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PROCEEDINGS OF THE INTERNATIONAL CONFERENCE ON MANAGEMENT AND BUSINESS 2023

(COMB 2023)

DANANG, AUGUST 25TH, 2023

NHÀ XUẤT BẢN TÀI CHÍNH

THE UNIVERSITY OF DANANG
UNIVERSITY OF ECONOMICS

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WELCOME REMARKS

The University of Danang - University of Economics (DUE, Vietnam), University of Liège (Belgium), The University of Hue - University of Economics, Nha Trang University, Quy Nhon University, and Hong Duc University, is proud to present the 10th International Conference on Management and Business (**COMB-2023**).

As a representative of the organizing committee, I extend a cordial welcome to all distinguished participants of COMB-2023. We are immensely delighted to undertake the responsibility of hosting this significant event in Danang, building upon the successes of our previous annual conferences spanning from 2012 to 2022.

This conference stands as an exceptional platform, fostering collaboration and the cultivation of inventive concepts among academics, doctoral candidates, and industry professionals. It provides an avenue to explore contemporary and emerging trends in the realm of Management and Business, encompassing both domestic and international landscapes. Moreover, COMB-2023 aims to present effective business solutions within the context of a dynamic digital economy ecosystem, aligning with the objectives of sustainable development. We strongly encourage active participation in networking opportunities, which can facilitate valuable connections for your forthcoming enterprises and pursuits.

We are indeed privileged to welcome the esteemed scholar, Professor Mario Cools from the University of Liège (Belgium), as our distinguished keynote speaker. His presence greatly enhances the significance of this event, and we extend our heartfelt gratitude for his participation.

The conference boasts an impressive array of speakers, presenters, and accomplished doctoral candidates, whose contributions we genuinely acknowledge. Their invaluable time and insights significantly contribute to the triumph of this assembly. Our aspiration is for this conference to deliver an enriching, transformative, and enjoyable encounter for all attendees.

A/P. Thuy Anh Vo,

Interim Rector, The University of Danang - University of Economics

KEYNOTE SPEAKER

Professor Mario Cools

Professor in Transport and Mobility at University of Liège, Belgium

His main research focus lies on transportation models, reliability of transport systems, sustainability enhancing decision support systems, and the impact of new transport infrastructure. Prof. Cools has published numerous articles in leading peer-reviewed journals, including *Safety Science*, *Transport Policy*, *International Journal of Production Research*, *Expert Systems with Application*, *Networks and Spatial Economics*, *Renewable and Sustainable Energy Reviews*, and *Transportation Research. Part A-B-C*.

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PART 1.
DIGITAL BUSINESS & DIGITAL ECONOMY

The 10th International Conference on Management and Business (COMB-2023)
August 25th, 2023, Danang, Vietnam

Factors Affecting Digital Transformation of Small and Medium Enterprises – The Case of Thanh Hoa Province, Vietnam

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ABSTRACT

The objective of this paper is to examine the factors affecting the digital transformation of the SMEs in Thanh Hoa province. Based on the Technological, Organizational, and Environmental (TOE) model and analyzing the sample of 288 valid questionnaires, the results of the SEM analysis indicate that there are five factors impact positively on digital transformation of small and medium-sized enterprises (SMEs) in Thanh Hoa Province. The most influenced factor is Information technology management, followed by Digital strategies, Information technology infrastructure, Partnership, and Employee skill. Furthermore, the analysis results pointed out that the digital transformation has a positive impact on the Business performance of SMEs in Thanh Hoa Province.

Keywords: Business performance, Digital transformation, SMEs, Thanh Hoa province.

1. Introduction

Digital transformation is defined as the integration and application of digital technologies to enhance management efficiency, production, business operations, and improve the competitiveness of enterprises. Currently, the Government of Vietnam is gradually formulating and implementing the digital transformation across the broader economy in order to promote growth and achieve prosperity. Many studies pointed out that digital transformation have positively impacts firms performance (Nwankpa and Roumani, 2016; Mubarak et al., 2019; Zhang et al., 2022; Ren, Y et al., 2023) in general, as well as the performance of SMEs, in particular (Peter, 1988; Bharadwaj, 2000; Hess et al., 2016; Hu, 2020). Recognizing digital transformation as an essential trend and an important solution to develop businesses in general and small and medium-sized enterprises (SMEs)

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in particular, Vietnamese Government and entrepreneurs have been focusing on accelerating the digital transformation process.

At present, businesses have been undergoing digital transformation in various aspects in Vietnam. For example, they have digitized administrative processes, remoted workforce management, managed document and inventory, implemented e-commerce and digital marketing strategies, adopted electronic payment systems, invested in automation and mechanized production lines as well. Economists have estimated that digital transformation helps small and medium-sized enterprises to reduce operating costs up to 60 percent in some processes. In certain cases, digital transformation lead time savings up to 90 percent compared to the previous methods.

For Vietnam, SMEs are categorized into Micro-enterprises, Small enterprises and Mid-sized enterprises. The classification based on the field of operation (agriculture, forestry, aquaculture; industry and construction sectors and the field of commerce and services) and some following criteria as an average annual number of employees who participate in social insurance and total revenue in the year or total capital of the year (The Government, 2021). Furthermore, the Government has been attempting to provide assistance for SMEs and DT for SMEs has been being paid attention to promote in the recent years.

For Thanh Hoa, the Province has made continuous efforts to drive comprehensively digital transformation (DT), with the goal is to develop a digital government, digital economy, and digital society. Regarding to SMEs in the province, they have tried to implement promptly DT in order to improve efficiency in production and business activities. As of the end of 2022, there are over 20,000 SMEs operating, accounting for 90 percent of the total number of businesses in Thanh Hoa province. With the perspective of putting people and businesses at the center of service and using their satisfaction as a measure of the efficiency of the local government, Thanh Hoa province attempts to support enterprises, cooperatives, and individual businesses in promoting digital transformation.

In reality, the process of digital transformation for SMEs in Thanh Hoa province is still in its early stages. Therefore, the Provincial Steering Committee for Digital Transformation has carried out a program, with the aim, until 2025, Thanh Hoa targets to have more than 50% enterprises out of the total number of the tax-paying enterprises to implement the digital transformation (Linh Huong, 2023). To achieve this goal, appropriate solutions need to be implemented to address the challenges of digital transformation and foster digital economic development, which has helped SMEs reduce costs, enhance operational efficiency, and competitiveness. Therefore, it is crucial to find out factors affecting digital transformation of SMEs in Thanh Hoa province then the local government can propose suitable solutions to address the challenges of digital transformation of these enterprises in Thanh Hoa province.

The rest of the paper is organized as follows. Section 2 expresses the methodology. Research results is displayed in Sections 3. Discussion is shown in Section 4. The following section concludes the paper.

2. Methodology

2.1. Research model and hypotheses

To investigate the factors affecting the digital transformation of SMEs, the paper develops the model based on the Technology-Organization-Environment (TOE) model developed by Tornatzky et al (1990). TOE model implied that variables such as technology, organization, and environment factors could be used to explain the digital transformation. Furthermore, the TOE model is not limited by the organization's scale or the characteristics of the industry/product. Therefore, the TOE theory provides a comprehensive framework for explaining technology adoption in an organization. Accordingly, the essential variables that may affect the digitalization process of SMEs stand for the technology, organization and environment factors. Through theoretical synthesis, this study identifies 6 critical factors have a positive impact on the DT of SMEs in Thanh Hoa province such as: Government support (GS), Partnership (PA), IT infrastructure (ITI), IT management (ITM), Employee skill (ES), and Digital strategies (DS). Moreover, this study supposes DT has a positive impact on the business performance (BP) of SMEs in Thanh Hoa Province. The conceptual model is shown in Figure 1.

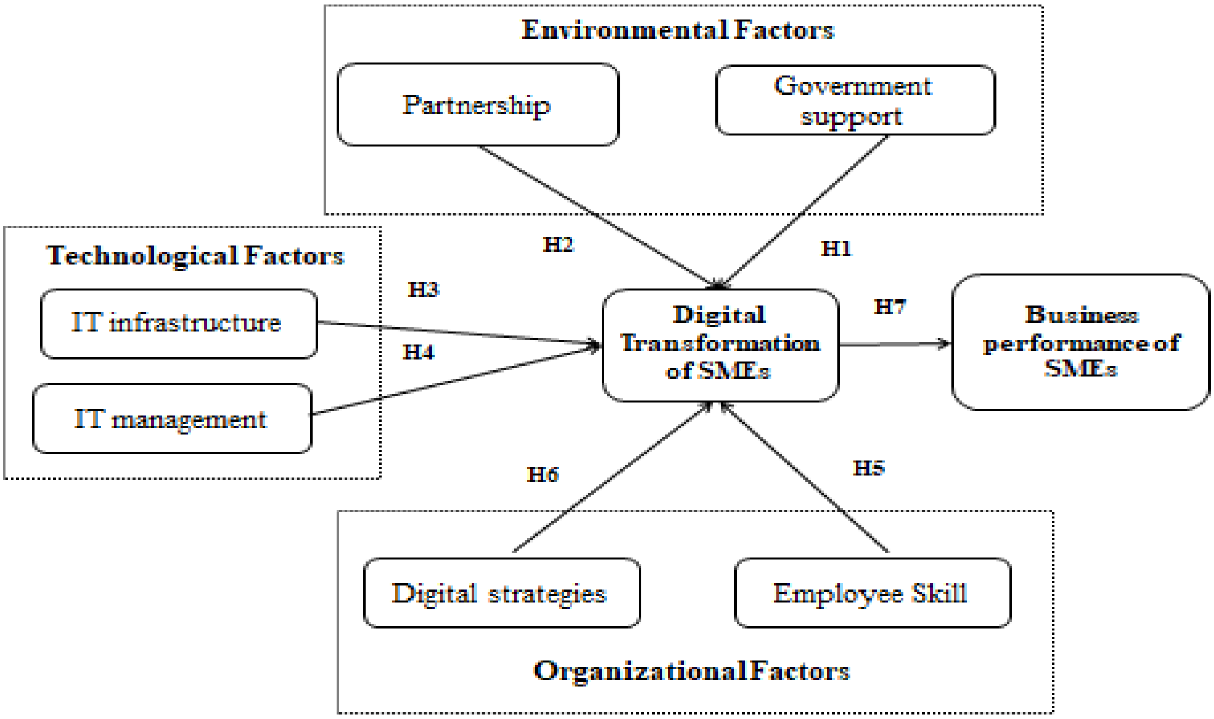

Figure 1. Proposed Research Model

Source: synthesis by the authors

Based on the research model, the authors propose the following research hypotheses:

The government can develop and strengthen policies and programs to support SMEs' DT agenda, create specific policies, support initiatives, customize training programs, and promote collaborative ecosystems. Moreover, the success of DT must also change organizations by creating a dynamic partner ecosystem. Thus, government support and partnerships, as important environmental factors, can have a significant impact on the success of DT. However, given the varying results of DT under the same environmental conditions, we have reason to doubt the validity of direct impact. In other words, government support and partnerships can impact on the results of DT through organizational factors, and we propose the following hypotheses:

H1: Government support is positively related to DT of SMEs in Thanh Hóa Provine

H2: Partnership is positively related to DT of SMEs in Thanh Hóa Provine

Information technology is most important for companies to achieve DT, which is conducive to optimize business processes, create customer and corporate value. Digital technology brings out new forms of business strategies by altering the value creation paths that organizations have previously relied upon to remain competitive, providing technical support for their effective implementation as well. In addition, IT can help enable leadership and organizational performance. IT infrastructure resources and IT management capabilities are generally regarded as important IT strategic choices. IT infrastructure resources are non-competitive resources, while IT management capabilities are competitive resources that it is difficult for competitors to imitate, such that organizations usually require an effective combination of IT infrastructure and IT management capabilities to obtain IT business value. Therefore, this research proposes the following hypotheses:

H3: IT infrastructure is positively related to DT of SMEs in Thanh Hóa Provine

H4: IT management capability is positively related to DT of SMEs in Thanh Hóa Provine

Prior researchs show that human factors can significantly impact on DT capacity in an organization and thus organizations have to increase their employee's skills to ensure DT successfully. Employees are the most important executors of enterprises' digital strategy and their own skills and knowledge as well as digital strategy affects the results of DT. This study proposes the following hypotheses:

H5: Employee skill moderates the linkage is positively related to DT of SMEs in Thanh Hóa Provine.

H6: Digital strategies is positively related to DT of SMEs in Thanh Hóa Provine.

Relationship between DT and Business performance of SMEs in Thanh Hóa Provine

Previous studies suggest that digital transformation has a positive impact on the business outcomes of SMEs. For Vietnam, a study by Hai (2021) also implied that IT, human resources, and business strategy have a positive impact on the digital transformation of SMEs, and vice versa digital transformation has a positive impact on the business results of SMEs. Digital transformation has a positive effect on the dynamic capabilities of enterprises; the higher the intensity of individual and the stronger the entrepreneurial orientation, the stronger the positive impact of digital transformation on the dynamic capabilities and innovation performance of enterprises (Wang, 2021). Thus, the paper proposes the following hypotheses:

H7: DT has a positive impact on Business performance of SMEs in Thanh Hóa Provine

Inheriting the results of previous studies, the authors proposes factors influencing DT of SMEs in Thanh Hoa province as described in Table 1.

Table 1. Description of the scale

Symbol	Observed variables	Source of the scale
GS	***Government support***	
GS1	Thanh Hoa province can develop and strengthen policies and programs to support your SME's DT agenda	Kraja *et al* (2014)
GS2	Thanh Hoa province can create specific policies to support your SME's DT agenda	

GS3	Thanh Hoa province can support, and counseling initiatives to support your SME's DT agenda	
GS4	Thanh Hoa province can customize training programs to support your SME's DT agenda	Pelletier and Cloutier (2019)
GS5	Thanh Hoa province can be an important environmental factor and play a significant impact on the success of DT	
PA	***Partnership***	
PA1	SMEs can improve their business performance even if limited resources are available by establishing collaboration with their partners	Lin *et al* (2020)
PA2	SMEs can improve their business performance and achieve growth by establishing collaboration with their partners	
PA3	The formation of inter-organizational relationships can help organizations acquire resources to reduce uncertainty and interdependence	
PA4	Partnership is an important environmental factor, can have a significant impact on the success of DT	
ITI	***IT infrastructure***	
ITI1	Investment in and use of IT infrastructure are considered to provide enhanced decision-making capabilities and increased efficiency	Mahdi (2019)
ITI2	Investment in and use of IT infrastructure are considered to improved productivity, playing an important role in management capabilities and corporate performance	
ITI3	It is difficult for competitors to imitate IT infrastructure resources	Li *et al* (2019)
ITI4	IT infrastructure resources is generally regarded as an important IT strategic choice	
ITI5	IT infrastructure can develop unique organizational capabilities, thereby enhancing organizational performance.	Mahdi (2019)
ITM	***IT Management capacity***	
ITM1	To what extent your company uses IoT	Teng *et al* (2022)
ITM2	To what extent your company uses social media	
ITM3	To what extent your company uses cloud technologies	Armstrong (1999)
ITM4	To what extent your company uses big data and data analytics	Melville *et al* (2004)
ES	***Employee skill***	

ES1	Your business advances continuous learning in digital technologies	Kane (2019), Grab *et al* (2019)
ES2	A balance between general digital skills and specialized digital roles is adequate	
ES3	Your business can assemble teams with the right mix of skills for each digital project	
ES4	Employees are compound talents who understand both business and digitalization	Kane (2019)
ES5	Your business provides employees with resources or opportunities to acquire the right digital skills for digital transformation	
DS	***Digital strategies***	
DS1	Your company's digital transformation strategy can increase sales	Chatterjee *et al* (2020)
DS2	Your company's digital transformation strategy can improve competitiveness	
DS3	Your company's digital transformation strategy can fundamentally change business processes	Salvini *et al* (2020)
DS4	Your company's digital transformation strategy can improve customer experience and satisfaction	
DS5	Your company's digital transformation strategy can improve innovation capabilities	Hartley and Sawaya (2019), Evangelatos (2020).
DS6	Your company's digital transformation strategy can improve business decisions	
DT	***Digital transformation***	
DT1	Assess your organization's digital transformation maturity compared to peers	Mubarak (2019), Hu (2020), Li *et al* (2021)
DT2	Assessment of the use of digital technology	
DT3	Assess how widely your own digital technology is used	
DT4	Your company's digital transformation can improve efficiency	
DT5	Digital transformation of your business can help return on investmen	
BP	***Business performance of SMEs***	
BP1	Digital transformation of your business can help increase sales	

BP2	Digital transformation of your business can help increase gross profit	Mubarak (2019), Hu (2020), Li *et al* (2021)
BP3	Your company's digital transformation can help increase net profit	
BP4	Digital transformation of your usiness can help return on equity	

Source: compliled by the authors, 2022

The analytical steps included assessing the scale and the reliability of the measured variable by Cronbach's alpha coefficient and factor loading by EFA analyses. To confirm univariate, multivariate, convergent, and discriminant validity of the concepts, CFA analysis is performed. To evaluate the impact of independent variables on the dependent variable, Structural equation modeling (SEM) is conducted. Furtheremore, the bootstrap method was used for sustainability testing with 1.000 repeated samples. Data analysis is performed by the SPSS 22.0 and Amos 20.0 software.

2.2. Data and data sources

The data is collected by convenience sampling. The questionnaire was sent to executives of SMEs both in-person and online by the end of march 2023. The data includes 288 valid survey questionnaires. Hair et al (1998) suggested that if the sample size is around 100 then the factor loading criterion should be greater than 0.5 and recommended a ratio of 5:1 for sample size compared to the number of parameters in multivariate analysis. In the research model, the authors have identified 38 observed variables, using a 5-point Likert scale. Therefore, the sample size is reliable for estimating.

3. Research results and discussion

3.1. Descriptive statistics of the study sample

Data are extracted from 288 valid questionnaires shed some light on SMEs. For the firm age, 32 SMEs (11.11%) had been operating for less than 2 years, 98 SMEs (34.02%) had been operating for 2 to 5 years, 112 SMEs (39.02%) had been operating for 5 to 10 years, and 46 SMEs (15.59%) had been operating for over 10 years. In terms of the number of employees, the results showed that 32 SMEs (10.98%) had less than 10 employees, 221 SMEs (76.88%) had 10-49 employees, and 35 SMEs (12.14%) had 51-100 employees. Regarding to the major business areas, the results showed that 10 SMEs (3.47%) were in the agriculture sector, 64 SMEs (22.2%) were in the industry sector, 108 SMEs (37.57%) were in the service sector, and 106 SMEs (36.8%) were in two or three sectors.

3.2. Measurement Model Evaluation Results

3.2.1. Cronbach's alpha analysis

The variables with an item-total correlation values of less than 0.5 can be considered useless and are eliminated from the model. A Cronbach's alpha coefficient of over 0.7 is considered to be acceptable for the scale (Hair et al., 2014). In the first Cronbach's alpha analysis, three variables (DS6, ITI5 and ES5) were removed since their total correlation coefficient was less than 0.5. In the second analysis, all observed variables had a total correlation greater than 0.5 and a Cronbach's alpha coefficient greater than 0.7, indicating that they were reliable. The results of the second Cronbach's alpha test, which examined the reliability of the variables pointed out variables that were eligible for the study.

3.2.2. Results of exploratory factor analysis (EFA)

The Kaiser–Meyer–Olkin (KMO) test and Bartlett's test results are shown in Table 2. The KMO value is 0,885, indicating that the correlation among variables represent a moderate or high correlation. Moreover, Bartlett's test of sphericity is statistically significant ($p < 0.005$), indicating that the correlation matrix is not an identity matrix and the data is suitable for factor analysis. Therefore, the results of EFA test indicate that the application of EFA is completely appropriate.

Table 2. Factor analysis for variables

	Factor							
	1	2	3	4	5	6	7	8
DS1	0.887							
DS5	0.834							
DS2	0.793							
DS3	0.785							
DS4	0.731							
DT4		0.869						
DT5		0.821						
DT3		0.816						
DT2		0.788						
DT1		0.739						
GS4			0.773					
GS2			0.769					
GS3			0.763					
GS1			0.743					
GS5			0.704					
ITI2				0.889				
ITI3				0.811				
ITI4				0.782				
ITI1				0.771				
PA1					0.843			
PA2					0.817			
PA3					0.814			

PA4					0.685			
ES2						0.860		
ES4						0.825		
ES3						0.800		
ES1						0.749		
ITM4							0.839	
ITM2							0.801	
ITM3							0.704	
ITM1							0.698	
BP4								0.963
BP2								0.830
BP3								0.802
BP1								0.603
Initial Eigenvalues	11.066	3.041	2.718	2.460	2.205	1.726	1.501	1.144
Cumulative %	31.618	40.307	48.073	55.102	61.403	66.334	70.623	73.891
KMO	0.885							
Approx. Chi-Square	7025.659							
Df	559							
Sig.	,000							

Source: Processing data of AMOS software.

The Bartlett’s test conducted on the correlation of observed variables with a significance level (Sig.) of 0.000, which is smaller than 0,05, indicates that the observed variables are not correlated with each other in the population. Consequently, the null hypothesis (Ho) that the factor model is not suitable is rejected, indicating that the data is completely appropriate for factor analysis. Moreover, the eigenvalues is 1.144 > 1, and the cumulative variance test yields a value of 73.891%, which is greater than 50%, indicating convergence of the analysis at the 8th factor. The factor loadings of each observed variable are all greater than 0.5, indicating that the observed variables adequately represent the significant influence of the factors that they represent.

3.2.3. Results of confirmatory factor analysis (CFA)

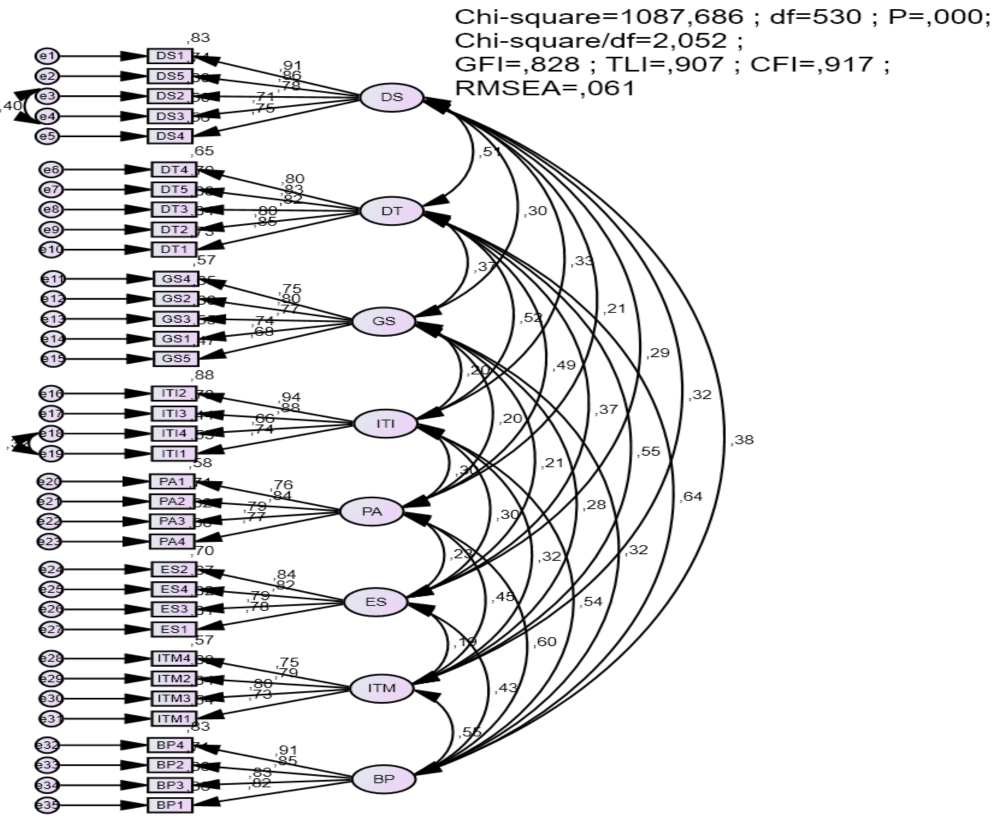

Figure 2. Results of confirmatory factor analysis

Source: Processing data of AMOS software

The results of the CFA analysis are presented in Figure 2. The critical model comprises established factors that are interrelated freely. The CFA analysis results indicate that the Chi-square value of 1087,686 with degrees of freedom being 530, comparative fit index (CFI) value of 0.917, Tucker–Lewis index (TLI) value of 0.907 (both greater than 0.9), the goodness of fit index (GFI) value of 0.828 (greater than 0.8), and root mean square error of approximation (RMSEA) value of 0.061 (less than 0.8) are all satisfactory. The factor weights of each observed variable are greater than 0.5, indicating the model's convergent validity. Furthermore, the model indices are consistent with the data.

Additionally, the correlation coefficients and standard deviations of the scale components (displayed in Table 3) reveal that the correlation coefficients between each pair of concepts and their standard deviations are significantly 1% of level. Therefore, the factors in the model exhibit discriminant validity regarding the correlation between the scale components. The CFA analysis also shows the satisfactory of convergent validity, discriminant validity, correlation, and reliability of the scale components.

Table 3. Results of testing the correlation between the components of the scales

			Estimate	S.E.	C.R.	P
DS	<-->	DT	0.346	0.051	6.791	0.000*
DS	<-->	GS	0.196	0.046	4.298	0.000*
DS	<-->	ITI	0.244	0.050	4.915	0.000*

			Estimate	S.E.	C.R.	P
DS	<-->	PA	0.124	0.040	3.131	0.002*
DS	<-->	ES	0.212	0.050	4.197	0.000*
DS	<-->	ITM	0.215	0.048	4.507	0.000*
DS	<-->	BP	0.273	0.049	5.521	0.000*
DT	<-->	GS	0.221	0.044	5.037	0.000*
DT	<-->	ITI	0.350	0.050	6.962	0.000*
DT	<-->	PA	0.259	0.042	6.190	0.000*
DT	<-->	ES	0.245	0.048	5.075	0.000*
DT	<-->	ITM	0.337	0.050	6.686	0.000*
DT	<-->	BP	0.417	0.053	7.932	0.000*
GS	<-->	ITI	0.130	0.043	3.005	0.003*
GS	<-->	PA	0.104	0.036	2.909	0.004*
GS	<-->	ES	0.134	0.045	3.011	0.003*
GS	<-->	ITM	0.162	0.043	3.811	0.000*
GS	<-->	BP	0.200	0.044	4.516	0.000*
ITI	<-->	PA	0.173	0.040	4.307	0.000*
ITI	<-->	ES	0.218	0.050	4.382	0.000*
ITI	<-->	ITM	0.211	0.047	4.507	0.000*
ITI	<-->	BP	0.379	0.052	7.351	0.000*
PA	<-->	ES	0.134	0.040	3.323	0.000*
PA	<-->	ITM	0.234	0.042	5.615	0.000*
PA	<-->	BP	0.337	0.046	7.359	0.000*
ES	<-->	ITM	0.128	0.046	2.788	0.005*
ES	<-->	BP	0.303	0.051	5.915	0.000*
ITM	<-->	BP	0.352	0.051	6.856	0.000*

Notes: * is significant at 1% level

Source: Processing data of AMOS software

3.3. The results of the structural equation modeling (SEM)

The linear structural model (SEM) is utilized to assess the fitness of the research model and examine the relationships among the factors. The SEM analysis yielded the following results: degrees of freedom (df) = 536; Chi-square = 1136.199; p = 0.000 < 0.05; Chi-square/df = 2.120 < 3; CFI = 0.911 and TLI = 0.901 > 0.9; GFI = 0.826 > 0.8; and RMSEA = 0.062 < 0.8. These results confirm that the model is consistent with the collected data. Table 4 displays the results of estimating the cause-and-effect relationships among the factors in the research model.

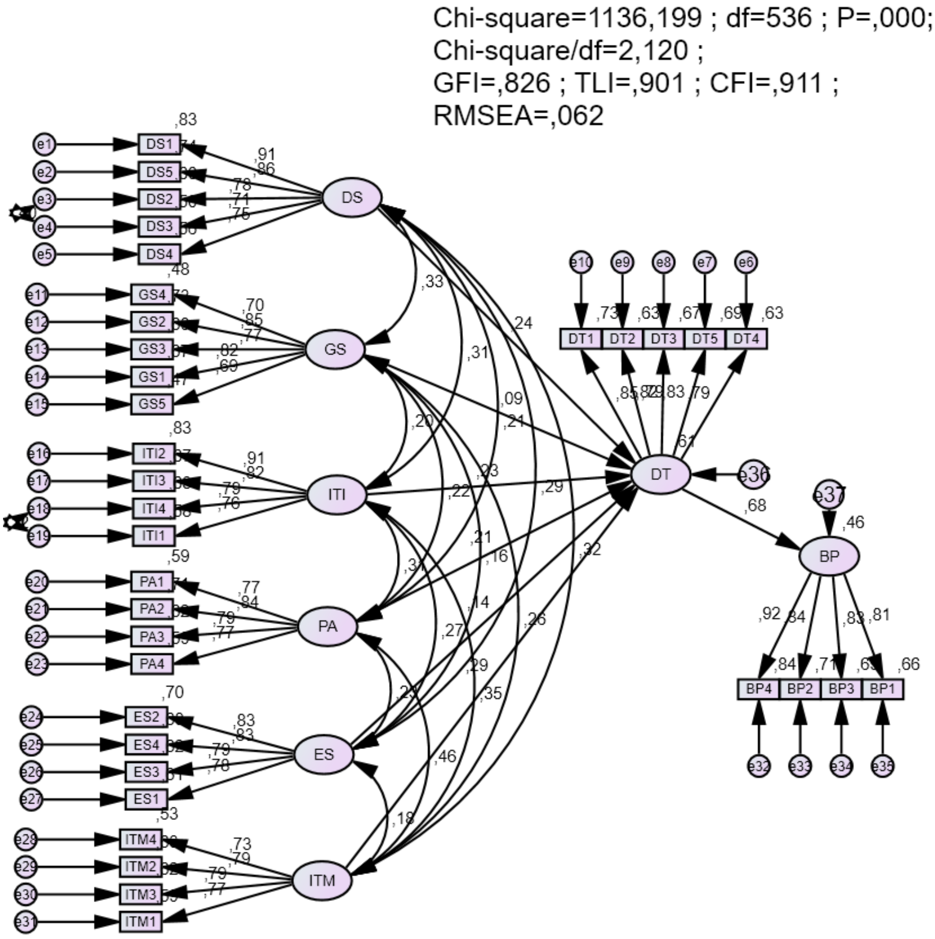

Figure 3. The results of the structural equation modeling

Source: Processing data of AMOS software.

The regression results in Table 4 show that with the exception of hypothesis H1, the other hypotheses (H2, H3, H4, H5, H6, H7) can not be rejected, indicating that all hypotheses are accepted except for hypothesis H1. It is implied that the factors: Partnership, IT infrastructure, IT management, Employee skill, and Digital strategies all have a positive impact on the digital transformation of SMEs in Thanh Hoa Province. Among these factors, IT management has the strongest impact (with a coefficient of β = 0.288), followed by Digital strategies (with β = 0.240), IT infrastructure (with β = 0.229), Partnership (with β = 0.208), and the factor with the least impact is Employee skill (with β = 0.138). Interestingly, the findings show that Government support variable does not play significant role to the digital transformation of SMEs in Thanh Hoa province.

Table 4. The results of estimating the causal relationships among the factors

Hypothesis	Correlations			Estimate	S.E.	C.R.	P	Results
H1	*DT*	<---	*GS*	*0.089*	*0.056*	*1.776*	*0.076*	*Rejected*
H2	DT	<---	PA	0.208	0.064	3.680	0.000*	Supported
H3	DT	<---	ITI	0.229	0.052	4.350	0.000*	Supported
H4	DT	<---	ITM	0.288	0.063	4.744	0.000*	Supported
H5	DT	<---	ES	0.138	0.046	2.768	0.006*	Supported
H6	DT	<---	DS	0.240	0.048	4.512	0.000*	Supported
H7	BP	<---	DT	0.677	0.065	11.261	0.000*	Supported

Notes: * is significant at 1% level

Source: Processing data of AMOS software

Additionally, the research results also indicate that digital transformation has a positive impact on the business performance of SMEs in Thanh Hoa Province (with a coefficient of $\beta = 0.677$). These findings are consistent with previous studies.

3.4. Evaluating model reliability using the bootstrap method

Table 5 displays assessment of research model reliability using the bootstrap method. It can be seen that the critical ratio (CR) values of the interrelationships between the factors in the model are all below 1.96, indicating that the p-value is greater than 5%. This implies that the non-zero deviation lacks statistical significance at the 95% confidence level, and hence we can conclude that the estimated model is reliable.

Table 5. Assessment of research model reliability using the bootstrap method

Parameter			SE	SE-SE	Mean	Bias	SE-Bias	CR
DT	<---	DS	0.065	0.001	0.24	0.000	0.002	0.0
DT	<---	GS	0.049	0.001	0.09	0.002	0.002	1.0
DT	<---	ITI	0.068	0.002	0.23	0.001	0.002	0.5
DT	<---	PA	0.07	0.002	0.205	-0.003	0.002	-1.5
DT	<---	ES	0.056	0.001	0.138	0.000	0.002	0.0
DT	<---	ITM	0.069	0.002	0.292	0.004	0.002	2.0
BP	<---	DT	0.053	0.001	0.674	-0.003	0.002	-1.5

Source: Processing data of AMOS software

According to the outcomes of the SEM model, all the hypotheses of the model are accepted (excepted for H1), indicating that the following elements: Partnership, IT infrastructure, IT management, Employee skill, and Digital strategies all have a positive impact on the digital transformation of SMEs in Thanh Hoa Province. Moreover, digital transformation has a positive impact on the business performance of SMEs in Thanh Hoa Province.

4. Discussion

This paper contributes to a better understanding of the factors influencing the Digital transformation of SMEs and the impact of DT to Business performance in Thanh Hoa province. The estimated results suggest some important findings.

Firstly, Information technology management has a positive correlation with the SMEs'digital transformation in Thanh Hoa province. It can be explained that the implementation of IT management help to ensure all of the information technology resources of an enterprise are managed in accordance with its needs and priorities. Therefore, IT management can help to drive the digital transformation of SMEs.

Secondly, Employee skill has a positive impact on SMEs' digital transformation, implying that digital transformation depends on employees with digital skills. It is due to the fact that digital technology does not function independently, nor does it always workwell so that SMEs will rely on alarge number of employees who are familiar with and adept at digital tools to successfully master these digital methods and technologies. Therefore, for SMEs in Thanh Hoa province, to successfully implement digital transformation, these enterprises have to focus on training employees' digital skills.

Thirdly, Partnership has a positive correlation with DT, suggesting that the ability of a SME to connect with others can help firm to implement digital transformation. A high-quality partnerships with connectivity enables a SME to get help and learn from partners to promote DT. Moreover, DT is an indispensable to enhance and maintain partnership at high level.

Fourthly, Digital strategy plays positive impact on DT of SMEs in Thanh Hoa province, expressing that to successfully achieve digital transformation of SMEs, a business must first carry out top-level design and develop a comprehen-sive digital transformation strategy. The fact that DT of a SME has purpose in line with the development strategy around the vision, goals, business ecological blueprint, and other major strategic directions. Therefore, to carry out digital transformation effectively, quickly, and comprehensively, SMEs in Thanh Hoa province must be guided to formulate digital transformation strategies.

Fifthly, IT infrastructure has a positive correlation with DT. It is manifest to realize that factors as the composite hardware, software, network resources and services required for the existence, operation and management of an enterprise IT environment play crucial role in DT. Therefore, investing in IT infrastructure is inevitable for SMEs to ensure successfully DT.

Sixthly, Government support variable has a relevant but not significant impact on the digital transformation of SMEs. It can be explained that for SMEs, the local government has not yet provided the necessary for the digital transformation process. This explanation is consistent with the Thanh Hoa' provincial competitiveness index (PCI) in recent years (ranked 43/63, 47/63 in 2021, 2022 respectively).

Finally, DT has positive impact on BP, implying that SMEs in Thanh Hoa province have realized the benefits of digital transformation. Implementing DT can help SMEs to reduce business costs by automating processes, reducing waste, and optimizing supply chain management; in the end DT has a positive impact on the business outcomes of SMEs.

5. Conclusion

Based on the theoretical foundations of the Technology-Organization-Environment (TOE) model, the authors formulate a model with the objective of assessing the factors influencing the digital transformation of SMEs in Thanh Hoa Province. The result indicates that there are five factors can help to drive the digital transformation, namely: Information technology management, Digital strategies, Information technology infrastructure, Partnership, and Employee skill. The paper also pointed out that the supports of Thanh Hoa province have proven ineffective to promote digital transformation. Moreover, analysis results reveal that the digital transformation plays an important role on business performance of SMEs in Thanh Hoa province.

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Digital Transformation Adoption at Small and Medium Enterprise in Construction Industry in Ho Chi Minh City

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ABSTRACT

This study examined the influence of factors on the adoption of digital transformation at small and medium enterprises (SMEs) in the construction industry in Ho Chi Minh City. The study conducted data analysis of 249 questionnaires from employees and leaders through SmartPLS software. The analysis results have shown that the independent variables have a positive influence on the adoption of digital transformation, sorted in descending order, which is Technological advancement; Cost minimization; Competitive pressure; Environmental influence; and Pandemic Covid-19. Based on the results of this study, the author has proposed a few governance implications to help improve efficiency when applying digital transformation, thereby realizing the sustainable development goals of the enterprises.

Keywords: Digital transformation, SMEs, The construction industry, Pandemic Covid-19

1. Introduction

1.1. The necessity of the study

Today, digital transformation has made a huge change to the lives of modern people. Digital transformation is gradually affecting people's lives when people can experience services conveniently and quickly. Moreover, the ongoing Covid-19 pandemic has helped businesses and people realize the importance of digital transformation. During the time of social distancing, the processing of work is mainly done online using computers or smartphones. To adapt to this new breakthrough, any entity existing in society that does not adapt and transform to fit will soon be eliminated. As an entity that exists and develops in society, small and medium enterprises (SMEs) specializing in construction cannot go against this rule. With the total social investment capital of about 100 billion USD in 2020, of which, investment in construction (including civil construction, industrial construction, traffic construction) accounts for about 30-40% of the total investment.

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society, this is a great resource for national economic development. If there is a synchronous solution in terms of mechanisms and policies, especially awareness of the issue of digital transformation, the total social investment capital for the construction industry will be about 40 billion USD to 50 billion USD/year in the period of 2021-2025, the industry's digital transformation will create enormous surplus value for society. In order to promote this great resource, in addition to the synchronous issuance of legal documents, the digital transformation of the construction industry will create a spur for rapid and sustainable growth for the industry and make a great contribution to economic growth national economy, especially maintaining the supply chain in construction investment activities and providing services to people and businesses during the Covid-19 pandemic. This study explores the influencing factors as well as their impact on the adoption of digital transformation in enterprises. From the research results, businesses can consult and build their own appropriate digital transformation roadmap to bring practical and meaningful benefits in production and business activities.

1.2. Research objectives

The research needs to clarify the following specific objectives:

(1) Identify the factors affecting the adoption of digital transformation of SMEs in the construction industry.

(2) Assess the impact of factors affecting the adoption of digital transformation of SMEs in the construction industry.

(3) Test the difference about adoption of digital transformation of SMEs in the construction industry according to individual characteristics.

(4) Propose the management implications to help the Board of Directors of these enterprises come up with some policies to improve efficiency, thereby increasing profits for enterprises.

1.3. Research question

(1) What factors affect the adoption of digital transformation of SMEs in the construction industry?

(2) How is the impact of these factors on the adoption of digital transformation?

(3) How is the difference about adoption of digital transformation according to individual characteristics?

(4) What are the managerial implications that help the Board of Directors come up with measures to increase the adoption of digital transformation?

1.4. Subject and scope of study

Research subjects: Factors affecting the adoption of digital transformation of SMEs in the construction industry.

Research object: Leaders and employees. With an organization, when there is a change, it is the job of the head first. Since digital transformation is a total and comprehensive change process, it is the job of all members of the organization, including leaders and employees.

Research scope: The study was carried out at SMEs in the construction industry in Ho Chi Minh City. The survey was conducted in February 2023.

2. Theoretical basis, literature review and research methods

2.1. Theoretical basis

2.1.1. Adoption of digital transformation

Digital transformation is mentioned more and more often among the important factors to enhance the competitiveness and successful development of the organization (Ablyazov & Asaul, 2018). Digital transformation has brought breakthrough economic changes and is changing the way businesses operate and do business (Agushi, 2019).

The adoption of digital transformation has impacts on businesses such as transparency, creativity using the internet, online transactions, e-commerce, e-services, etc. (Azam & Quaddus, 2012). Digital transformation is seen as an opportunity for small businesses to enter foreign markets (Yin, 2020). Digital transformation will contribute to reducing costs, increasing productivity, enhancing customer relationships and satisfaction (Karltorp, 2017).

2.1.2. Competitive pressure

Competitive pressure is the level of competition in the business field (Soewarno et al., 2020). According to Bernard et al. (2006), competitive pressure arises when companies compete with competitors in the market to win customers, increase market share or struggle to survive.

In addition, Soewarno et al. (2020) reports that as consumer demand increase, financially strong companies pursue more innovation, leading to higher conversion adoption. Dahlman (2018) concludes that the easing of trade barriers facilitates the entry of foreign competitors into the domestic market, increasing competitive pressure. In this study, competitive pressure is described as the amount of pressure a company has over its industry competitors as they adapt to new digital technologies.

Hypothesis H1: Competitive pressure has a positive impact on the adoption of digital transformation in enterprises.

2.1.3. Technological advancement

According to Unctad (2018), technological progress is now an integral part, having far-reaching effects on every economy, society, research, art and daily life. McArthur and Sachs (2002) report that, with technological progress at a threshold, Asian economies now require a new approach to technological growth.

The advancement of technology forces SMEs to conduct more digitization of their business operations. Advanced technology will help businesses outperform competitors (Sin et al., 2016). Due to the increasing use of the Internet, it makes communication between humans and machines easier (Popescu, 2018).

Hypothesis H2: The advancement of technology has a positive impact on the adoption of digital transformation in enterprises.

2.1.4. Cost minimization

Cost minimization is a financial strategy aimed at achieving the most cost effective way to deliver products and services at the required quality level. It is the process of reducing spending on unnecessary or inefficient activities.

Studies also show that cost reduction is an important factor in the implementation of emerging technologies (Ainin et al., 2015). The adoption of digital transformation will help SMEs operate their businesses using the internet, social media, and not needing a store when buying and selling. It will save rental costs, save time and be easier for both customers and businesses. Small companies are more likely to deploy low-cost internet technologies (Ramayah et al., 2016).

Hypothesis H3: Cost minimization has a positive impact on the adoption of digital transformation in enterprises.

2.1.5. Environmental influence

Environmental influences include factors inside and outside the business, which can affect the business separately or together. According to Karltorp (2017), environmental influences are the drivers of changes that occur within the wider organization, including social, political, economic, governmental, legal, technological and demographic learn. Environmental pressures stem from competitors, business partners and suppliers, customers and sales expectations (Ramayah et al., 2016). Environmental influences will force businesses to adopt digital transformation, even though their business operations are not problematic. The digital transformation process is often influenced by market dynamics, high or low technology industry, and company specialization (Tyler et al., 2020).

Hypothesis H4: Environmental influences have a positive impact the adoption of digital transformation in enterprises.

2.1.6. Pandemic Covid-19

In addition to a public health issue, the Covid-19 pandemic has also had a significant impact on the global economy with a reduction in global gross domestic product growth (Fernandes, 2020). Dramatic environmental changes have been triggered by the Covid-19 pandemic, encouraging businesses to adopt emerging technologies on a broader scale (Priyono et al., 2020). According to Sharon Chang (2020), SMEs have woken up and realized that adopting digital transformation is a priority in their business and daily life during this pandemic.

Hypothesis H5: The Pandemic Covid-19 has a positive impact on the adoption of digital transformation at enterprises.

2.2. Literature review

Digital transformation has been an important issue in recent years, both in business and in research. It deals with changes in the way organizations operate and create value (new business models, products and services) and communicate, using digital technology (Morakanyane, Grace, & O'Reilly, 2017; Vial, 2019). When it comes to digitizing and transforming processes, products, services, and business models, large organizations are willing to take more risks than SMEs (Kane, Palmer, Phillips, Kiron, & Buckley, 2015) and are also more mature digitally, as they have sufficient financial and human resources as well as a very clear digital transformation strategy. In contrast, SMEs often lag behind due to less clear digital transformation strategies (Dethine, Enjolras, & Monticolo, 2020), lack of skills (Leifels, 2020) and digital capabilities (Peillon & Dubruc, 2019). Digital transformation requires SMEs to fundamentally change their business models (Bouwman, Nikou, & de Reuver, 2019) and therefore requires them to be willing to change. Most important for SMEs is the early stage of digital transformation, which refers to defining the roadmap of business goals based on digital transformation and, therefore, enhancing perception of SMEs (Barann, Hermann, Cordes, Chasin, & Becker, 2019). So, the research question is: "What are the common factors affecting the adoption of digital transformation in small and medium-sized enterprises?". A report from the OECD, 2017, page 36 shows that the level of digital transformation among SMEs is particularly low, related to the acquisition of digital technologies. In addition, Eller, Alford, Kallmunzer, and Peters (2020) find that recent studies on digital transformation have mainly focused on large organizations, where the authors focus on innovation perspectives. business models (Hanninen, Smedlund, & Mitronen, 2018), case studies on how large, established organizations approach and drive digital transformation (Kaiser & Stummer, 2020; Sebastian et al., 2017) as well as on factors that contribute or hinder (Steiber, Alange, Ghosh, & Goncalves, 2020) from the perspective of innovation diffusion theory. In the context of SMEs, many authors have focused their research on the factors behind digital transformation (Ferreira, Fernandes, & Ferreira, 2019; Tarute, Duobiene, Kloviene, Vitkauskaite, & Varaniute, 2018; Wilaisakoolyong, 2018).

Others, like Eller et al. (2020) focuses on assessing digital transformation factors and their impact on the performance of small and medium enterprises. The results show that information technology (IT), employee skills and digital strategy are the main factors that positively impact digital transformation in SMEs. Finally, a recent study by (Nadkarni & Prugl, 2020) reviewed 58 studies from 2001 to 2019 and drew a thematic map from an agent and technology perspective, to help companies identify aspects related to digital transformation.

To have an overview, based on previous research papers, the author has summarized and listed a number of factors affecting digital transformation in SMEs, as shown in Table 1. TOE analysis framework is developed applies to three groups, namely Technology (T), Organization (O) and Environment (E).

Table 1: Identified influencing factors, based on TOE framework

Technological factors	Author
Use digital methods (e.g. e-commerce)	(Gamache et al., 2019)
Information communication technology infrastructure (ITC or IT) or digital architecture	(Chatzoglou & Chatzoudes, 2016; Gamache et al., 2019; Nyandoro, 2016)
Cost of ITC equipment	(Nyandoro, 2016)
Access to technology and the Internet	(Tarute et al., 2018)
Accept new technologies and innovations	(Wilaisakoolyong, 2018)
Data quality	(Gamache et al., 2019)
Improve quality serving	(Ferreira et al., 2019)
Using digital technology (or tools or Products)	(Isensee et al., 2020; Sandkuhl et al., 2019; Vial, 2019)

Use different digital channels (communication)	(Sandkuhl, Shilov, & Smimov, 2019)
Compatibility	(Yoon & George, 2013)
Data	(El Hilali, El Manouar, & Abdou Janati Idrissi, 2020)
Organizational factors	**Author**
Strategy	(Dilber, 2019; Irimias & Mitev, 2020; Isensee et al., 2020; Loon Hoe, 2020; Sandkuhl et al., 2019; Savic et al., 2016; Stemberger et al., 2019; Wilaisakoolyong, 2018)
Resources	(Nyandoro, 2016; Tarute et al., 2018; Wilaisakoolyong, 2018; Yoon & George, 2013)
Support, executive leadership & management	(Dilber, 2019; Gamache et al., 2019; Irimias & Mitev, 2020; Isensee et al., 2020; Loon Hoe, 2020; Sandkuhl et al., 2019; Savic et al., 2016; Vial, 2019; Wilaisakoolyong, 2018; Yoon & George, 2013)
Enterprise characteristics	(Bordonaba-Juste et al., 2012; Chatzoglou & Chatzoudes, 2016; Ferreira et al., 2019; Isensee et al., 2020; Nair et al., 2019; Nyandoro, 2016; Wilaisakoolyong, 2018; Yoon & George, 2013)
Organizational structure	(Stemberger et al., 2019; Vial, 2019)
Business Owners' Ages /SME	(Ferreira et al., 2019; Nair et al., 2019)
Human Resources	(Bordonaba-Juste et al., 2012; Ferreira et al., 2019; Gamache et al., 2019; Isensee et al., 2020; Loon Hoe, 2020; Nair et al., 2019; Nyandoro, 2016; Sandkuhl et al., 2019; Vial, 2019; Yoon & George, 2013)
Policy	(Wilaisakoolyong, 2018)
Capacity	(Isensee et al., 2020; Tarute et al., 2018; Vial, 2019)
Attitude towards IT implementation	(Isensee et al., 2020; Nair et al., 2019; Nyandoro, 2016; Vial, 2019)
Cognitive Creation	(Dilber, 2019; Isensee et al., 2020; Martinez, 2019)
Cooperation	(Dilber, 2019; Isensee et al., 2020; Loon Hoe, 2020; Sandkuhl et al., 2019; Savic et al., 2016; Stemberger et al., 2019; Tarute et al., 2018; Vial, 2019)
Communication	(Sandkuhl et al., 2019; Savic et al., 2016)
Corporate culture	(Dilber, 2019; Irimias & Mitev, 2020; Isensee et al., 2020; Loon Hoe, 2020; Martinez, 2019; Sandkuhl et al., 2019; Vial, 2019)

Changing business model	(Martinez, 2019; Tarute et al., 2018)
Industry Maturity	(Irimias & Mitev, 2020; Tarute et al., 2018)
Innovation	(El Hilali, El Manouar, & Abdou Janati Idrissi, 2020)
Decision making - based Exploration	(Savic, Ograjensek, & Rejc Buhovac, 2016)
Environmental factors	**Author**
Service provider standards	(Wilaisakoolyong, 2018)
Regulation (local, government)	(Isensee et al., 2020; Tarute et al., 2018; Wilaisakoolyong, 2018)
Support (e.g. Government, competency centres, research organisations)	(Chatzoglou & Chatzoudes, 2016; Dilber, 2019; Irimias & Mitev, 2020; Nyandoro, 2016)
Pressure (e.g. competition, business partners, customers, suppliers, government)	(Nair et al., 2019; Nyandoro, 2016; Wilaisakoolyong, 2018; Yoon & George, 2013)
Create marketing opportunities	(Ferreira et al., 2019; Wilaisakoolyong, 2018)
Customer behavior	(Wilaisakoolyong, 2018)
Consumer readiness	(Chatzoglou & Chatzoudes, 2016)
Client	(El Hilali et al., 2020; Savic et al., 2016)

Source: Compiled by the author

Although research in this area is increasing, each researcher presents a different set of factors influencing digital transformation. For this reason, a structured framework that summarizes the identified common elements of digital transformation relevant to SMEs is lacking. There is also a lack of empirical studies on this topic (El Hilali, El Manouar, & Abdou Janati Idrissi, 2020).

Previous studies have focused more on identifying mature and less specific patterns of factors influencing digital transformation (De Carolis, Macchi, Negri, & Terzi, 2017; Schumacher, Erol, & Sihn, 2016; Tarhan, Turetken, & Reijers, 2016).

To address this research gap, based on the factors identified from previous studies, especially the study of Wahid and Zulkifli (2021), combined with the TOE analysis framework (Fleischer & Tornatzky, 1990; Baker, 2012), and derived from the reality of SMEs in the construction industry in Ho Chi Minh City, that is SMEs are generally weak in finance, so they have to cut costs and use technological measures to improve competitiveness in the market. Therefore, the authors together with experts agreed to select 5 influencing factors to include in the model of this study. The proposed model will include six research variables, including the dependent variable Adoption of digital transformation, five independent variables are Technological advancement - belonging to group Technology (T); Cost minimization - belonging to group Organization (O); Competitive pressure; Environmental influence; and Pandemic Covid-19 belonging to group Environment (E).

2.3. Research methods

The research process was carried out through two steps: preliminary research and formal research. Preliminary qualitative research was carried out through group discussion techniques to adjust the scale and form survey questions.

Formal quantitative research is carried out through non-probability convenience sampling technique, paper questionnaires are sent directly to employees and leaders. There are thousands of small and medium enterprises in the construction industry are operating in Ho Chi Minh City. However, due to the limitation of time and human resources, we only conducted a survey of 26 reputable and well-known enterprises, in which each enterprise received 10 questionnaires. According to the instructions of Cohen (1992), we have 5 independent variables in the structural model, so at least 122 observations are required to achieve 80% statistical sensitivity (with 5% significance level). In this study, the sample size was selected as n = 260, meeting the minimum sample size requirement according to Cohen (1992). As a result, 255 questionnaires were collected, of which 6 were invalid. The remaining 249 valid, the author put into use for data analysis through SmartPLS software.

2.4. Research models

Based on theories related to technology acceptance model, which mainly considers combined with the TOE analysis framework and the reality of SMEs in the construction industry in Ho Chi Minh City, with the aim of testing technology adoption at these enterprises. The proposed model will include six research variables, including the dependent variable Adoption of digital transformation; five independent variables are Competitive pressure; Technological advancement; Cost minimization; Environmental influence; and finally the Pandemic Covid-19.

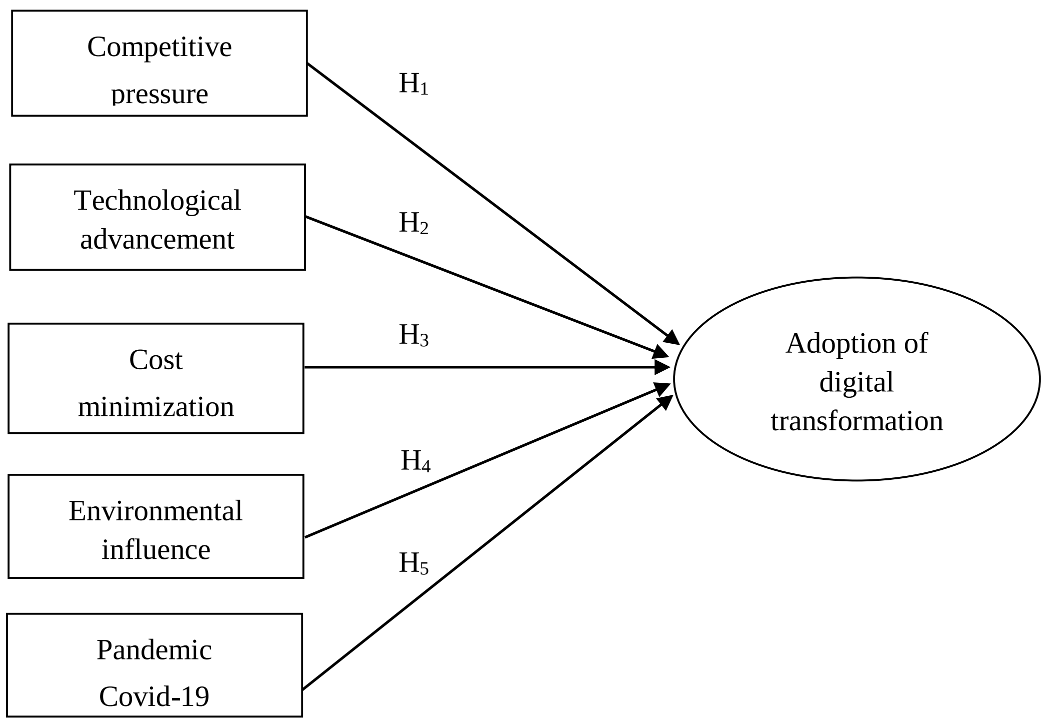

Figure 1. Proposed research model

3. Results and discussion

3.1. Analysis results of measurement model

3.1.1. Convergence value

Firstly, we need to evaluate the reliability of the scale through two typical indicators, which are Cronbach's Alpha index (CA) and composite reliability (Composite Reliability - CR). Next, the assessment of convergence value of latent variables is based on the external loading coefficient and the average variance extracted AVE.

Table 2: Analysis results CA, CR and AVE

	Cronbach's Alpha (CA)	**Composite Reliability (CR)**	**Average Variance Extracted (AVE)**
CDS	0.882	0.919	0.740
CN	0.850	0.898	0.687
CP	0.877	0.916	0.731
CT	0.863	0.907	0.709
DB	0.868	0.910	0.717
MT	0.795	0.867	0.620

Source: Compiled by the author

From Table 2 above, it can be seen that the Cronbach's Alpha coefficient (CA) of the variables have good and very good reliability (CA ϵ (0.7÷ 0.95)). Specifically, the Adoption of Digital Transformation (CDS) has Cronbach's Alpha = 0.882. Similarly, the Technology Advancement (CN) has Cronbach's Alpha = 0.850; the Cost minimization (CP) has Cronbach's Alpha = 0.877; Competitive pressure (CT) has Cronbach's Alpha = 0.863; the Pandemic Covid-19 (DB) has Cronbach's Alpha = 0.868; and the Environmental influence (MT) has Cronbach's Alpha = 0.795.

On the other hand, the composite reliability coefficient (Composite Reliability - CR) of the research variables is also greater than 0.7, confirming the suitability and reliability of the scale. The coefficient of Average Variance Extracted (AVE) of the research variables is also greater than 50%. Thus, the research variables all have convergent values.

Table 3: Analysis results Outer Loadings (OL)

	Original Sample	**Sample mean**	**Standard deviation**	**T value**	**P value**
CDS1 ← CDS	0.896	0.895	0.016	56.336	0.000
CDS2 ← CDS	0.819	0.818	0.037	22.120	0.000
CDS3 ← CDS	0.910	0.910	0.011	79.834	0.000
CDS4 ← CDS	0.811	0.810	0.029	27.597	0.000
CN1 ← CN	0.822	0.819	0.030	26.998	0.000
CN2 ← CN	0.817	0.816	0.026	31.627	0.000
CN3 ← CN	0.819	0.818	0.028	28.754	0.000

CN4 ← CN	0.858	0.858	0.016	52.516	0.000
CP1 ← CP	0.898	0.897	0.018	50.331	0.000
CP2 ← CP	0.823	0.821	0.030	27.790	0.000
CP3 ← CP	0.878	0.878	0.019	46.006	0.000
CP4 ← CP	0.818	0.817	0.028	28.763	0.000
CT1 ← CT	0.831	0.830	0.026	31.765	0.000
CT2 ← CT	0.817	0.816	0.030	27.103	0.000
CT3 ← CT	0.838	0.837	0.032	26.095	0.000
CT4 ← CT	0.880	0.880	0.021	42.715	0.000
DB1 ← DB	0.830	0.830	0.022	38.314	0.000
DB2 ← DB	0.864	0.864	0.023	36.922	0.000
DB3 ← DB	0.824	0.824	0,026	31.307	0.000
DB4 ← DB	0.868	0.868	0.033	26.502	0.000
MT1 ← MT	0.775	0.775	0.030	25.573	0.000
MT2 ← MT	0.750	0.749	0.037	20.188	0.000
MT3 ← MT	0.817	0.815	0.028	29.351	0.000
MT4 ← MT	0.805	0.804	0.033	24.429	0.000

Source: Compiled by the author

Table 3 shows that, all observed variables converge on their own factors with external load coefficients from 0.750 to 0.910, reaching the acceptable level (> 0.7) and are statistically significant with $p < 0.05$.

3.1.2. Discriminant value

The evaluation of discriminant value is usually based on 3 criteria: cross-load coefficient of observed variables; the square root of the AVE value of the latent variable; and HTMT coefficient (Heterotrait-Monotrait).

Table 4: Cross Loading Factor

	CDS	CN	CP	CT	DB	MT
CDS1	**0.896**	0.643	0.529	0.551	0.499	0.540
CDS2	**0.819**	0.527	0.447	0.456	0.414	0.365
CDS3	**0.910**	0.693	0.669	0.609	0.523	0.563
CDS4	**0.811**	0.572	0.407	0.555	0.457	0.483
CN1	0.523	**0.822**	0.402	0.482	0.381	0.443
CN2	0.552	**0.817**	0.428	0.526	0.442	0.381

CN3	0.510	**0.819**	0.471	0.467	0.378	0.357
CN4	0.733	**0.858**	0.567	0.601	0.511	0.498
CP1	0.542	0.545	**0.898**	0.380	0.409	0.372
CP2	0.495	0.439	**0.823**	0.332	0.314	0.349
CP3	0.555	0.562	**0.878**	0.448	0.450	0.382
CP4	0.479	0.396	**0.818**	0.298	0.267	0.309
CT1	0.510	0.580	0.388	**0.831**	0.511	0.485
CT2	0.555	0.466	0.367	**0.817**	0.400	0.431
CT3	0.544	0.561	0.352	**0.838**	0.397	0.468
CT4	0.526	0.529	0.340	**0.880**	0.421	0.440
DB1	0.462	0.415	0.347	0.454	**0.830**	0.442
DB2	0.494	0.458	0.365	0.379	**0.864**	0.406
DB3	0.439	0.447	0.361	0.475	**0.824**	0.396
DB4	0.476	0.456	0.370	0.434	**0.868**	0.401
MT1	0.464	0.426	0.369	0.409	0.351	**0.775**
MT2	0.473	0.409	0.278	0.371	0.359	**0.750**
MT3	0.423	0.349	0.307	0.467	0.425	**0.817**
MT4	0.442	0.427	0.349	0.461	0.395	**0.805**

Source: Compiled by the author

With the criterion of cross-load coefficient, the discriminant value is generated when the system of load coefficients of the observed variable on its research variable is higher than all its coefficients of cross-loading on other research variables. Comparing with the results of Table 4, we see that they meet the technical requirements. Therefore, we can conclude that the research all variables have discriminant value.

Tablet 5: Fornell-Lacker

	CDS	**CN**	**CP**	**CT**	**DB**	**MT**
CDS	**0.860**					
CN	0.714	**0.829**				
CP	0.607	0.572	**0.855**			
CT	0.635	0.633	0.430	**0.842**		
DB	0.553	0.524	0.426	0.512	**0.847**	
MT	0.575	0.513	0.414	0.542	0.485	**0.787**

Source: Compiled by the author

The analysis results in Table 5 show that the square root value of AVE (located on the main diagonal) of each research variable is larger than the correlation value between them and other research variables in the model. Therefore, the research variables achieve discriminant value.

Table 6a: Heterotrait-monotrait ratio (HTMT)

	CDS	**CN**	**CP**	**CT**	**DB**	**MT**
CDS						
CN	0.800					
CP	0.678	0.647				
CT	0.723	0.731	0.491			
DB	0.628	0.600	0.483	0.596		
MT	0.675	0.613	0.494	0.656	0.585	

Source: Compiled by the author

Table 6b: Confidence interval HTMT

	Original sample	**Sample mean**	**Error**	**2.5%**	**97.5%**
CN → CDS	0.800	0.801	0.001	0.707	0.878
CP → CDS	0.678	0.678	0.001	0.557	0.780
CP → CN	0.647	0.649	0,001	0.543	0.734
CT → CDS	0.723	0.722	-0.001	0.627	0.805
CT → CN	0.731	0.731	0.000	0.633	0.814
CT → CP	0.491	0.491	0.000	0.349	0.606
DB → CDS	0.628	0.628	0.000	0.528	0.714
DB → CN	0.600	0.601	0.001	0.460	0.718
DB → CP	0.483	0.482	0.000	0.358	0.590
DB → CT	0.596	0.596	0.000	0.479	0.699
MT → CDS	0.675	0.674	-0.001	0.565	0.771
MT → CN	0.613	0.616	0.003	0.416	0.743
MT → CP	0.494	0.494	0.000	0.334	0.635
MT → CT	0.656	0.661	0.005	0.444	0.791
MT → DB	0.585	0.586	0.000	0.458	0.689

Source: Compiled by the author

With the Heterotrait-monotrait criterion, we see in Table 6a, the HTMT indexes are less than the threshold of 0.85. On the other hand, the HTMT confidence interval in Table 6b also does not contain the value 1. As expected, this value proves discriminatory when compared with the 0.85 threshold.

It can be seen that all the criteria for evaluating the measurement model are satisfactory, providing evidence of the reliability and validity of the CDS, CN, CP, CT, DB, and MT scales in the model.

3.2. Structural model analysis results

3.2.1. Check for collinearity through the VIF

One measure related to collinearity is the variance magnification factor (VIF). In the context of PLS-SEM, a VIF value ≥ 5 indicates a significant collinearity problem (Hair et al., 2011).

Table 7: Inner VIF Values

	CDS	**CN**	**CP**	**CT**	**DB**	**MT**
CDS						
CN	2.187					
CP	1.562					
CT	1.945					
DB	1.598					
MT	1.623					

Source: Compiled by the author

Table 7 shows that the VIF coefficients of the research variables are less than 3, which indicates that the multicollinearity between the research variables in the model does not affect the testing of the research hypothesis.

3.2.2. Path coefficient

Path coefficients are the path weights that connect factors together. When the data is normalized, the path coefficient has a value from 0 to 1. The larger the value, the stronger the path in the (internal) structural model. This coefficient has a positive sign (+) indicating the positive effect, a negative sign (-) indicates the opposite direction.

Table 8: Path coefficient

	Original Sample	**Sample mean**	**Standard deviation**	**T value**	**P value**
CN → CDS	0.324	0.327	0.068	4.760	0.000
CP → CDS	0.227	0.227	0.056	4.065	0.000
CT → CDS	0.189	0.189	0.071	2.660	0.008
DB → CDS	0.114	0.114	0.046	2.494	0.013
MT → CDS	0.156	0.155	0.052	3.028	0.002

Source: Compiled by the author

Table 8 presents the path coefficients of the variables CN, CP, CT, DB, MT, and CDS. The results show that the path coefficient from DB→CDS has the smallest value of 0.114 and the path coefficient from CN→CDS has the largest value of 0.324. All path coefficients in the model are positive and statistically significant at the $p < 0.05$ level.

3.2.3. Coefficient of determination R^2

The coefficient R^2 is calculated as the square of the correlation between the predicted value and the value of the endogenous research variable. The value of R^2 Adj is given to avoid bias for models with many research variables. R^2 Adj reduces the value of R^2 through the number of explanatory variables and sample size.

Table 9: Coefficient of determination R Square (R^2) và R Square Adjusted (R^2Adj)

	R Square (R^2)	**R Square Adjusted (R^2_{Adj})**
CDS	0.642	0.635

Source: Compiled by the author

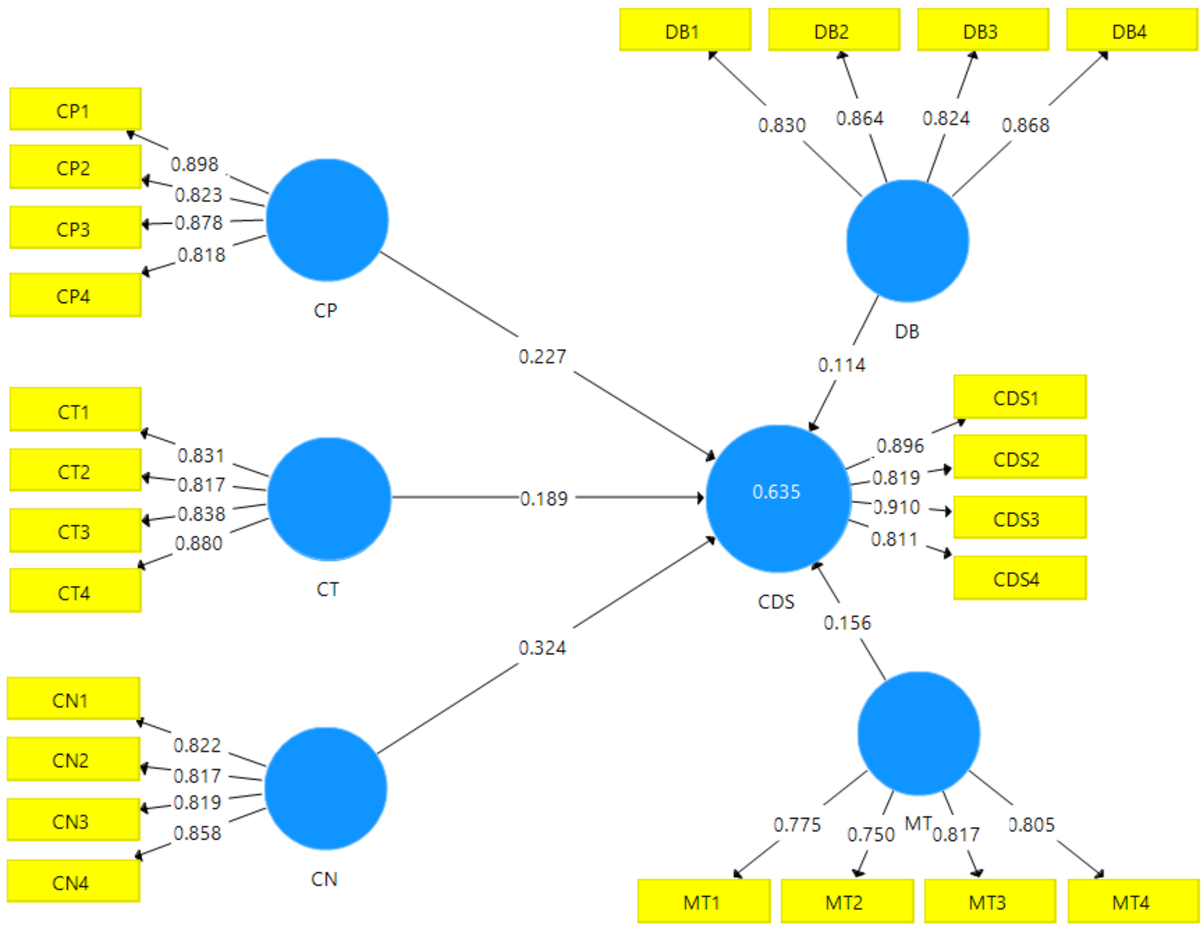

Figure 2: Research model results

Source: Compiled by the author

Table 9 and Figure 2 describe the results of the research model. The results show that the R^2Adj coefficient of Adoption of digital transformation (CDS) is 0.635, that is, 63.5% of the variation of CDS dependent variable is explained through 5 independent variables, the remaining 36.5% is due to the impact of other factors that have not been included in the study in the model.

3.2.4. The results of testing the hypotheses in the model

The value of the path coefficient for the latent variable is used to evaluate the strength and weakness and the direction of the impact of each independent variable on the dependent variable. Statistical significance level is applied at 5% level (p-values ≤ 0.05) with bootstrapping procedure.

Table 10: The results of testing the hypotheses in the model

Hypotheses	Relationship	Path Coefficients (β)	T value	P value	Hypotheses results
H_1	**CT → CDS**	0.189	2.660	0.008	Accepted
H_2	**CN → CDS**	0.324	4.760	0.000	Accepted
H_3	**CP → CDS**	0.227	4.065	0.000	Accepted
H_4	**MT → CDS**	0.156	3.028	0.002	Accepted
H_5	**DB → CDS**	0.114	2.494	0.013	Accepted

Source: Compiled by the author

Based on the path coefficient Beta - β (normalized regression coefficient) to evaluate the importance of the independent variables in the influence on the dependent variable. The larger the beta coefficient, the stronger the influence of the corresponding independent variable on the dependent variable. From Table 10 it is possible to draw conclusions: all hypotheses are accepted. In which, the path coefficient from DB to CDS has the smallest value (β= 0.114; p = 0.013); and the path coefficient from CN to CDS has the largest value (β= 0.324; p = 0.000).

This result shows that factors such as Technology advancement (CN), Cost minimization (CP), Competitive pressure (CT); and Environmental influence (MT) both have a positive impact on Adoption of digital transformation (CDS). This is similar to the study of Wahid & Zulkifli (2021) and Chu, Ba Quyet (2021). The remaining factor Pandemic Covid-19 (DB) shows a positive and significant impact on the adoption of digital transformation of SMEs. This is similar to the study of Sharon Chang (2020), which highlights that SMEs have realized the urgency of prioritizing digital transformation in business operations during the pandemic happenning. Simultaneously, the Covid-19 Pandemic has accelerated the need for teleworking due to social distancing measures and led to widespread adoption of digital transformation by the proliferation of digital platforms such as Google Meet, Microsoft Teams, Zoom, Webex, and Moodle, along with email services, instant messaging applications, and social media (Malik, Dhir, Kaur, & Johri, 2021).

3.2.5. Model fit

The normalized residual square root (SRMR) index was considered as a measurement criterion for model fit. The SRMR containing the value 0 indicates a perfect fit. In PLS-SEM, the SRMR value less than 0.08 indicates a good fit of the model.

Table 11: Model Fit

	Saturated Model	Estimated Model
SRMR	0.066	0.066

Source: Compiled by the author

Based on Table 11 (Model Fit), we see that the SRMR = 0.066 (< 0.08). Following the instructions of Hair & et al. (2017), this proves that the research model is consistent with the reality taking place within enterprises.

4. Conclusions

The objective of this study is to examine the influencing factors and measure their impact on the Adoption of digital transformation in some small and medium enterprises in the construction industry in Ho Chi Minh City. The research process was carried out through two steps: qualitative and quantitative with a valid sample size of 249 observations. The results show that the scales are reliable, the required validity and the research hypotheses are all accepted. The results of multiple regression analysis have identified 5 influencing factors, arranged in descending order, which are: Technological advancement (β= 0.324); Cost minimization (β= 0.227); Competitive pressure (β= 0.189); Environmental influence (β= 0.156); and the Covid-19 pandemic (β= 0.114). The results of the mean test show that, apart from gender, there is no difference, the remaining aspects such as age, work department, working position, and education level have differences in Adoption of digital transformation.

5. Management implications

Research results show that enterprises' acceptance of digital transformation is relatively good. The results of the regression analysis show that there are 5 factors affecting the adoption of digital transformation of the organization. The element with the stronger impact strength needs to be improved more than the content related to that factor.

+ Competitive pressure

Technology in the world changes day by day and brings great benefits. Competitors have also changed, owning a digitized platform that allows them to deploy and operate faster, more economically, with better quality. This makes competition increasingly fierce, and digital transformation is imperative for businesses. Digital transformation is an inevitable trend of the 4.0 era. Therefore, businesses need to understand and have a specific strategy and appropriate investment in order to survive and develop sustainably.

+ Technological advancement

Businesses need to enhance the digital employee experience. In addition, businesses should apply digital solutions to data analysis and processing. Enterprise management software will help simplify the process of handling and managing databases. The procedures for payment, advance, supply of materials, equipment, machinery, etc., employees can actively monitor the route and impact to make the processing process faster.

+ Cost minimization

The first thing to do is for the company to optimize the process to change the business method from traditional to automation. This makes the job go fast, saving time and money. Currently, businesses are consuming a large amount of paper for recording, storing records, and reporting, which is costly, costly, easy to damage due to external influences such as termites, moisture..., more It also takes a lot of time and effort to find it. Converting all paper documents to soft documents will facilitate searching, sharing information and saving storage space.

+ Environmental influence

Vietnam is the second fastest growing economy in Southeast Asia, with a young and dynamic population structure with access to high technology, which is considered to have great potential in digital transformation. The Government has been having policies to support and create conditions for businesses to successfully apply digital transformation. However, in reality, SMEs in the construction industry in Ho Chi Minh City are facing many financial barriers such as high investment costs in digital transformation, difficulty in accessing digital information, data risks and network security, etc. This requires businesses to have the right policies and directions to ensure the development and optimization of resources.

+ Pandemic Covid-19

The situation of the Covid-19 pandemic has now decreased, but it is still unpredictable with the appearance of many new strains, the risk that the disease can break out again at any time. Therefore, businesses need to urgently prepare to digitize all products, services, equipment, and upgrade infrastructure such as machinery, equipment, internet connection, application of management software in the business job. In addition, it is necessary to arrange accommodation and ensure the health of employees in the working environment if there is a Covid-19 pandemic or a similar pandemic.

6. Limitations and suggestions for future research

6.1. Limitation

The survey has only been conducted on a small scale, with 26 small and medium enterprises in the construction industry in Ho Chi Minh City. The results of multiple regression analysis with R^2 adjusted by 0.635 show that the model can only explain 63.5% of the variation of the dependent variable, the remaining 36.5% is due to the impact of other factors that have not been determined yet included in this model.

6.2. Suggestions for future research

Further studies should be carried out on a larger scale or in other localities, in order to have a more comprehensive and representative view, through the discovery and addition of new factors that affect to business adoption of digital transformation.

Next, instead of only considering the direct impact of each independent variable on the dependent variable as in this study, subsequent studies can use the PLS-SEM structural equation model to evaluate the impact of factors on the adoption of digital transformation through intermediate variables or other regulatory variables.

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APPENDIX

SURVEY QUESTIONNAIRE

No:

Dear Sir/Madam!

My name is Nguyen Quang Anh, lecturer at Faculty of Business Administration, University of Economics Ho Chi Minh City. Currently, I am conducting a research on the factors affecting the adoption of digital transformation in SMEs in the construction industry in Ho Chi Minh City. The research results will serve as a basis to give some managerial implications to help improve efficiency when applying digital transformation, thereby realizing the goal of stable development of enterprises. Please take a moment to complete the questionnaire below.

This questionnaire is anonymous. Thus, the fear of the participants answering the question will be avoided. I absolutely promise that all information you provide will only be used for scientific research purposes within the framework of this research topic.

Looking forward to receiving your help!

PART I : ASSESSMENT SECTION

Please rate your level of agreement with each of the statements below. Your rating will be expressed by numbers (from 1 to 5), specifically as follows:

1 = "Strongly disagree"; 2 = "Disagree"; 3 = "Normal"; 4 = "Agree"; 5 = "Strongly agree"

Please circle (or mark an "x") in the appropriate box, in each option for each statement.

Technology Advancement (CN), Cost minimization (CP), Competitive pressure (CT); and Environmental influence (MT) both have a positive impact on Adoption of digital transformation.

This is similar to the study of Wahid & Zulkifli (2021) and Chu, Ba Quyet (2021). The remaining factor Pandemic Covid-19

Code	**Competitive pressure (CT)**	**Level of agreement**					**Reference source**
CT1	I switched to adoption of digital transformation because of the increasing number of customers contacting online services.	1	2	3	4	5	(Wahid & Zulkifli, 2021; Lai et al., 2018; Picoto, Bélanger, & Palma-Dos-Reis, 2014)
CT2	The increasing number of competitors will affect my company's business.	1	2	3	4	5	
CT3	My company will be at a competitive disadvantage if it does not adop the digital transformation.	1	2	3	4	5	
CT4	My company has experienced competitive pressure in its business.	1	2	3	4	5	
	Technology advancement (CN)	**Level of agreement**					**Reference source**
CN1	I believe that using technology today will help my company improve its business.	1	2	3	4	5	(Chen et al., 2015; Premkumar & Roberts, 1999; Wahid & Zulkifli, 2021)
CN2	Social media is a channel of marketing and business promotion.	1	2	3	4	5	
CN3	In my opinion, technology not only changes the way products and services are produced, but also changes the behavior of competitors, customers and the business landscape.	1	2	3	4	5	
CN4	Technological advancements help build a better relationship between customer satisfaction, loyalty, and retention.	1	2	3	4	5	
	Cost minimization (CP)	**Level of agreement**					**Reference source**
CP1	Reducing costs is a factor affecting the adaptability of SMEs to digital transformation.	1	2	3	4	5	(Niehaves & Plattfaut, 2014; Premkumar & Roberts, 1999)
CP2	I believe that adopting the digital transformation can reduce costs.	1	2	3	4	5	
CP3	Switching to adopt the digital transformation can reduce working hours.	1	2	3	4	5	
CP4	I think the Internet will offer more at lower prices in the near future.	1	2	3	4	5	
	Environmental influence (MT)	**Level of agreement**					**Reference source**
MT1	Economic factors push SMEs to adopt the digital transformation.	1	2	3	4	5	Li, 2008; Wahid & Zulkifli, 2021; Lai et al., 2018)
MT2	The growing culture of online shopping (goods and services) has driven me to adoption of digital transformation.	1	2	3	4	5	
MT3	Cultural factors pushed me to adopt the digital transformation.	1	2	3	4	5	

MT4	The government is encouraging companies to adopt the digital transformation.	1	2	3	4	5	
	Pandemic Covid-19 (DB)	**Level of agreement**					**Reference source**
DB1	The Covid-19 pandemic is a powerful factor in today's environmental problems.	1	2	3	4	5	(Wahid & Zulkifli, 2021)
DB2	The Covid-19 epidemic affected me to switch to adopt the digital transformation.	1	2	3	4	5	
DB3	The emergence of the Covid-19 pandemic made me turn to using technology as a social network in my work.	1	2	3	4	5	
DB4	My company's business model has been disrupted by Pandemic Covid-19.	1	2	3	4	5	
	Adoption of digital transformation (CDS)	**Level of agreement**					**Reference source**
CDS1	The benefit of digital transformation is that there is a faster communication channel between the customer and the business.	1	2	3	4	5	(Premkumar & Roberts, 1999; Wahid & Zulkifli, 2021)
CDS2	I am applying digital transformation in my daily work.	1	2	3	4	5	
CDS3	I feel it is a strategic necessity to adopt the digital transformation to compete in the marketplace.	1	2	3	4	5	
CDS4	The divisions are structured in line with the company's digital transformation.	1	2	3	4	5	

PART II : PERSONAL CHARACTERISTICS

Please provide some personal information. Please put an "x" in the box that corresponds to you below:

1. Gender □ Male □ Female

2. Age □ Less than 25 □ From 25 to 40 □ Over 40

3. Working department

□ Office

□ Construction on site

□ Technical

4. Working position

□ Employee/Staff

□ Leader, Vice/Head of Department, or equivalent

5. Academic level

□ College

□ Graduate

□ Post-graduate

Thank you very much!

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The Impact of Transformational Leadership Styles on The Development of Creative Competencies of Employees in Enterprises in The Context of Digital Transformation

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ABSTRACT

This study aims to examine the impact of transformational leadership styles on the development of employees' creative capacities at businesses in the context of digital transformation. The study used quantitative methods through exploratory factor analysis (EFA) and linear structural equation modeling (SEM). With the survey sample size including 518 samples of employees of enterprises with many different types stationed in the provinces and cities of the North, Central and South, the research results show the contribution of both theory and practice of the study, demonstrating the importance of transformational leadership style in the relationship affecting the creative capacity of employees and the mediating role of internal and external locus of control. In addition, the research also demonstrates the positive impact of internal locus of control on sharing culture. The research findings will serve as valuable resources for managers who are involved in formulating policies and implementing strategies to foster and enhance the creative potential of employees within enterprises amidst the ongoing digital transformation.

Keywords: Transformational leadership style; Internal locus of control; External locus of control; Shared culture; Creative capacity; Digital transformation.

1. Introduction

Digital transformation is becoming an indispensable requirement for the sustainable development of all organizations in the current context. The core of digital transformation lies in the

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pursuit of efficient innovation to enhance the ability to organize activities and deliver greater value to businesses, consumers, and society. Hence, promoting a culture that fosters creativity and innovation is crucial for enhancing organizational capacity in the digital age. To establish a strong foundation in their development process, businesses must proactively cultivate their unique strengths, embrace diverse values, and readily adapt to global innovation. Promoting and nurturing the creative potential of every individual within the organization is recognized as an essential prerequisite for fostering the long-term growth and success of the business.

Research by Patterson et al. (2009); Hu et al. (2009) shows the critical role of individual creativity in the success of organizations. Individual creativity can help increase a firm's competitive advantage (Palangkaraya et al., 2010). In order to foster creativity within the organization, leaders must adapt their mindset to align with the evolving trends of development. This includes promoting effective communication across all levels, fostering collaboration and cooperation, facilitating knowledge sharing within the enterprise, and cultivating a culture that emphasizes proactive action and the ability to swiftly adapt to changing circumstances.

Leadership success is evidenced by their management styles at work (Tran et al., 2022). The ability of employees to perform a specific task is a key role of a transformational leader who follows the impressive management strategies used by employees (Aggarwal & Krishnan, 2013). Transformational leadership possesses an exceptional ability to foster organizational unity and achieve operational outcomes that surpass the intended goals, pleasantly surprising all stakeholders with unprecedented efforts that transcend conventional circumstances (Shirang & Vandana, 2017). A study conducted by Faraz et al. (2018) demonstrates a positive correlation between transformational leadership styles and the creative work behaviors of employees. At the same time, intrinsic motivation mediates the positive relationship of transformational leadership style with the creative capacity of employees in the organization.

Vietnam is one of the leading countries in the world in promulgating programs and strategies on national digital transformation. Prime Minister's Decision No. 749/QĐ-TTg, which approves the "National Digital Transformation Program for 2025 with an orientation to 2030," emphasizes the significance of international cooperation as a vital approach to implementing digital transformation. In particular, international cooperation plays a crucial role in fostering digital transformation across society and serving as a catalyst for the digitalization efforts within state agencies. Vietnamese organizations and enterprises cooperate with large technology enterprises in the world to research, develop, transfer and pioneer the application of new technologies and new models in Vietnam". Currently, an increasing number of businesses are embracing digital transformation. With an increasing awareness of the significance of digital transformation, businesses are now more determined than ever to embrace this change and make it a reality. Nevertheless, despite the fact that Vietnam houses over 98% of small and medium enterprises, the awareness regarding the significance of digital transformation in the context of the fourth industrial revolution remains incomplete. Because only 31% of businesses are at the beginning of digital transformation, 53% are at the observation stage and only 3% have basically completed this process. Numerous businesses encounter obstacles during the digital transformation journey, including a shortage of digital skills and personnel, inadequate information technology infrastructure to support digital transformation, a deficiency in digital mindset and cultural challenges within the organization. The ability of employees to think creatively remains a significant concern for contemporary business managers, particularly in the context of digital transformation requirements.

This study aims to examine the relationship of transformational leadership styles to the creative capacity of employees in enterprises in the context of digital transformation. Using quantitative research methods, through exploratory factor analysis (EFA) and linear structural modeling (SEM), the results of the study show both theoretical and practical contributions, demonstrating the importance and impact of transformational leadership styles on the creative capacity of employees, as well as the mediating role of external locus of control and internal locus of control factors in this relationship. The authors present a set of recommendations to enhance the creative capabilities of employees within enterprises, considering the ongoing digital transformation. These suggestions are based on the research findings and aim to guide future development in this area.

2. Literature review and hypotheses

2.1. Literature review

The theory of transformational leadership was formulated by Burns (1978). Burn (1978) posits that transformational leadership entails the process of elucidating a compelling vision of the future and effectively conveying it to employees. It involves invigorating employee intellect and valuing the individual distinctions among them. Based on Dvir et al. (2002) findings, transformational leadership is a style of leadership characterized by the cultivation of engaging behaviors, the inspiration of motivational drive, the provision of intellectual stimulation, and the demonstration of personal consideration towards employees. These leadership behaviors have the power to bring about significant changes in employees, enabling them to unlock their full potential and attain optimal levels of effectiveness in the workplace.

Individual creative competency is the ability to generate and implement creative ideas within the organization (Hu et al., 2009). Organizations depend on their employees for innovative ideas generated in the areas of products and services (Patterson et al., 2009). The capacity for individuals to implement innovative ideas is also an important aspect of individual creative competency (Carmeli et al., 2006; Xerri & Brunetto, 2011). In the face of intense competition, the ability to innovate becomes a crucial factor for organizations to effectively fulfill customer demands, ensuring the highest level of customer satisfaction (Hu et al., 2009). Individual creative competency is also the capacity to motivate innovation and creativity in organizations (Hu et al., 2009; Kheng & Mahmood, 2013).

External locus of control refers to a pessimistic attitude from the external environment in the decision-making process. Internal locus of control refers to a belief in one's ability to control the external environment (Asgari & Vakili, 2012). Individuals with an external locus of control tend to perform better when instructed, while those with an internal locus of control strive for more innovative thinking and more motivation to succeed and achieve goals.

In the context of global digital transformation today, knowledge sharing has become a social requirement. Sharing culture seems to have been more interested in businesses and has become one of the characteristics of many businesses today. Knowledge sharing is an important component of knowledge management, the success of an organization depends on knowledge sharing strategies

(Liebowitz & Megbolugbe, 2003). Tsui et al. (2006) argue that knowledge sharing is an activity that helps employees share knowledge and experience to help projects and plans be completed quickly and cost-effectively. Efficient knowledge sharing initiatives facilitate the utilization of individual expertise and elevate collective knowledge to new heights (Nguyen et al., 2021). Krough et al. (2000) argue that knowledge sharing is still important in creating new knowledge and leveraging them to improve business performance.

2.2. Research hypothesis

2.2.1. Transformational leadership style and employee creativity

Knippenberg and Hogg (2003) argue that the willingness to change is not only a measure of leadership results, but also influences the motivation and performance of employees under their authority. Additionally, it impacts their level of compliance, perception of the leader's personal reputation, and overall adherence to rules and regulations. Assessing readiness and fostering innovative thinking involves testing and implementing creative ideas, as well as actively seeking out new approaches. (Koene et al., 2002). According to a study conducted by Daus and Ashkanasy (2005), there is a correlation between employees' creative ability at work and two factors: the emotional competence of their leader and the level of interdependence within the workplace.

As such, the relationship between transformational leadership styles and employee creativity is found in a variety of studies. However, the results of numerous research studies have been inconsistent with one another. Patterson et al. (2009) suggest that only the emotional stability factor has an impact on the creative capacity of employees. Meanwhile, Yesil and Sozbilir (2013) argue that motivation for self-development has a positive impact on the creative capacity of employees in the workplace. In the realm of businesses amidst the era of digital transformation, this study aims to explore the influence of transformational leadership styles on the creative potential of employees. Therefore, the following hypothesis is proposed:

H1: Transformational leadership style has a positive impact on the creative capacity of employees in businesses in the context of digital transformation.

2.2.2. Transformational leadership style and External locus of control

Transformational leadership characterizes a management style based on being proactive at work. Transformational leadership is a style of leadership that strives to inspire and motivate individuals to achieve exceptional goals. It goes beyond merely setting targets and instead focuses on instilling strong values, as well as providing support to overcome significant challenges (Dvir et al., 2002). Transformational managers don't just focus their energy on motivating employees. Good transformational leaders have a broad vision of the company's future. And they can turn that into a detailed, clear plan. In this context, transformational leaders play a crucial role in training employees and helping them overcome pessimistic and uncontrollable attitudes originating from the external environment. Given the context of digital transformation, the influence of transformational leadership style on the management of external locus of control of employees within enterprises can be examined. Therefore, the following hypothesis is proposed:

H2: Transformational leadership style has the opposite impact on the External locus of control of employees in enterprises in the context of digital transformation

2.2.3. External Locus of control and Employee Creativity

Numerous studies have established a strong correlation between the extent of external locus of control and personal creativity, as evidenced by the works of Sharifi (2004), Mousavi (2008), Moghim and Mahram (2008), and Asgari and Vakili (2012) among others. Wheatley (2000) posits that employees are more likely to willingly share their knowledge when they perceive sharing as integral to their work and receive adequate encouragement to do so. Employees who exhibit passive habits in the workplace tend to display low levels of creativity and frequently rely on others to accomplish tasks. Regarding this content, the following hypothesis is formulated:

H3: External locus of control adversely affects the creative capacity of employees in enterprises in the context of digital transformation.

2.2.4. Transformational leadership style and sharing culture

Podug et al. (2017) argue that the knowledge-sharing process has a positive effect on the organization's ability to innovate. According to a study by Darroch and MacNaughton (2002), enhancing knowledge sharing within an organization fosters creativity and innovation, facilitating the development of novel working methods, procedures, and the transformation of traditional approaches. Consequently, this enables the organization to thrive and operate more effectively. Transformational leaders frequently make management decisions related to HR policies, which aim to ensure their relevance and promote knowledge sharing across different areas of the business. By fostering interconnection between departments and individuals within the organization, these leaders enhance the overall performance and efficiency of all activities. In light of the ongoing digital transformation, the authors conducted a study to examine the influence of transformational leadership styles on the culture of knowledge sharing within enterprises. To achieve this, the authors formulated the following hypothesis:

H4: Transformational leadership styles have a positive impact on sharing culture in businesses in the context of digital transformation.

2.2.5. Sharing culture and individual creativity of employees

Based on Thun's (2009) findings, effective leadership can significantly impact employees' psychological well-being in the workplace. It can result in improved concentration, a sense of value within the organization, active participation in decision-making, enhanced resilience in tackling challenges, reduced feelings of stress and dissatisfaction, and increased self-confidence. The relationship between knowledge sharing and creativity at work is found in various studies (Mousavi, 2008; Moghim and Mahram, 2008; Asgari and Vakili, 2012). Sharing culture in organizations is encouraged to create a friendly working environment and a favorable condition for individuals to promote their creativity and capacity in many different activities of the organization. In light of the ongoing digital transformation, this study aims to examine the correlation between shared culture within enterprises and the creative capacity of their employees. Thus, the study proposes the following hypothesis:

H5: Sharing culture has a positive impact on the creative capacity of employees in enterprises in the context of digital transformation.

2.2.6. Transformational leadership style and internal locus of control

Transformational leadership refers to a management style in which a manager has the ability to clearly communicate goals and inspire a strong team. A transformational leader is a charismatic manager who can make subordinates feel passionate about the success of the company. This leadership style offers numerous advantages that are evident in a wide range of organizational activities, including training, personnel development, and strategy formulation. The findings of a study conducted by Hoxha (2019) demonstrate the positive influence of transformational leadership styles on employee performance. Leaders with a transformational style, instead of being passive and reliant, consistently encourage initiative and emphasize individual autonomy to enhance productivity and efficiency in the workplace. In the context of digital transformation, this study aims to examine the correlation between transformational leadership style and employees' orientation towards internal control. Accordingly, the study formulates the following hypothesis:

H6: Transformational leadership style has a positive impact on the internal locus of control of employees in enterprises in the context of digital transformation.

2.2.7. Internal locus of control and individual creative competency of employees

In their studies, Rashidi and Shararay (2008) as well as Asgari and Vakili (2012) have demonstrated significant differences in the relationship between the two control-oriented groups, namely internal and external locus of control, and creative capacity. Specifically, they found that individuals with an external locus of control tend to exhibit lower levels of creativity compared to those with an internal locus of control. People with external locus of control perform well on tasks that are continuous, available and adhere to the principles set out earlier; while, people with internal locus of control tend to do the work independently. The internal locus of control refers to the initiative and autonomy in decisions that are often associated with the creative capacity of individuals in all activities of the organization. The study aims to examine the correlation between an individual's internal locus of control and their creative capacity within contemporary enterprises undergoing digital transformation. To achieve this, the following hypothesis is proposed:

H7: Internal locus of control has a positive impact on the creative capacity of employees in enterprises in the context of digital transformation.

2.2.8. External control orientation and culture of sharing

According to Davenport and Prusak (1998), individuals might refrain from sharing their knowledge if they lack confidence in their competence or the validity of the information they intend to share. This belief is considered central to the process of knowledge sharing. Increased trust leads to increased knowledge sharing (Anderson & Narus, 1990; Ardichvili et al., 2003). The organization promotes a culture of sharing, which is fostered through initiatives, professionalism, and effective management policies. However, work-related activism can have a detrimental impact on both the culture of sharing and management performance. In the realm of digital transformation, as the need for collaboration and communication capabilities intensifies, there is a greater emphasis on fostering a culture of sharing. The study aimed to examine and elucidate how the direction of external control influences the culture of sharing within organizations during the process of digital transformation. To achieve this, the following hypothesis is therefore formulated:

H8: External locus of control adversely affects the sharing culture in enterprises in the context of digital transformation.

2.2.9. Internal locus of control and sharing culture

Research by Oliver & Kandadi (2006) suggests that the effectiveness of policies based on employee motivation and creating initiative in work has an impact on knowledge sharing and cultural development of the organization in the direction of knowledge. Syed-Ikhsan and Rowland (2004) argue that knowledge sharing is highly effective when information flows easily throughout the company, with a simple, flat, low-level organizational structure and boundaries between departments. Internal locus of control with the role of creating trust and initiative in work has a positive impact on work engagement, knowledge sharing and the belief of cooperation. In order to study the impact of internal locus of control on sharing culture in enterprises in the context of digital transformation, the study hypothesizes:

H9: Internal locus of control has a positive impact on sharing culture in enterprises in the context of digital transformation.

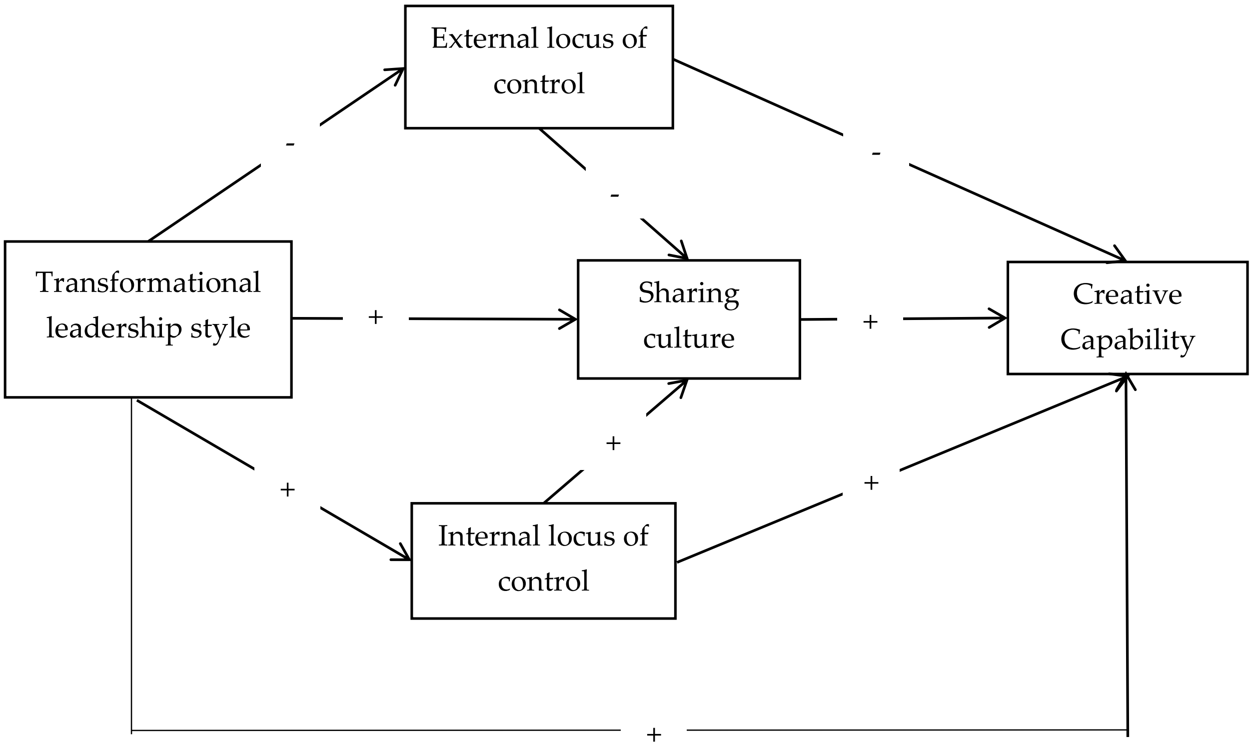

Figure 1. The proposed research model

3. Research methodology

3.1. Research scale

Based on the theoretical overview and related research works, the research proposes a model with 05 variables. In particular, independent variables are transformational leadership styles, intermediate variables include external locus of control, internal locus of control and shared culture, dependent variables are creative capacity of employees. The scale used in the study is a likert scale with 5 levels corresponding to the rating points: (1) - Strongly disagree; (2) - Disagree; (3) - Normal; (4) - Agree; (5) - Strongly agree. Indicators measuring the applied variables are adjusted in accordance with the study sample characteristics from previous studies.

Table 1. Origin of the scale of variables

No.	Variable	Symbol	Number of observations	Origin of scale
1	Transformational leadership style	TLS	5	Burns (1978)
2	External locus of control	OEC	4	Sawyerr et al. (2009)
3	Sharing culture	SHC	6	Schein (2004); Chennamaneni (2006)
4	Internal locus of control	OIC	4	Sawyerr et al. (2009)
5	Creative Capability	CRA	5	Hu et al. (2009); Kheng and Mahmood (2013)

3.2. Research samples

The research sample selected according to the non-probability sampling method is convenient sampling. Investigators in the study were identified as employees of enterprises with many different types stationed in provinces and cities of all three regions of the North, Central and South. The North includes businesses in the provinces of Hoa Binh, Bac Giang and Hanoi. The Central region includes businesses in Thanh Hoa, Nghe An and Ha Tinh provinces. The South is the enterprises located in Ho Chi Minh City. The sample size in the collection was 518 samples, including 237 male employees, accounting for 45.75% and 281 female employees, accounting for 54,25%. The data collection process is conducted both directly and online through the Google Form tool. The number of questionnaires received is 500, with 291 questionnaires collected and 246 votes utilized. In terms of online submissions, 400 forms were sent out, resulting in 288 questionnaires collected and 272 questionnaires used. The total number of valid questionnaires used for analysis is 518. According to research by Hair et al. (2010) for reference on the expected sample size, the minimum sample size is 5 times the total number of observed variables. With the number of observations in the article is 24, the research scale includes 518 samples to ensure the analysis requirements. The completion time for data collection is from November 2022 to May 2023.

Table 2. Distribution of the survey sample

No.	Investigation area	Expected Investigation	Number of samples collected	Number of samples used in analysis	Percentage (%)
1	The North region	300	176	165	31.85
2	The Central region	400	302	264	50.97
3	The South region	200	101	89	17.18
	Total	900	579	518	100

3.3. Data processing

The method used in the study is quantitative. The data is then collected, cleaned and processed through SPSS and AMOS software. First, evaluate the reliability of the scale with the requirement of total variable correlation coefficient > 0.3; Cronbach's Alpha coefficient > 0.7. At the same time, if the

Cronbach's Alpha If Item Deleted value is greater than the Cronbach's Alpha coefficient of a variable, it is necessary to consider this type of observation variable; Next, EFA exploratory factor analysis study aims to determine the "convergent validity" and "discriminant validity of the scale" and with the requirement of Factor loading > 0.5; KMO coefficient >= 0.5 and <=1; Sig value < 0.05, at the same time percentage of variance > 50%. The Varimax factor rotation method was employed for factor extraction. The study employed the AMOS program to evaluate the model's appropriateness using CFA testing. Subsequently, the research hypotheses were examined through SEM model analysis, adhering to the requirement of chi-square/df < 3 (Hair & partner, 1998), P < 0.05, and GFI, TLI, CFI > 0.9 (Segars & Grover, 1993), as well as RMSEA < 0.08 (Taylor & partner, 1993).

4. Research results and discussion

4.1. Testing the reliability of the scale

The results of the evaluation of the reliability of the scale for all variables show that the total variable correlation coefficient of the observed variables is > 0.3; Cronbach's Alpha coefficient >0.7. At the same time, Cronbach's Alpha If Item Deleted coefficient if removing the observations is smaller than the Cronbach's Alpha coefficient of the variable. These results represent the reliability of the scale and the data values included in the analysis.

Table 3. Evaluate the reliability of the scale through Cronbach's Alpha coefficient

No.	Variable	Symbol	Cronbach's alpha
1	Transformational leadership style	TLS	0.920
2	External locus of control	OEC	0.909
3	Sharing culture	SHC	0.885
4	Internal locus of control	OIC	0.848
5	Creative Capability	CRA	0.874

4.2. Explore factor analysis (EFA)

After testing the suitability of the scale, the study conducted EFA exploratory factor analysis for both variables, intermediate variables and dependent variables. The results show that the data are eligible for analysis due to the Factor loading > 0.5; KMO coefficients >= 0.5 and <=1; Sig values. < 0.05; Percentage of variance> 50% and satisfies both "convergent validity" (observed variables converging on the same factor) and "discriminant validity" (observed variables belonging to one factor differentiate from another).

Table 4. Exploratory Factor Analysis (EFA) Results

EFA Analysis	KMO coefficient	P-value	Variance extracted (%)	Factor loading	Conclusion
Independent variables and intermediate variables	0.922	0.000	71.931	All > 0.5	Meet the requirements
Dependent variable	0.854	0.000	66.818	All > 0.5	Meet the requirements

Table 5. Rotation matrix

Indicators	Component			
	1	2	3	4
SHC2	0.820			
SHC4	0.793			
SHC6	0.780			
SHC3	0.779			
SHC1	0.738			
SHC5	0.602			
TLS2		0.840		
TLS1		0.806		
TLS4		0.803		
TLS3		0.780		
TLS5		0.758		
OEC3			0.846	
OEC1			0.821	
OEC2			0.821	
OEC4			0.782	
OIC1				0.828
OIC3				0.786
OIC2				0.773
OIC4				0.724

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

4.3. Confirmatory factor analysis (CFA)

Confirmatory factor analysis (CFA) is the next step in exploratory factor analysis (EFA), which involves designing to identify, test, and adjust measurement models independently. The purpose of the CFA is to establish appropriate measurement models that can be used to test structural models.

The results of the CFA analysis showed the conformity of the measurement model with the Chi–square index = 662.527; df = 242; Chi–square/df = 2.738 (< 3); P= 0.000 (< 0.05); gfi = 0.901 (> 0.9); TLI = 0.941 (> 0.9); CFI = 0.948 (> 0.9); RMSEA = 0.058 (< 0.08).

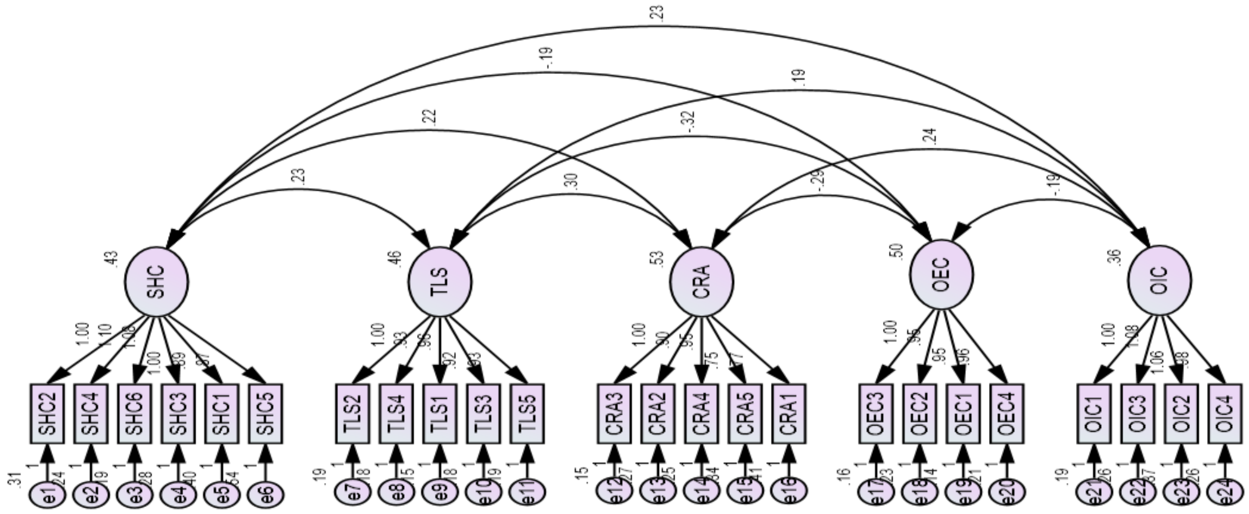

Figure 2. CFA Analysis

4.4. SEM Linear Structure Model Analysis

To test the hypotheses, the study conducted an analysis of the SEM linear structure model. The results of the analysis show that the aggregate indicators are satisfactory. Specifically, Chi–square = 571.259; df = 242; Chi–square/df = 2.361 (< 3), P= 0.000 (< 0.05); GFI = 0.915 (> 0.9); TLI = 0.954 (> 0.9); CFI = 0.959 (> 0.9); RMSEA = 0.051 (< 0.08).

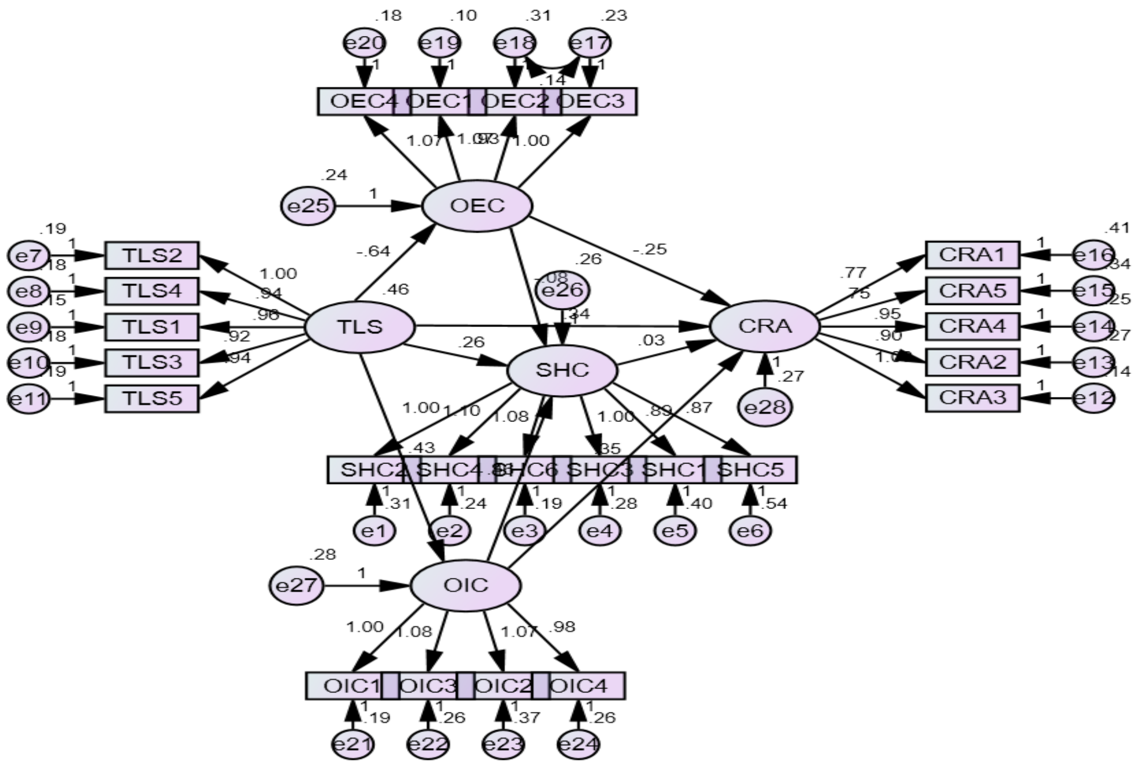

Figure 3. SEM Model Analysis

The results of estimating the relationships in the model show that the research model is suitable. Except for hypotheses H5 and H8, all other hypotheses are accepted with significance P < 0.05.

Specifically, the H1 hypothesis is accepted with a significance level of $P < 0.05$ and a regression weight of 0.339 (> 0). Thus, the results of the study proved that transformational leadership styles positively impact the creative capacity of employees in enterprises in the context of digital transformation. These results are consistent with the findings of Koene et al. (2002); Knippenberg and Hogg (2003); Daus and Ashkanasy (2005); Patterson et al. (2009).

The H2 and H3 hypotheses are accepted with significance levels in the test < 0.05 and with regression weights of -0.644 (< 0) and -0.251 (< 0). The research results show that the transformational leadership style has the opposite impact on the employees' external locus of control and the external locus of control also has the opposite effect on the creative capacity of employees in enterprises in the context of digital transformation. These results are consistent with the findings of Dvir et al. (2002); Sharifi (2004); Mousavi (2008); Moghim and Mahram (2008); Asgari and Vakili (2012).

The H4 and H5 hypotheses examine the impact of transformational leadership on shared culture and the impact of shared culture on the creative capacity of employees in enterprises in the context of digital transformation. The results of the study show that, with a significance level of < 0.05 and a positive regression weight (0.256), the hypothesis H4 is accepted. Therefore, it can be concluded that transformational leadership styles positively impact the culture of sharing in businesses. These results are in line with the research work of Darroch and MacNaughton (2002); Podug et al. (2017). Meanwhile, with a significance level of 0.590 (> 0.05), the study rejects the hypothesis H5. That is, there is no impact of sharing culture on the creative capacity of employees in businesses in the context of digital transformation.

Similarly, with significance levels $p < 0.05$ and regression weights of 0.426 (> 0) and 0.347 (> 0), hypotheses H6 and H7 are also accepted. In conclusion, the transformational leadership style has a positive impact on the internal locus of control of employees and the internal locus of control also has a negative impact on the creative capacity of employees in enterprises in the context of digital transformation. These results are consistent with the findings of Rashidi and Shararay (2008); Asgari and Vakili (2012); Hoxha (2019).

In addition, because there is a significance level of 0.144 (> 0.05), the hypothesis H8 is rejected, that is, there is no impact of the direction of external control on the sharing culture at enterprises. Meanwhile, with the significance level $p < 0.05$ and the regression weight 0.458 (> 0), the study accepts the hypothesis H9. Therefore, it can be concluded that internal locus of control has a positive impact on sharing culture in enterprises in the context of digital transformation.

Thus, with the rejection of the H5 and H8 hypotheses, while accepting all the rest of the hypotheses, the results of this study have shown contributions both theoretically and practically. Theoretically, the research results have shown that transformational leadership styles both have a direct impact and have an indirect impact on the creative capacity of employees at enterprises in the context of digital transformation through variables mediated by external locus of control and internal locus of control. In addition, the research results also show that internal locus of control has a positive impact on sharing culture in enterprises. In practical terms, the research results will be valuable documents for managers in the policy making process, solutions to improve the creative capacity of employees, contributing to high performance and overall performance of the organization.

Table 6. Results of SEM analysis for relationships in the model

Hypothesis	Relationship	Weightage	S.E.	C.R.	P	Conclusion
H1	CRA <--- TLS	0.339	0.066	5.161	0.000	Accepted
H2	OEC <--- TLS	-0.644	0.046	-14.071	0.000	Accepted
H3	CRA <--- OEC	-0.251	0.060	-4.165	0.000	Accepted
H4	SHC <--- TLS	0.256	0.061	4.171	0.000	Accepted
H5	CRA <--- SHC	0.031	0.057	0.539	0.590	Rejected
H6	OIC <--- TLS	0.426	0.043	9.833	0.000	Accepted
H7	CRA <--- OIC	0.347	0.064	5.397	0.000	Accepted
H8	SHC <--- OEC	-0.083	0.057	-1.461	0.144	Rejected
H9	SHC <--- OIC	0.458	0.057	7.964	0.000	Accepted

4.5. Descriptive Statistical Analysis

Research has shown the importance and impact of different aspects of transformational leadership styles on the creative capacity of employees in businesses in the context of digital transformation. Furthermore, to establish a clear connection and gain insight into the underlying factors, the study employed a descriptive statistical analysis to calculate the mean value of the factors incorporated within the model.

The statistical analysis results reveal that the creative capacity of employees in businesses is currently rated relatively high, with the highest average value among all variables in the model being 3.8965. This shows that, with the current digital transformation context, creativity in work is a necessary requirement and businesses are also aware of this. Therefore, most businesses have measures and policies to encourage the creativity of employees in activities. This condition is essential for employees to enhance their skills, abilities, and creativity in the workplace, thereby contributing to the optimization of performance and work efficiency.

In contrast, with an average value of 2.3856, the employee's external locus of control is the lowest of all factors. External locus of control refers to a mindset characterized by a pessimistic attitude that is susceptible to being influenced by external circumstances and events. Considering its negative impact, it is reasonable to evaluate it at a low level. However, with an average value of 2.3856, this is still a relatively high level compared to the negative factors. This observation indicates that a significant proportion of employees in businesses continue to exhibit a passive attitude at work, lacking initiative and creativity. This is something that business managers need to take seriously and have better solutions in the near future.

Table 7. The results of statistical analysis describe the value of the variables

Variable	N	Minimum	Maximum	Mean	Std. Deviation
CRA	518	1.00	5.00	3.8965	0.68096
TLS	518	1.00	5.00	3.7552	0.67115

OEC	518	1.00	5.00	2.3856	0.71430
SHC	518	1.00	5.00	3.4698	0.69217
OIC	518	1.50	5.00	3.7756	0.66948
Valid N (listwise)	518				

5. Conclusions and recommendations

On the basis of the overview, the study builds models and tests research hypotheses through exploratory factor analysis (EFA) and linear structural modeling (SEM). The research results have shown that transformational leadership styles have both a direct and positive impact, and have an indirect impact on the creative capacity of employees of enterprises in the context of digital transformation through intermediaries and external locus of control and internal locus of control. In addition, the study also demonstrates the positive impact of internal locus of control on sharing culture. Based on the findings presented, the authors put forward several suggestions to enhance the creative potential of employees within enterprises amidst the ongoing digital transformation.

Firstly, to enhance employee creativity during work, leaders should adopt a transformational leadership style and employ effective management techniques that foster innovation and creativity. It is imperative to establish a conducive working environment that fosters comfort, fosters knowledge sharing within the workplace, and ensures equitable management practices encompassing procedural adherence, outcome orientation, and a positive work demeanor.

Secondly, in light of the emphasis on managing external forces, it is imperative for managers to assist employees in acknowledging the significance of proactivity within the workplace. Additionally, they must mitigate tendencies toward passivity and a dearth of confidence in both individual and managerial decision-making. It is imperative to restrict reliance on external entities when making operational decisions, particularly for tasks or occupations that are not excessively demanding, intricate, and call for employee initiative rather than managerial oversight.

Thirdly, regarding an internal locus of control, employees are required to exhibit heightened awareness regarding their personal initiative and creative capabilities while engaging in work tasks that align with the organization's demands. Managers are required to establish a dynamic and professional work environment while fostering a sharing culture that aligns with appropriate coordination policies within the current landscape of digital transformation.

Besides its contributions, the study also has certain limitations. The first aspect to consider is the sampling methodology employed in this study. It utilizes a non-probability sampling technique, specifically a convenience sampling method. Despite the presence of a substantial number of samples that are moderately stratified across the three regions of North, Central, and South, this particular sampling method frequently fails to accurately assess sampling errors. Consequently, it diminishes the representation and overall validity of the samples employed in the study. Moreover, the research context is also limited to Vietnamese enterprises. The study's findings pave the way for further investigation into pertinent matters within local and global enterprises.

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The Impact of Digital Transformation on Business Performance: A Case Study of Thanh Hoa Small and Medium Sized Enterprises

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ABSTRACT

This research concentrates on quantitative analysing the impact of digital transformation on business performance of small and medium sized enterprises in Thanh Hoa province via analyzing the results of linear structural model. The results from a sample survey of 500 small and medium-sized enterprises show that digital transformation has a positive effect on business performance of enterprises as well as the other factors such as: Human resource; Financial resource; Technology level of the enterprise; Policy suppoting from local government; Marketing strategy; and Management and Executive ability of business leaders. The results also indicate that digital transformation level of Thanh Hoa small and medium sized enterprises is not high, and it affects business performance at the 6th level in the model with 7 independent variables. From the research results, the author proposed some solutions to promote digital transformation thereby improving business performance of small and medium enterprises in Thanh Hoa province in the coming time.

Keywords: Digital transformation; Business performance; Thanh Hoa SMEs

1. Introduction

Small and Medium Enterprises (SMEs) play an essential part in the development of national economy. It also considered as the main source of employment, poverty reduction, improvement in lifestyle and empowerment of low-income groups. In Thanh Hoa, SMEs also has important role, SME acts as the driving force of economic growth and development. By the end of 2022, the number of small and medium-sized enterprises in Thanh Hoa province now has more than 20,000 enterprises (accounting for 90% of the total number of enterprises). However, the production and business performance of Thanh Hoa SMEs have been not high recently, contributing to economic growth in

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general is still low, According to the report of Thanh Hoa Planning and Investment Department in 2021, production and business activities of enterprises face many difficulties due to the impact of the Covid-19 epidemic. There were 336 enterprises dissolved, an increase of 2.1 times compared to 2020, 1505 enterprises temporarily stopped operating, up 25.3% over the same period. Profit before tax of SMEs during the time has been a loss [32]. In this situation, Thanh Hoa province has made important steps in leading, directing, operating and creating conditions for SMEs to develop in which Thanh Hoa province established Thanh Hoa Provincial Digital Transformation Steering Committee and has been dentifying digital transformation as an inevitable trend and an important solution for SMEs to improve production and business efficiency, expand markets, cut costs, and adapt to the new context of the digital economy.

According to calculations by economists, digital transformation helps small and medium-sized enterprises optimize their operations, thereby cutting costs by up to 60%, saving 50% - 70%, and even saving up to 90% time in some processes compared to before. This is also a factor that helps enterprises be ready to adapt to the new wave of the economic crisis, as well as firmly grasp the opportunity to recover and make a breakthrough after the Covid-19 epidemic [14]. Well aware of this benefit, Thanh Hoa SMEs have realized digital transformation be needed to suit the needs of customers. Businesses are also growing faster to catch up with the market, breaking away from the boundaries of the traditional business environment. In addition, the digitalization process also SMEs an equal business environment. At that time, small businesses can optimize costs, and efficiency, thereby being able to compete with larger, older organizations in the market, expanding the market. They spent certain resources to invest in technology infrastructure, digitize operation processes; thereby improving the efficiency of management and administration and increasing competitiveness. However, reality shows that small and medium enterprises in Thanh Hoa province are almost at the digitization stage of the digital transformation process. While argument shifting is a process of comprehensively changing business models and organizations by applying digital technology platform solutions, helping to bring practical benefits to businesses from leaders' thoughts to business strategy.

The relation of digital transformation and business performance has attracted the attention of management and organizational scholars in the past decade. In addition, firms are increasingly interested in using digital transformation to obtain a competitive advantage. Nevertheless, studies on digital transformation outcomes remain scarce. Therefore, this study empirically investigated the effect of digital transformation on firm performance of Thanh Hoa SMEs by analyzing the results of linear structural model (SEM) with data from a sample survey of 500 SMEs. From the results, the author will propose some solutions to improve the business performance of SMEs in Thanh Hoa province in the coming time.

2. Literature review

2.1. Digital transformation

In general, digital transformation refers to a radical and comprehensive shift in the use of technology with the goal of improving business performance. Li, L., et al. (2017) state that digital transformation is the third and highest level of digital skills attained. It occurs when digital use facilitates innovation and creativity, as well as encourages significant changes in professional or knowledge fields. Furthermore, digital transformation is defined as “a rapid change in all strategies because demands must change, operations must be digital, and extended supply chain relationships must be extended.”[21]. Other definition states that digital transformation in enterprises can be understood as the process of changing old and traditional models into digital businesses, based on new technology applications, such as Big data, IoT, cloud computing, etc. to change the operating method, working process and labor culture in the enterprise. The goals that digital transformation often aim for include: Speeding up the market, increasing competitive position, boosting revenue growth, increasing labor productivity, expanding the ability to attract and retain customers [25]. Mergel, I., Edelmann, N.; Haug, N. (2019) states that “Digital transformation is a holistic effort to revise core processes and services beyond the traditional digitization efforts. It evolves along a transition continuum from analog to digital to a full stack review of policies, current processes, and user needs and results in a complete revision of the existing and the creation of new digital services. The outcome of digital transformation efforts focuses, among others, on the satisfaction of user needs, new forms of service delivery, and expanding the user base” [24]. Another definition comes from Gebayew et al., (2018), which states digital transformation is the process of applying digital technology to change the people, processes, strategies, structure and competitive dynamics of a higher education institution [12]. And other definition states that digital transformation is the reorganization or new investment in technology and business models to more effectively engage customers at all times. Schools need to see college as a “formal effort to innovate vision, business model and investment for a new digital economy” [22].

2.2. Business Performance and Measures of Business Performance

Measuring business performance in today’s economic environment is a critical issue for academic scholars and practising managers. In general, business performance is defined as “the operational ability to satisfy the desires of the company’s major shareholders” [31], and it must be assessed to measure an organisation’s accomplishment. And other definition states that business performance is a company's potential to adapt to the business environment, along with changesin the market environment that consist of customers, competitors and other power forces that can change the waybusiness works [28]. Therefore, a right management, better marketing strategy, and agood financial planning are necessary for a good business performance [15]. Muda, Salwa and Rahman, M.R.C.A., (2015) appraise the performance of small and medium enterprises (SME's) with referral to three aspects, such asprofitability, productivity, and market. Profitability aspect views business pe rformance from the perspective offinancial aims accomplishment as devised by the company. Productivity is based on company achievement in itsbusiness activities to meet customer wants and needs, as well as employee’s productivity. Market aspects, suchas, achievement of product sales, market position and market share, is the base of business performance [26]. Cao, M., Zhang, Q (2011) states that firm performance is a measure of how well a firm is able to meet its goals and objectives compared with its primary competitors [5].

Regular indicators used in measuring business performance are profit, return on investment (ROI), turnover or number of customers [39], design quality and product improvement [20]. However, FrancoSantos et al. (2007) recommend measuring business performance through the business performance measurement (BPM) system, as it is an important tool within many research areas, particularly in business and social science studies. This system analyses and investigates each quality that affects a firm's business performance, categorising business performance into two broad areas: operational business performance (OBP) and strategic business performance (SBP) [11]. The major function of the system is to focus on investigating all an organisation's functions at high and low levels of activity [23]; it is appropriately applied to measuring the performance of small and medium enterprises (SMEs). This system is also appropriate for both quantitative (for example, questionnaires) and qualitative (for example, structured interview) research methods. Carlos M., J. (2011) evaluates business performance on the basis of a combination of traditional financial indicators (ROE, ROA, ROS), short-term financial responsiveness, long-term of the business and non-financial factors such as the level of mission, strategy, and vision [6]. Cyert & March, (1992) said that business performance is reflected in the goals achieved by the business such as desired profit, growth rate, new market development, new products and the ability to dominate the market [8]. According to Dawes (1999), measuring business performance using secondary financial data is based on financial indicators with specific ratio numbers such as revenue and profit growth rate, referred to as objective performance measure [9]. The opposite of this method is the method of measuring business performance using primary data based on the respondents' perception of business performance with scales indicating the level of very bad to very good or very little to a lot, called a subjective performance measure [18], [37], [38]. In this study, the author uses the subjective method to measure business performance with scales of Enterprises have the ability to grow revenue in the long term; Enterprises have the ability to attract potential customers; Enterprises have the ability to make profit in the long term; Enterprises have the ability to increase, expand and develop market share in the long term [37], [38].

2.3. Digital transformation and business performance

Digital transformation studies have concentrated on conceptualizing and formulating implementation strategies. Noticeably, few studies have addressed the effect of DT on firms' performances. However, Scott et al. (2017) found a direct positive impact of technology adoption in the financial sector on firm performance, arguing that it may be observed more effectively in the long term, rather than in the short term, due to the complex nature of the technology adoption [30]. In the same results, Guo and Xu (2021) found that the operating performance is much more affected by digital transformation than financial performance. Digital transformation for improving operating performance requires more favorable conditions (i.e., policy and innovation environment) [13]. Moreover, Chen et al. (2016) used a resource-based view in textile SMEs and demonstrated the positive effect of DT on perceived organizational performance [7]. Furthermore, Braojos et al. (2019) empirically showed that IT capabilities, represented by e-commerce and social media, improve a firm's performance. Digital transformation of enterprises includes the overall transformation of enterprise strategy, marketing, commodities, business model, management and corporate culture. So, digital transformation can reduce the communication cost of firm, improve the connectivity of innovation networks, accelerate the speed of digital integration, expand the scope of integration, increase the knowledge heterogeneity and integration requirements of innovation networks, and reshape the creation and sharing of knowledge in innovation networks. Digital capabilities positively influence firm performance only through technological capabilities [4]. Furthermore, enterprises in the mature stage of their product life cycle benefit the most from digital transformation [40]. In Vietnam, Khương,.V.M. (2019) studied the impact of digital transformation on production and business performance of 500 largest enterprises in Vietnam. His research results shows that large enterprises that actively transform digitally not only bring additional profits to their own businesses, but also contribute significantly to the growth of the country's GDP [19]. Another study by Anh, N.K. (2022) also confirmed that digital transformation is an important factor in improving business performance of SMEs, especially during a period when the economy is experiencing severe impacts from the covid 19 pandemic [3].

3. Methodology

In this study, the author uses quantitative combined with qualitative research methods, including three steps: Preliminary qualitative research, preliminary quantitative research and formal quantitative research. Preliminary qualitative research was carried out through in-depth interviews and focus group discussions with experts in the field of SMEs development to explore the factors affecting SMEs business performance in Thanh Hoa province, and adjust the scales of the factors accordingly. Quantitative research with survey methods through questionnaires direct sent via email to enterprises to collect primary data. Respondents are key members of the enterprises.

3.1. Sample design

The sample selected in the preliminary quantitative study is via the convenient sampling method in which respondents are managers in Thanh Hoa SMEs, with 200 samples. For formal sampling, in multivariate regression analysis, the minimum sample size to be obtained is calculated by the formula 50 + 8*m (m: number of independent variables) [33]. Thus, with 40 observed variables (Including dependent variables) in this study, the minimum sample size must be 50 + 8 * 40 = 370 observations. For the SEM structural model, the appropriate sample size to use for the SEM model is from 250 to 500 questionnaires [29]. Thus, in order to ensure objectivity and reliability, in this study, the author selected an official quantitative research sample of 500 questionnaires, the results obtained with 488 valid samples included in the analysis.

3.2. Methods of processing and analyzing data

The data collected from the preliminary quantitative survey questionnaire are processed by SPSS 20.0 software to evaluate the reliability of the scales via Cronbach's alpha coefficient and EFA exploratory factor analysis. The data collected from the official quantitative survey questionnaire is firstly processed by SPSS 20.0 software to evaluate Cronbach's alpha coefficient and exploratory factor analysis EFA. Then, confirmatory factor analysis (CFA) and SEM (Structural Equation Modeling) analysis are performed by AMOS (Analysis of Moment Structures) version 20.0 software with ML estimation method (Maximum Likelihood) to test theoretical models and hypotheses.

3.3. Research model and variable scales

After conducting an overview of the theoretical and empirical review of domestic and foreign studies on the factors affecting business performance of enterprises, combined with experts' suggestions, the author determines the factors affecting the business performance of SMEs in accordance with the characteristics of Thanh Hoa province, including: Technology level of enterprises, Human resources, Financial resources, Management and executive ability of enterprise's leaders, Marketing strategies, Digital transformation of enterprises and Policies to support local enterprises. The model of factors affecting business performance of SMEs in Thanh Hoa province is as follows:

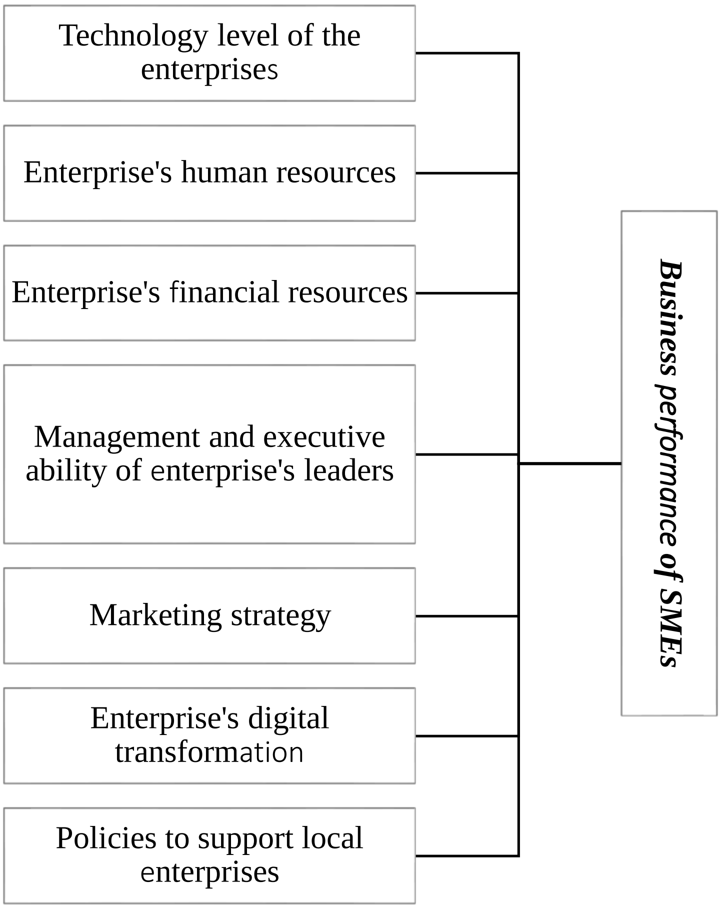

Figure 1: Model of factors affecting business performance of Thanh Hoa SMEs

Research hypotheses:

Hypothesis 1 (H1): The technology level of the enterprises has a positive relationship with the business performance.Second point.

Hypothesis 2 (H2): Human resources and business performance of enterprises have a positive relationship.

Hypothesis 3 (H3): Financial resources have a positive relationship with business performance of enterprises.

Hypothesis 4 (H4): The management and executive ability of enterprise's leaders has a positive relationship with business performance.

Hypothesis 5 (H5): Marketing strategy of enterprises has a positive relationship with business performance.

Hypothesis 6 (H6): Digital transformation of enterprises and business have a positive relationship.

Hypothesis 7 (H7): Local enterprise support policies have a positive impact on business performance.

Scales of variables in the formal research model

Table 1. Synthetic scales adjusted for the official analysis

No.	Code	Scales	Source
I	***Business performance of SMEs***		
1	KQKD1	Enterprises have the ability to grow revenue in the long term	(Tú & Đặng, 2018)
2	KQKD2	Enterprises have the ability to attract potential customers	Experts' suggestions
3	KQKD3	Enterprises have the ability to make profit in the long term	(Vankatraman N. & Ramanujam V., 1987), (Tú & Đặng, 2018)
4	KQKD4	Enterprises have the ability to increase, expand and develop market share in the long term	(Vankatraman N. & Ramanujam V., 1987)
II	***Technology level of the enterprises***		
1	TDCN1	Enterprises regularly update and apply new technologies in production and business activities	(Huong, et al., 2021), (Thích, 2018)
2	TDCN2	Enterprises apply modern technology in marketing and brand promotion	(Huong, et al., 2021), (Thích, 2018)
3	TDCN3	Enterprises take great importance of investment in research and implementation of new technologies	(Huong, et al., 2021), (Thích, 2018)
4	TDCN4	The level of technology in production of enterprises is at a high level compared to the others	Experts' suggestions
III	***Enterprise's human resources***		
1	NNL1	Enterprise's employees are well-trained	(Huong, et al., 2021), (Thích, 2018), (Eltahir, 2018)
2	NNL2	Employees in enterprises have good working skills	(Huong, et al., 2021), (Tan, 2019)
3	NNL3	Most employees in enterprises have	(Huong, et al., 2021), (Eltahir,

		good working experience	2018)
4	NNL4	Enterprise's employees have good attitude	(Huong, et al., 2021), (Tan, 2019)
5	NNL5	Employees in enterprises have high adaptability to innovation	Experts' suggestions
IV	***Enterprise's financial resources***		
1	NLTC1	Enterprises have advantages in accessing capital markets	(Huong, et al., 2021), (Tan, 2019)
2	NLTC2	Enterprises have the ability to meet the loan conditions (loan records, collateral, business plans, etc.)	(Huong, et al., 2021), (Tan, 2019)
3	NLTC3	Enterprises have the ability to effectively use capital in business	Experts' suggestions
4	NLTC4	Enterprises always have enough capital to meet production and business needs, innovate technology to improve product and service quality	(Huong, et al., 2021), (Tan, 2019)
5	NLTC5	Enterprises always pay all debts on time	Experts' suggestions
V	***Management and executive ability of enterprise's leaders***		
1	QLDH1	Enterprise's leaders have good organizational and management skills	(Huong, et al., 2021), (Thích, 2018)
2	QLDH 2	Enterprise leaders built a good strategy for investment and development in accordance with the local socio-economic development policy.	Experts' suggestions
3	QLDH 3	Enterprise's leaders built a good strategy on personnel training and development, human resource development in the long term	(Huong, et al., 2021), (Thích, 2018)

4	QLDH4	Enterprises have an efficient and flexible organizational structure	Experts' suggestions
5	QLDH5	Enterprise's leaders establish good relationships with stakeholders	Experts' suggestions
VI	***Marketing strategy***		
1	MAR1	Enterprises always focus on improving products to meet market needs	Experts' suggestions
2	MAR2	The distribution channel system of enterprises operates effectively	(Thích, 2018)
3	MAR3	Enterprises regularly organize sales promotion activities such as advertising, promotions and other product introduction communication activities.	(Alyahya, 2021)
4	MAR4	Enterprise's brand is built and managed methodically	Experts' suggestions
VII	***Enterprise's digital transformation***		
1	CDS1	Enterprise's leaders pay attention to the digital transformation issues	(Khương, 2019), (Ánh, 2022)
2	CDS2	Enterprises have the ability to apply digital technology to connect with the needs of customers and stakeholders	(Khương, 2019),
3	CDS3	Enterprises use cloud computing technology (A computing model using computer technology and Internet-based development) in internal management	(Khương, 2019), (Ánh, 2022)
4	CDS4	Enterprises have strong enough IT platform to enable digital transformation	Experts' suggestions
VIII	***Policies to support local enterprises***		

1	HTDN1	Local enterprise support policies are easily and conveniently accessed	Experts' suggestions
2	HTDN2	Policies to support development for enterprises (in terms of infrastructure, human resource training, environmental protection, consumption market, distribution network, technology) operate effectively	(Huong et al., 2021), (Hiệp & Hương, 2019)
3	HTDN3	The state management mechanism (tax, administrative management, prices of goods and services) is transparent and clear	(Huong et al., 2021), (Hiệp & Hương, 2019)
4	HTDN4	Policies to support credit access are really effective for enterprises	Experts' suggestions

Source: Author's compilation

4. Research results and discussion

4.1. Results of the reliability of scales and the factor analysis

The reliability of the scales was tested using Cronbach's Alpha tool. Observable variables with item-total correlation of less than 0.3 will be excluded and the standard for choosing the scales when Cronbach's Alpha is 0.6 or higher [27]. According to the research results, the scales of the research model all have high Cronbach's Alpha coefficient (>0.8). All observed variables of the scales have a total correlation coefficient greater than 0.3. Therefore, the scales are satisfactory, thus eligible for exploratory factor analysis.

The results of Bartlett's test considering the hypothesis of correlation between observed variables in the first factor yield 8 factors, however, the observed variable NNL5 has a loading coefficient less than 0.5, so it is removed. The author runs the second EFA factor analysis for the remaining variables. The results of the second EFA analysis (after removing the variable NNL5) shows that the KMO index was 0.887 (>0.5); the extracted variance is 66,055 % (>50%) which means that these 8 factors explain 66,055 % of the variation of the data; breakpoint in EFA factor analysis is 1.111 > 1; Bartlett's test has statistical significance (Sig.<0.05). Therefore, it can be concluded that the indicators in the study meet EFA analysis standards.

4.2. Confirmatory factor analysis (CFA) results.

Confirmatory factor analysis is the next step of exploratory factor analysis, the purpose is to evaluate whether the model and scales are suitable to test the SEM linear structural model. The results of the standardized CFA analysis show that the measurement criteria are appropriate: Chi-square/df = 2,829 < 3; TLI= 0.907 > 0.9, CFI= 0.918 > 0.9, GFI = 0.856 > 0.8; RMSEA coefficient = 0.061 < 0.08, so the model has a good fit with the market. Thus, it can be confirmed that the research scales ensure the analysis requirements. From the obtained results, the model is considered suitable with market data and there is no correlation between measurement errors, so it can be concluded that the scales are unidirectional.

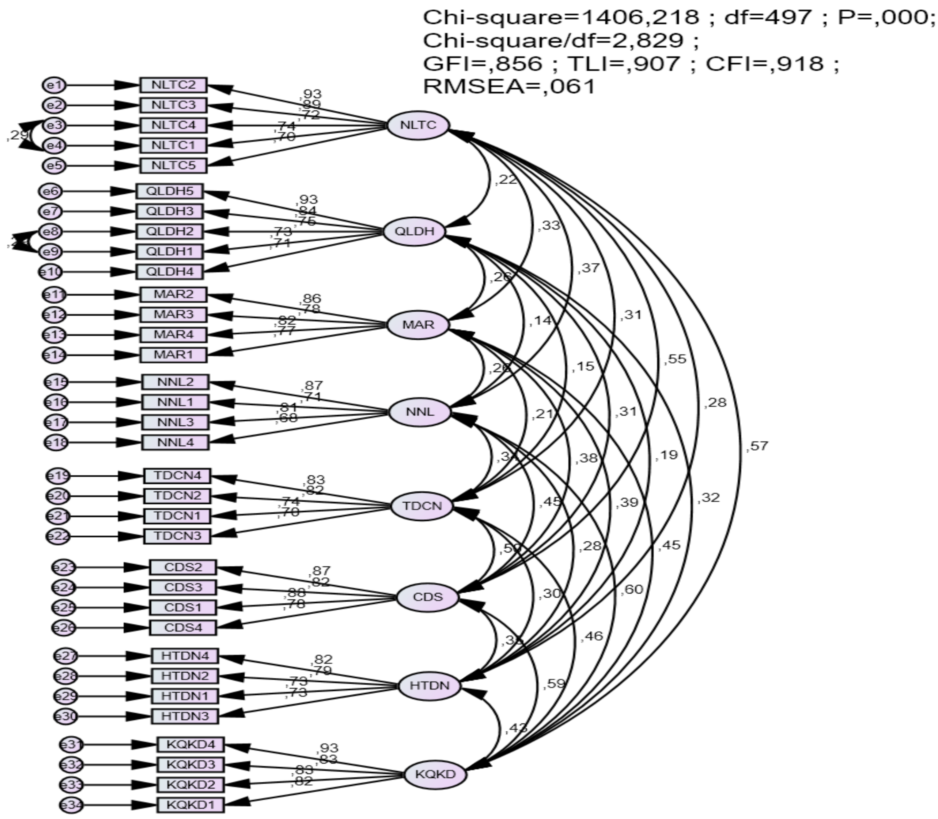

Figure 2. Research model CFA results (normalized)

Source: Results of processing survey data

4.3. The results of testing the Structural Equation Modeling

To determine the influencing factors and the degree of influence of these factors on the business performance of SMEs, the author uses the SEM model with the expectation of achieving highly reliable results. The author in turn conducts SEM analysis with the original proposed model and adjusts the model to obtain a more reliable model. SEM analysis results show that the df= 497, Chi-square = 1405.510 with p-value = 0.000 < 0.05, Chi-square/df= 2.828 < 3, CFI = 0.907, TLI = 0.918 are all greater than 0.9 ; GFI = 0.856 > 0.8; RMSEA = 0.061 < 0.8. All indicators confirm that the model is consistent with market data (Figure 3)

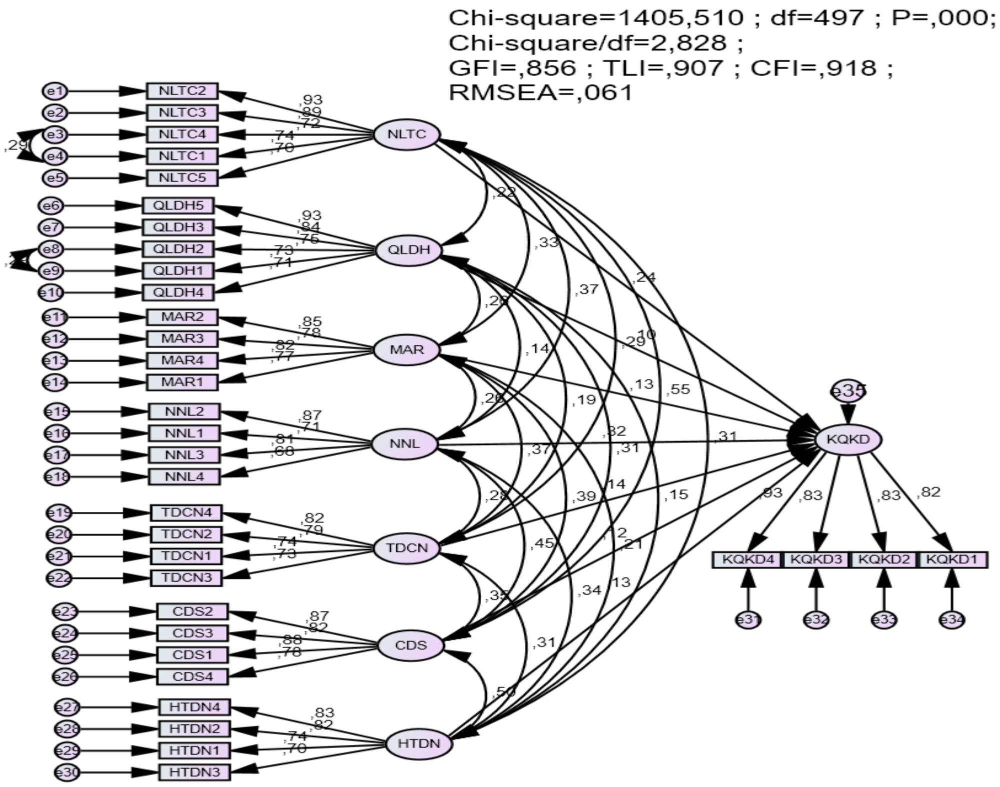

Figure 3. Results of Structural Equation Modeling (normalized)

Source: Results of processing survey data

4.4. Estimation of research model by Bootstrap method and SEM model testing results

Due to the nature of a sampling study, sample results are used to infer population results, however, sample estimates may vary for different samples. Therefore, Bootstrap technique is used to assess the reliability of the samples [29]. For this study, the bootstrap technique selected a sample equal to the original sample size of the study, with N=488 (ie 488 different samples). The smaller the bias of the Bootstrap estimate, the more reliable the estimate is on the sample. The critical value of estimated bias is not more than 1.96, then the model conclusion is considered stable and reliable. The test results show that the bias between the sample estimate and the bootstrap estimate is very small, the critical value (CR) is less than 1.96. Thus, it can be concluded that the estimated model is stable and reliable. The hypotheses testing results of the SEM model are shown in Table 2:

Table 2: Results of testing the research hypotheses

Hypotheses	Relationship			Normalized coefficients	Error Standard (S.E)	Critical value	P Value	Results	Order of effects on dependent variable
H1	KQKD	<--	TDCN	0,139	0,041	3,445	0,000	Accept	3
H2	KQKD	<--	NNL	0,322	0,044	7,709	0,000	Accept	1
H3	KQKD	<--	NLTC	0,241	0,042	5,718	0,000	Accept	2
H4	KQKD	<--	QLDH	0,100	0,032	2,802	0,005	Accept	7
H5	KQKD	<--	MAR	0,130	0,039	3,238	0,001	Accept	5
H6	KQKD	<-	CDS	0,124	0,050	2,487	0,013	Accept	6
H7	KQKD	<--	HTDN	0,133	0,042	3,163	0,002	Accept	4

Source: Results of processing survey data

According to the results of Table 3, the research hypotheses are all accepted (values of P are all less than 0.05). The estimation results show that there is a positive relationship between the digital transformation of enterprises and business performance, with the normalized coefficient $\beta = 0.124$ and standard error SE = 0.05. This estimate result has statistical significance, with $p = 0.013 < 0.05$. Thus, the hypothesis H6 is accepted. Although, the ability of enterprises to digitally transformation has a positive impact on business performance of SMEs, however, this impact is not really strong, with the 6th level of impact in the model. The research result confirms that when enterprises have good digital transformation capabilities, it will help improve management efficiency, increase employee productivity, improve product quality, and enhance the competitiveness of enterprises from that improves business performance of enterprises. The results of this study are similar to those of Sikander Ali Qalati, et al., (2021) and Khương (2019). Those research results confirm that large enterprises actively digital transformation not only help bring additional profits for their own businesses but also contribute significantly to the growth of GDP of the country.

This result is also similar to the conclusion from the research of Li, Zhang & Mao (2017) which indicated that the positive impact of digital transformation on business performance is more evident in large enterprises, state-owned enterprises, mature enterprises and commercial and service enterprises. However, for small enterprises, the effect is not really breakthrough [21]. Digital transformation is also an effective support tool in lean management - the golden key to creating competitive advantages. Lean management helps to optimize the operation process thanks to JIT, lean manufacturing strategies. Thanks to the softwares in the business, it is possible to accurately calculate and forecast the needs of customers and the ability of the business to meet; can automate ordering and delivery, thus avoiding unnecessary waste due to inventory, damage or excess.

According to the statistics of the MIT Digital Center, Microsoft and IDC have up to 25% of Asia's GDP in 2019 from digital transformation; an enterprise that has implemented digital transformation would have 26% higher profits than competitors in the same industry that have not done so; 84% of Southeast Asian business owners recognize digital transformation as an important step to strong growth and competitiveness. Key resources (Leadership, technology, human resources and business strategy) have a positive impact on SME's digital transformation and digital transformation has a positive impact on SME business performance [36]. Digital transformation has a positive impact on innovation, creativity and business orientation of SMEs and through digital transformation helps to optimize traditional business operations thanks to the contribution of digital technology; improve production level, scale business and realize value benefits, such as efficiency improvement, cost reduction and quality improvement.

According to the results of survey on digital transformation level of Thanh Hoa SMEs with a sample of 500 enterprises (in wich there were 488 votes valided) through the Likert scale with 5 levels, from 1- Very disagree; 2 - Disagree; 3 - Normal; 4 - Agree; to 5 - Strongly agree, the specific evaluation results are shown in Table 3 following:

Table 3. Enterprise's assessment about digital transformation level

Code	***Scales of Enterprise's digital transformation***	**Average rating (Score)**
CDS1	Enterprise's leaders pay attention to the digital transformation issues	3,67
CDS2	Enterprises have the ability to apply digital technology to connect with the needs of customers and stakeholders	3,71
CDS3	Enterprises use cloud computing technology (A computing model using computer technology and Internet-based development) in internal management	3,84
CDS4	Enterprises have strong enough IT platform to enable digital transformation	3,14
	Mean	**3,59**

Source: Results of processing survey data

In fact, the survey results in Thanh Hoa SMEs show that the digital transformation level of enterprises has been assessed at a good level, but not high (average score is 3.59/5 points). Specifically, most enterprises agree that they have been using cloud computing technology (A computing model using computer technology and Internet-based development) in internal management and they also agree that they have the ability to apply digital technology to connect with the needs of customers and stakeholders. In addition, over 50% of surveyed enterprises agree that their leaders have a positive attitude towards digital transformation issues. However, the weakest content about the digital transformation ability of enterprises is that the information technology platform which is not strong enough to allow digital transformation. This is also the problem focused on and solved in the coming time for SMEs in Thanh Hoa province.

Thus, the reality shows that the digital transformation ability of SMEs in Thanh Hoa province is not really high, but it is clear that digital transformation is one of the factors promoting business performance of enterprises. Currently, enterprises need to identify digital transformation as an inevitable trend and an important solution to improve production and business efficiency, expand markets, cut costs, and adapt to the new context of the digital economy.

5. Conclusions and implications for enterprises

This study investigated the impact of digital transformation on business performance in Thanh Hoa SMEs via a sample survey of 500 enterprises. The results show that digital transformation has a positive effect on business performance of enterprises as well as six other factors. The results also indicate that digital transformation level of Thanh Hoa SMEs is not high, and it affects business performance at the 6th level in the model with 7 independent variables. From the research results, the author proposes some solutions to promote digital transformation thereby improving business performance of Thanh Hoa SMEs in the coming time as follows:

First of all, enterprises when embarking on digitization do not need to deploy simultaneously on the whole system, but should choose some of the strongest and most necessary stages in production and business activities. Secondly, raising awareness of digital transformation requirements as well as knowledge about digital transformation for enterprise leaders as well as all employees, towards building high-quality human resources well adapted to digital transformation. Next, enterprises need to allow employees to use data: Extracting and exploiting business information to help employees better understand customers and partners. From there, promoting information exchange in departments, improving customer relationships with enterprises and achieving higher work efficiency. Enterprises also need to apply appropriate technology solutions: For small and medium-sized enterprises, choosing an appropriate technology application is an essential element to ensure work productivity and business profits while still saving costs. investment fees. In addition, enterprises need to ensure continuity in the management system: The main purpose of digital transformation is still to streamline workflow and improve customer experience, so the management is seamless to ensure contact is essential. Small and medium sized enterprises before thinking about any transformation solution, should optimize the system, fragment the work and enhance the cooperation between departments.

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Understanding Smartphone Usage Behavior among Motorcycle Riders Using an Extended Theory of Planned Behavior

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ABSTRACT

The utilization of smartphones while driving (SPWD) poses a significant risk to road safety, particularly for motorcycle riders who are more prone to accidents. Despite this peril, SPWD has not received adequate attention. To address this gap, the present study expanded the theory of planned behavior (TPB) by incorporating driving exposure and time pressure factors, utilizing the perspectives of the Stimulus-Organism-Response theory. The aim was to develop a comprehensive research framework that could provide a deeper understanding of the mechanisms influencing SPWD among motorcycle drivers in Vietnam. The analysis of survey results, based on 485 valid responses from young drivers in Da Nang, revealed that time pressure was found to significantly influence the TPB factors related to the intention of using smartphones while driving. Moreover, driving exposure exhibited a positive impact on time pressure. All research hypotheses were supported, reinforcing the validity of the study's findings. These outcomes serve as a crucial point of reference for future research and have the potential to be expanded into quantitative studies to empirically test the relationships proposed in the model. Additionally, the study's results can inform the development of road safety policies and initiatives specifically targeting SPWD behavior among motorcycle riders in Vietnam.

Keywords: Smartphone using while driving; road safety; motorcycle riders; TPB.

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Factors Affecting Digital Transformation of Small and Medium Enterprises: A Study in Thanh Hoa Province

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ABSTRACT

Digital Transformation (DT) has attracted the attention of management and organization scholars over the past decade. Digital transformation is inevitable for businesses today, but successful digital transformation requires many factors. However, studies on factors affecting digital transformation are still scarce. Therefore, this study investigated empirically to determine the factors affecting the digital transformation of enterprises. A semi-structured questionnaire was used to collect data from 238 representatives of small and medium-sized enterprises in Thanh Hoa on business digital transformation. Using reliability analysis and multiple regression analysis techniques, the research identifies 5 factors affecting the digital transformation of small and medium-sized enterprises in Thanh Hoa, including Awareness of the leadership team, Digital technology, Technology Digital capabilities, Corporate culture, and Digital strategy; While government policy was found to have no connection with corporate digital transformation. Based on the results of regression analysis, the author has proposed several governance implications for businesses to promote the digital transformation process of enterprises.

Keywords: Digital transformation, influencing factors, small and medium enterprises.

1. Introduction

The rapid development of digital technology is one of the most remarkable achievements of the 21st century. Along with the benefits that technology brings, the development of technology has made the business environment becomes more complex and unpredictable, businesses have to face more challenges as the competitive environment becomes more fierce. Any business that wants to survive and develop sustainably in such conditions needs to change to become more flexible and adapt in time to the advancement of technology (Popović-Pantić et al., 2019). All of this, combined with the problems of the contemporary business environment such as lack of resources, stiffer

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competition, and increasing customer awareness, call for a rethinking of the current business philosophy as well as how to communicate and collaborate with key stakeholders. The rapid growth and penetration of digital technology in all sectors of society have prompted many businesses to think and actively explore ways in which digital technology can be effectively harnessed to enhance the quality of every aspect of the business. Several businesses are demonstrating their remarkable ability to exploit digital technology to gain a competitive advantage in the market. Traditional companies, with their rigid, centralized, and self-contained structures, often find it difficult to change and keep up with the pace of growth that digital demands (Imran et al., 2018). To survive, traditional companies must question their organizational model, learn from those who have gone ahead in digital adoption, and it is necessary to change the organizational model as well as the mindset to suit the business environment. We are transitioning to a digital economy and society. Although it's been almost half a century, it wasn't until recently, with the deployment of more digital infrastructure, that the ubiquity of smartphones made digital transformation so powerful and faster, helping to generate huge amounts of data to support business growth (Chen et al., 2015). It is this change that has created opportunities to improve welfare and solve pressing social problems such as education and health (Mubarak et al., 2019). Researchers have attested to the significant positive effects of digital transformation on productivity and operational efficiency at the macro level (Popović-Pantić et al., 2019; Mubarak et al., 2019). However, such benefits come with new challenges as digital transformation changes the nature and structure of companies and markets, raising concerns about jobs and skills, privacy, security, and social and economic interaction (Mubarak et al., 2019).

To date, research in the field of digital transformation has been largely descriptive. In particular, in Vietnam, research on digital transformation in enterprises is quite limited, studies have only focused on understanding the difficulties that businesses face in digital transformation as well as qualitative research to learn about the factors affecting the digital transformation of businesses. Therefore, there is a need for more empirical studies to learn about the factors affecting the digital transformation of enterprises, especially the majority of businesses in the current Vietnamese business system (small and medium enterprises). So that, this study will focus on exploring and determining factors affecting digital transformation of SMEs in a specific province in Vietnam, particularly in Thanh Hoa.

2. Literature Review and Theoretical Framework

2.1. Digital tranformation

The fourth industrial revolution has created the impetus for the application of technology in business activities. With the rapid development of high-speed internet, cloud computing, and blockchain technology, Industry 4.0 is changing the way businesses operate, the way they do business, and the behavior of consumers (Abdulquadri et al., 2021). Traditional businesses are being transformed online, which is known as digital transformation.

Recent studies help us understand the digital transformation process of businesses and the perspective of existing literature helps to clarify the concept and definition of digital transformation. According to Mubarak et al. (2019) digital transformation represents a change in the activities of individuals and businesses through the application of digital technology to create great improvements in business, personal experiences, and new business models. Vial (2019) defines digital transformation more specifically, according to the author, digital transformation is a process that aims to improve an entity by making significant changes in its properties through a combination of information technology, computing, communication, and connectivity. This definition shows that digital transformation can significantly change the business activities of enterprises by applying modern technologies. Therefore, it is understandable since the concept of digital transformation was born.

Lanzolla et al., (2008) emphasizes the application of digital technologies as a driver of digital transformation. Digital technologies may include big data, mobile, cloud computing, or search-based applications. Another view, Chatterjee et al. (2002) believe that for digital transformation to be successful, leaders must believe in the value and benefits of new technologies and support their implementation in the organization. In this view, Hess et al. (2016) emphasize the role of human factors, especially managers, in promoting transformation processes, and at the same time the authors also suggested that there should be a match between human resource capacity and digital technology applications to optimally exploit such technology applications.

In the study of Nadkarni & Prügl (2020) synthesized from previous studies, internal factors affecting the digital transformation ability of enterprises are divided into 3 groups: 33% focus on technology, 34 % focus on organizational issues, and 33% focus on both technology and organizational issues. In organizational-focused studies, four factors are mentioned a lot and have a direct influence on the expected results of enterprises' digital transformation: (1) leadership, (2) business strategy digital, (3) employee competencies, and (4) corporate culture. For technology-focused research, the use of technology platforms for business activities such as systematically storing information and data, interacting with customers, communicating, internal communications, and other activities that affect the digital transformation ability of enterprises. This article calls it a technology platform. Based on previous research, Teng et al. (2022) believe that digital transformation is closely tied to digital technologies, including artificial intelligence, big data, cloud computing, and blockchain, to empower businesses and vigorously develop new technologies, new products, new models and new formats, so that enterprises have an effective, diversified and sustainable development model. This concept represents four aspects that businesses need to systematically embrace to realize digital transformation. First, digital transformation is a systemic change enabled by digital technology. Second, the main task of digital transformation is to reconstruct and renew value systems. Third, the core path of digital transformation is the ability to form new kinetic energy, continuously create new value, and achieve sustainable development. Finally, the key elements of digital transformation are technology, people (skills), and strategy appropriate to each stage of the business. Therefore, in the process of digital transformation, businesses need to have a clear strategy (road map), the right method (technology), the right talent, etc. to form an effective digital transformation system and promote transformation and change systematically, accelerating innovation in each stage.

2.2. Key Factors for the Digital Transformation of SMEs

The digital transformation of SMEs is a distinct path that is inherently constrained by industry, size, stage, technology, and resources. Meanwhile, the digital transformation of a business is a complex systematic project. It requires not only the use of online sales and payment tools, but also the selection of a transformation model, business model innovation, organizational structure optimization, and asset management changes. Systematic digital empowerment is realized through R&D, production, sales, warehousing, logistics, marketing, and other links, and finally, the industrial closed loop is realized, linking deals with all aspects of smart manufacturing, digital logistics, data risk, and more (Teng et al., 2022).

Some scholars find that small and medium-sized businesses face many difficulties in digital transformation. In April 2020, Cisco announced the report "Digital Development Index of Small and Medium Enterprises in Asia - Pacific" covering 1,340 enterprises in the region in general and 50 enterprises in Vietnam in particular (Huyền, 2023). In Vietnam, small and medium-sized enterprises are facing barriers in the digital transformation process such as a lack of digital skills and human resources (17%), a lack of a strong enough IT platform to enable the digital transformation (16.7%), a lack of digital thinking or digital culture challenges in businesses (15.7%)… However, the report also shows that businesses Vietnamese small and medium enterprises are initially investing in Cloud Computing technology (18%), network security (12.7%), and upgrading software and hardware for digital transformation (10.7%) (Huyền, 2023).

In recent years, several studies have been carried out on the factors that influence the success of digital transformation (Vogelsang et al., 2018). Several studies report that the six dimensions of corporate strategic vision (in cluding: Strategic vision (for a digital world), Culture of innovation, Know-how and intellectual property (IP) assets, Digital capabilities (talent), Strategic alignment, Technology assets), consistency of digital transformation vision and investments, the relevance of innovation culture, adequate ownership of assets wisdom and know-how, the power of digital capabilities, and the use of digital technology can be improved (Teng et al., 2022). This allows a business to achieve a successful competitive position through digital transformation. Several studies have also shown that four factors drive successful digital transformation: customer-centricity, governance, innovation, and resource acquisition (Mhlungu et al., 2019). According to (Wrede et al., 2020), support from senior management is one of the most important factors for successful digital transformation through planning, aligning the benefits of the organization, communicating consistently and often, providing resources and tools, mobilizing people, establishing accountability and deadlines for products. A unified strategic goal is also crucial for a successful and rapid digital transformation (Sullivan et al., 2021). Studies also show that three key resources—IT, human resources, and business strategy—have a positive impact on the digital transformation of SMEs; however, these factors are barriers to the digital transformation of these enterprises (Teng et al., 2022). From a holistic perspective, the six key factors for the digital transformation of SMEs are identified from three aspects of technology, organization, and environment: government support, technical capacity digital, senior management, digital strategy, IT infrastructure, and corporate culture. Digital transformation is a long and arduous task, facing technological challenges, enhancing enterprise capacity, and training talents… but not unattainable. Only by focusing on the key factors and by adding external support to their strengths can SMEs innovate iteratively.

2.3. Proposed Conceptual Model and Hypothesis Formulation

The resource-based theory posits that a firm is a collection of disparate resources (Wernerfeelt, 1984). Due to many different reasons, the resources of enterprises are different and heterogeneous, it is this heterogeneity that determines the difference in competitiveness of enterprises. Enterprises have different tangible and intangible resources, which can be transformed into their capabilities, while the resources are immovable and difficult to reproduce between enterprises; These unique resources and capabilities are a source of long-term competitive advantage for the business. Compared with the external conditions of the enterprise, the internal conditions of the enterprise play a decisive role in gaining a competitive advantage in the market. Therefore, the present research mainly focuses on the organization itself and identifies the key elements that SMEs in digital transformation need: leadership, digital technology, digital skills (skills of managers and employees to operate digital transformation) and digital transformation strategy, corporate culture, and additional external support are the elements of government policy.

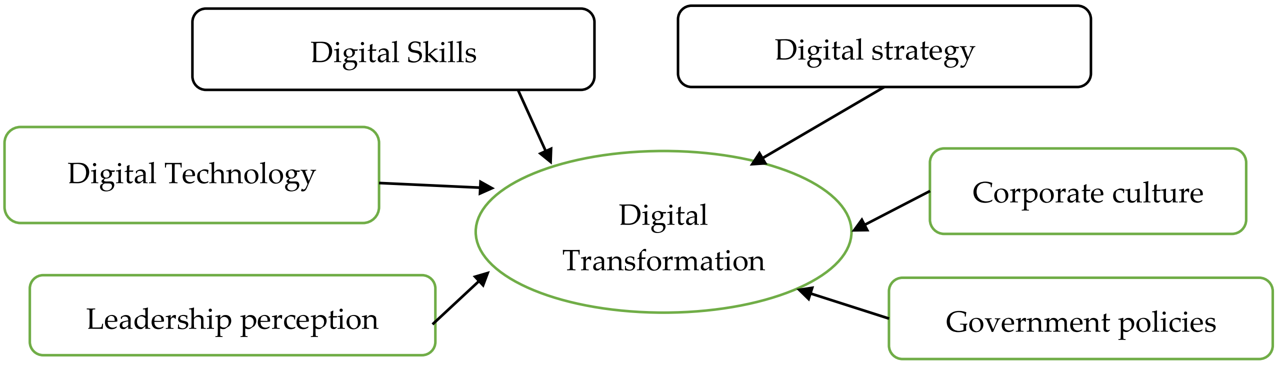

Figure 1: Conceptual Framework

2.3.1. Leadership perception.

When it comes to digital transformation in businesses, it can be seen that the attitude and perception of business managers are the key to determining the success of digital transformation. The change in leaders' thinking and actions greatly affects the digital transformation ability of enterprises. Those changes include rapid optimization of leadership decision-making with instant access to information and open data (Mazzei & Noble, 2017) and any changes in leadership learning and development (Ánh & Nương, 2022). Furthermore, leaders need a digital mindset to lead the digital transformation journey. The barrier to many businesses being ready for digital transformation stems from the management's unwillingness to change. Before the requirements of digital transformation, the company's board of directors often raises doubts about whether there is any risk if the enterprise chooses to change or whether their benefits will be affected when deciding to invest in the cost of digital transformation. Since then, to maximize personal benefits (according to agency theory), the board of directors often does not choose to face cost risks when implementing digital transformation. However, the requirement for digital transformation is an inevitable and inevitable trend in the digital era and for businesses to start the digital transformation process, business managers, above all else, need to be aware of the benefits and costs that digital transformation brings to businesses, thereby mapping out a digital transformation strategy that is suitable for businesses. Therefore, to be ready for digital transformation, the awareness of enterprise management can be considered as a guideline for the strategy to implement all plans. Therefore, to be ready for digital transformation, the awareness of enterprise management can be considered as a guideline for the strategy to implement all plans.

Hypothesis H1: Leadership perception has a positive impact on the digital transformation process.

2.3.2. Digital technology

Digital transformation will change job structure (Loebbecke & Picot, 2015), job roles, and workplace requirements (White, 2012). Digital interoperability allows cross-site groups to appear across the entire scope of the business. In this context, the traditional hierarchical work structure gradually disappears and new opportunities emerge that extend beyond the boundaries of the enterprise, such as the integration of other external services (Loebbecke & Picot, 2015). In addition, implementing a digital work environment becomes essential. According to White (2012), a digital workplace must be relevant, principled, imaginative, and independent of the workplace. Thus, how well a business has a background in applying technology in its current operations will greatly affect its ability to successfully transfer arguments in the future.

The basic idea behind the digital transformation implementation of SMEs is to change business and workflow based on innovations based on digital technologies; In this way, business operations can be made more efficient. Artificial intelligence has been proposed for decades, but it has only undergone explosive growth in recent years. The reason lies in the growing maturity of technologies such as cloud computing, the Internet of Things (IoT), and big data. Cloud computing provides an open platform for artificial intelligence, IoT ensures real-time data sharing and big data provides unlimited resources for deep learning. In addition, the development of blockchain technology in 2018 can make up for the shortcomings of artificial intelligence in data security and data elements, and while providing reliable assurance for the application of artificial intelligence in different scenarios. Several studies have found that digital transformation can be achieved through artificial intelligence (Magistretti et al., 2019). IoT plays an important role in digital transformation (Mubarak et al., 2019). Blockchain technology influences digital transformation. Notably, 5G networks also play the role of digital transformation (Attaran & Attaran, 2020). Thus, it can be seen that digital technology has positive effects on the digital transformation of businesses.

Hypothesis 2 (H2). Digital technology is positively correlated with the digital transformation of SMEs.

2.3.3. Digital Skills (Human resources)

In the process of digital transformation, more and more companies are starting to realize the importance of building a team of talent, because implementing digital strategies requires the support of employees. Digital talent has business competencies, holistic perspectives as well as digital concepts and skills (Kane, 2019). Therefore, a human resource with technology skills is the key to starting the digital transformation process in business management. The rapid development of employees' cognitive competencies and personal processes drives the digital transformation of enterprises (Butschan et al., 2019). For employees and management levels, there is a need for a process to perform operations with faster, more accurate, and more efficient speed when digital transformation. Therefore, it is required that employees have sufficient capacity, ready to approach, develop and use new technologies in improving and performing work. Moreover, depending on business conditions such as industry, and the operating model of the organization, employees, as well as managers, must develop the ability to feel and be flexible in maximizing the network and interconnectedness in the digital environment to identify new ideas, evaluate, modify and ultimately come up with new business models (Kohli & Melville, 2019). Studies have found that employees' digital mindset can influence their participation or departure from a company's digital transformation program (Solberg et al., 2020). Personal digital capabilities are associated with SME growth and innovation performance (Scuotto et al., 2021). However, some companies have not yet started digital transformation, which is also due to the lack of human resources and employees' digital skills. Therefore, organizations must implement virtual human resource development and use learning resources to prepare for the future (Bikse et al., 2021). Organizational empowerment is only effective when the right people are selected and the work efficiency is doubled. Therefore, in terms of digital transformation, the biggest challenge of the organization is not the specific business, but the people.

Hypothesis 3 (H3). Digital skills are positively correlated with SME digital transformation.

2.3.4. Digital transformation strategy

A digital transformation strategy is a blueprint for using digital solutions to improve the physical side of a business in engineering, manufacturing, and services. In essence, digital transformation is a comprehensive business strategy. Build a short-term, and long-term digital transformation roadmap that is driven by performance, not by technology or essential platforms (Teng et al., 2022). A digital transformation strategy is a prerequisite for successful digital transformation. By developing an effective, clear, and logical digital transformation strategy, one can ensure that one's digital transformation is as seamless as possible. A digital transformation strategy is like a personalized map that can bring tremendous value to the business transformation process. The formulation and implementation of a digital transformation strategy have become a key concern of organizations before digital transformation in many traditional industries (Chanias et al., 2019). Four common types of digital transformation strategies are formed through two aspects: using digital technology and preparing business models for digital operations (Chanias et al., 2019). Studies have found that SMEs are enhancing their digital transformation strategies through innovative technologies and new values that restructure business models and processes business (Min & Kim, 2021). Currently, many businesses have completed the digital transformation strategy formulation phase and are in the strategy implementation phase (Lichtenthaler, 2020). A new strategic implementation framework can be applied during digital transformation, divided into three phases: planning, implementation, and review (Barrane et al., 2021). In short, digital transformation is an enterprise's best strategy and it must be reflected in the entire process of business implementation, operation, and performance evaluation. It is no longer enough to remain at the technical level; need to digitize all aspects of decision-making, work, and collaboration, and deliver the best customer experience.

Hypothesis 4 (H4). Digital transformation strategies are positively correlated with the digital transformation of SMEs.

2.3.5. Corporate culture

According to psychological theory, human resources is considered the most essential part of an enterprise, once individual behavior is consistent with the enterprise's strategy, the enterprise will grow stronger and stronger. Therefore, many enterprises are very interested in building a standard system of values, attitudes, and ways of interacting and exchanging among all employees in all departments of the enterprise or building a corporate culture. In the digital age, if businesses are not flexible to change, and employees do not learn and access new technologies, it will be difficult for businesses to survive and compete.

Digital transformation is not only a challenge driven by technology but also requires a profound cultural change within the business. Everyone in the business must be prepared with adaptive skill sets and digital literacy. First, digital transformation requires a corporate culture of verifiable data and proven data sharing (Dremel, 2017). Data must be seen as a great asset and a driving force for business digital transformation. This will require greater transparency in day-to-day business and work processes as well as data thinking among employees. Second, digital transformation can cause cultural conflicts between young employees who are digitally savvy but inexperienced with older employees with a long track record in the traditional business but are technology lags (Kohli & Johnson, 2011). Managing to prevent conflicts between two different cultures from arising within the same organization by facilitating a culture of learning friendly and openly supported and trusted by management can effectively minimize potential cultural divides (Kohli & Melville, 2019).

Hypothesis 5 (H5): Corporate culture has a positive impact on the digital transformation of enterprises.

2.3.6. Government policies

From the resource-based (RBV) perspective of a company, small businesses have limited resources and capabilities. As a result, a small business is often unable to compete with larger companies using their lone resources and capabilities. Recognizing the importance and vitality of the role of SMEs, many governments have provided specific programs, funding, policies, and advice in national economic plans to support the development of SMEs and help small businesses gain competitive advantage (Eniola & Entebang, 2015; Kraja et al. 2014).

Small businesses with limited resources and inadequate capabilities can realize digital transformation by adopting third-party digital platform services. Organizations suggest that SMEs increase their capabilities by learning from other cooperation partners (Lin et al., 2020). Government has a role to play in creating policies, programs, and rules that help small businesses address their limited resources and inadequate capabilities (Park et al., 2020). As policymakers, governments can develop and strengthen policies and programs to support the digital transformation programs of small businesses, by creating specific policies, support, and consulting initiatives, customized training programs, and a collaborative ecosystem (Pelletier & Cloutier, 2019). The success of businesses in digital transformation depends most on the support of the Government. This requires the agencies of the Government of Vietnam to quickly implement Decision No. 749/QD-TTg. This is a great expectation for businesses because the Government with the ability to orient, organize and manage will promote the best support between businesses. Government support such as raising awareness, vision, and strategy of enterprises to contribute to the digitization of business activities; digitization of management processes, production processes, technological processes, financial management, accounting, human resources..., comprehensive digital transformation to create products, services, and models New for businesses need to be implemented quickly in 2021-2022.

Hypothesis 6 (H6): Government policy has a positive impact on business digital transformation.

3. Methodology

To evaluate the influence of factors on the digital transformation of enterprises, six main factors are considered: Leadership perception, Digital Technology, Digital Skills, Digital Strategy, corporate culture, and Government Policies. The questionnaire was sent directly and via email to various small and medium enterprises in Thanh Hoa. 300 samples of questionnaires were sent to 300 enterprises and 238 valid votes were collected for analysis. Subjects participating in this study are employees and leaders from the management level upwards, with knowledge of Industry 4.0 and digital transformation. Random sampling is used to select respondents. Data were collected using a 5-point Likert scale ranging from strongly disagree to strongly agree. The questionnaire is divided into two main parts. The first part includes respondents' information and business information and the second part looks at the key variables of this study as Leadership perception, Digital Technology, Digital Skill, Digital Strategy, corporate culture, Government Policies, and Digital Transformation. The questionnaire is adapted from the study of Westerman et al. (2012); Teng et al. (2022); Ánh & Nương, (2022); Y. Yu et al. (2013) combined with interviews In-depth consultation with some experts in the field of digital transformation in Vietnam. This study applies multiple regression methods through SPSS to analyze data.

4. Results and data analysis

4.1. Descriptive analysis

4.1.1. Demographic Information

Table 1: Information of responders

Criteria	Number	Percentage	Criteria	Number	Percentage
Gender			**Position**		
Male	186	78.15	CEO	102	42.86
Female	52	21.85	Managers	136	57.14
Age			**Education level**		
Under 30	12	5.04	Intermediate/ College	70	29.41
30-45	143	60.08	Bachelors	165	69.33
45-60	78	32.77	Postgraduate	3	1.26
Over 60	5	2.1			

The table above shows that the majority of interviewees are men (accounting for 78.15%), while women only account for 21.85%. There are 102 people (accounting for 42.86%) of the respondents who are business directors, while 136 people are holding managerial positions in the enterprise. Most of the respondents are 30-45 years old, ensuring that they are both leaders but also knowledgeable about information technology; Regarding educaton level, most representers of entreprises owned bachelor degrees (69.93%), following by number of people having Intermediate/ College degrees (29.41%), and only 1.26% peope are postgraduates.

4.1.2. Business information

Table 2: Information on business

Criteria	Number	Percentage	Criteria	Number	Percentage
Business field			**Time of operation**		
Trade & service	109	45.80	Under 5 years	26	10.92
Industry & Construction	85	35.71	From 5 – 9 years	89	37.39
Agriculture, Forestry, & Fishery	39	16.39	From 10- 20 years	66	27.73
Others	5	2.1	Over 20 years	57	23.95
Type of Business			**Number of employees**		
Limited liability company	108	45.38	< 10	119	50
Private enterprise	66	27.73	10-<100	86	36.13
Joint Stock Company	50	21	100-<200	33	13.87
Others	14	5.88			

From Table 2, it shows that the majority of enterprises in the research area work in the field of Trade & service (109 enterprises, accounting for 45.8%); there are 108 enterprises as Limited liability companies; the operating time of enterprises is mainly in the range of 5-9 years, followed by 10-20 years; Most enterprises have less than 10 employees (microenterprises) (accounting for 50%).

4.2. Descriptive analysis for mean

This part of the analysis was performed to check the customer's level of agreement with each variable. A mean value of less than 3 indicates low impact, less than 4 indicates moderate impact, and a value of 4 or greater than 4 indicates high impact.

Table 3: Mean Analysis

Variables	Mean	Std.Deviation
Leadership perception	2.93	.642
Digital technology	2.99	.50538
Digital Skills	3.22	.60395
Digital strategy	3.19	.45742
Corporate culture	3.03	.55052
Government policies	2.95	.50850
Digital transformation	3.03	.50448

The above table indicates that the mean range of all variables ranges from 2.93 to 3.22 with a standard deviation from 0.45742 to 0.642 indicating that most of the respondents in this study were answered on a scale from normal to agree. This shows that businesses have implemented activities to promote digital transformation but are still at a moderate and good level.

However, to measure the uncertainty, the standard deviation is used. A high standard deviation indicates more variation in the data and indicates that the values are far from the true value. Therefore, in this study, the S.D values are very low, which indicates that the values are close to the actual values and the respondents' responses are not very similar.

4.3. Reliability analysis

For the completeness and accuracy of the analysis, the reliability of the data collection tool is very important. Indeed, for data analysis, it is impossible to ignore providing evidence about the data. Therefore, it is important to check the reliability before further analysis. Cronbach's Alpha value must be equal to or greater than 0.70 for reliable data (Hair et al., 2010).

Table 4: Reliability Analysis

Variables	Number of variables	Cronbach's Alpha Value
Leadership perception (LP)	05	0.797
Digital technology (DT)	05	0.825
Digital Skills (DS)	06	0.869
Digital strategy (DST)	04	0.834
Corporate culture (CUL)	05	0.899
Government policies (GP)	05	0.899
Digital transformation (DX)	06	0.862

Table 4 shows that Cronbach's alpha values for all variables are greater than 0.7 and less than 0.9, which shows that all variables are reliable for the study and instrumentation is most relevant to the study and the results are accurate and reliable.

4.4. Multiple regression analysis

Multivariate analysis is used to examine the extent of the relationship between two or more variables. Furthermore, it shows the effect of the independent variables on the dependent variable. This test is interpreted according to the value of β, if it is significant at a significance level less than 0.05, we will accept the hypothesis otherwise we will reject the hypothesis. In particular, it is a statistical tool that allows one to check how many independent variables are related to one dependent variable. However, the model summary, coefficient table, and ANOVA table are presented below.

Table 5: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.822[a]	.676	.667	.26249	.676	80.174	6	331	.000	1.912

a. Predictors: (Constant), LP, DT, DS, DST, CUL, GP

b. Dependent Variable: DX

Table 5 shows that the model's adjusted R^2 is 0.676 with $R^2 = 0.667$ showing that the linear regression explains 66.7% of the variance in the data. The R-squared value is the proportion of variance in the dependent variable that is explained by the independent variables. Therefore, the R-squared value of .676 shows that independent variables (Leadership perception, Digital Technology, Digital Skill, Digital Strategy, corporate culture, and Government Policies) explain the change and predict the success of the transition. change numbers in the business. However, in the case of the current model summary results, the value of R = .822 indicates a high degree of predictability.

Table 6: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.732	.188		-3.890	.000
	LP	.429	.037	.477	11.459	.000
	DT	.108	.029	.143	3.725	.000
	DS	.304	.042	.306	7.213	.000
	DST	.137	.031	.165	4.340	.000
	CUL	.199	.035	.221	5.733	.000
	GP	.058	.036	.065	1.590	.113

a. Dependent Variable: DX

The above-denormalized coefficients show that the effectiveness of digital transformation in enterprises changes with an independent variable (Leadership perception, Digital Technology, Digital Skill, Digital Strategy, corporate culture, Government Policies) when all variables other independence remains unchanged. β is significant if $p < 0.05$. Therefore, table 5 above shows the impact of the independent variable on the dependent variable, the β value of Leadership perception (β = .477; Sig. = 000), Digital Technology (β = .143; Sig. =.000), Digital Skill (β = .306; Sig. =.000), Digital Strategy (β = .165; Sig. =.000), Corporate culture (β = .221; Sig. =.000), shows the impact of these variables on the digital transformation of enterprises. Leadership awareness is the important factor that has the greatest influence on the digital transformation of enterprises, followed by digital skills, while the research results show that Government Policies do not affect the digital transformation of enterprises. industry (β = .065; Sig. = .113).

5. Discussion and implications

This article contributes to a better understanding of the factors affecting the digital transformation of SMEs in Thanh Hoa. The empirical test looks at the relationship between corporate resources (Leadership perception, Digital Technology, Digital Skills, Digital Strategy, and Corporate culture) and an external factor, Government Policies) and digital transformation. These results reveal several important findings.

Firstly, the research results show that the perception of business leaders has the greatest influence on the digital transformation of enterprises (β = 0.477, Sig. = 0.000), and therefore H1 is confirmed. The results of the study are similar to those of (Leso et al., 2023). Whether the digital transformation is successful or not depends greatly on the perception of the participants in that process. Changing the perception of business leaders and all employees in the enterprise about digital transformation is one of the tasks and solutions considered the most important because it will determine how the digital transformation is done, how the results are targeted, and it will also show the determination of the head of the business to carry out digital transformation. The head of the enterprise will be the person in direct charge of digital transformation in the organization and will also be the one to convey the guidelines and policies of the Party and the Government on digital transformation to the employees in the enterprise. At the same time, turning the goal of digital transformation into a strategic goal of the business. The head of the business creates maximum conditions for members of the unit to actively innovate, and always seek to learn new technologies to be able to develop faster and more sustainably, linking other components. according to the circular economy model.

Second, employees' digital skills have a positive impact on the digital transformation of small and medium enterprises (Hypothesis 3/H3). The results of this study are consistent with the results of Teng et al., (2022) showing that digital competence has a positive impact on digital innovation. Furthermore, Yasa et al., (2019) confirms that digital capabilities influence digital innovation. Ahmed et al., (2022) argues that digital platform capabilities are positively associated with SME agility and all three dimensions of intellectual capital (i.e. human capital, organization, and relationship) mediate this relationship. This shows that digital transformation depends on employees with digital skills. Digital technology does not work in isolation, nor does it always work well. To successfully master these digital methods and technologies, SMEs will rely on a large number of employees who are familiar with and proficient in digital tools. For SMEs to successfully implement a digital transformation, people are as important as technology, and everything from a company's vision and strategy to execution involves people. Employee digital skills are key to digital transformation. Each employee must be self-conscious and responsible for improving their knowledge and skills in digital transformation. Accordingly, the topic offers solutions to the human factor.

Third, corporate culture has the third largest impact on the digital transformation of enterprises (Hypothesis 3/H3). This result is similar to the study results of Leso et al., (2023). This shows that creating a corporate culture geared towards digital transformation is very important. From leaders to employees in the business, it is necessary to create a culture of learning, sharing mutual knowledge at work, and together creating a friendly working environment so that employees have different technological cultures. (e.g. young people who are tech-savvy but inexperienced and older people who are experienced but lack technology) work together harmoniously, supporting each other to complement each other. improve work productivity.

Fourth, the results show that digital technology has a direct positive impact on digital transformation ($\beta = 0.143$, Sig. = 0.000), and thus H2 is confirmed. This shows digital technologies (resources including artificial intelligence, blockchain, cloud technology, big data, 5G, IoT, social media and cyberspace, and security technology) contribute to the digital transformation of small and medium enterprises. This shows that digital technology is the foundation of digital transformation, and SMEs should consider the different stages they are in and choose the right digital technology for them to contribute to digital transformation, instead of choosing digital technology blindly without analysis or simply using digital technologies to gain various benefits from digital transformation (J. Yu et al., 2022). This result is consistent with RBV's additional view that digital technology needs to be deeply integrated into business operations and management, combined with corporate strategy and people's digital skills, to form a strong dynamic capacity to realize the value of digital technology (J. Yu & Moon, 2021). This may also explain why many SMEs have invested in digital technology but digital transformation has not yet achieved much. Therefore, SMEs must understand and properly use different digital technologies to bring out their full value in supporting digital transformation.

Fifth, a digital transformation strategy has a suitable but insignificant impact on the digital transformation process of small and medium enterprises (Hypothesis 4/H4). Our findings are consistent with the findings of J. Yu et al., (2022), who found that digital orientation has a significant beneficial effect on digital innovation, as well as found by Yang et al., (2012) who found that technological orientation has a positive effect on innovative products. Our study complements the findings of J. Yu et al., (2022) that digital strategy also has a direct positive impact on digital transformation. Companies that are characterized as digitally oriented tend to deploy digital technologies in all functional areas and quickly embrace digital initiatives through commitment and appropriate thinking. Going digital means developing and acquiring new skills, competencies, and knowledge, which are important resources that can facilitate digital transformation. So, to do digital transformation, we have to do top-level design first. Previous studies have found that for successful digital transformation, companies must first develop a comprehensive digital transformation strategy. It should be considered an important part of the development strategy to embed data-driven concepts, methods, and mechanisms in the overall development strategy and systematically design digital transformation around the company's vision, goals, business plan, and other major strategic directions.

Sixth, government policy has no connection to business digital transformation. This may be because businesses have not taken advantage of the government's supportive policies or the government has not had policies that bring practical benefits to businesses. From the results of this study, it can be inferred that businesses need to actively learn and approach the government's supportive policies in digital transformation, at the same time, the government needs many practical policies. further to promote digital transformation in businesses.

6. Limitations and directions for further research

Despite great efforts, the study still has certain limitations. First, although the response rate to our study is acceptable, the surveys in this study were conducted only in small and medium enterprises in Thanh Hoa. Future studies on the digital transformation of SMEs would be helpful if SMEs from other provinces of Vietnam were included. In addition, the results of this study are based on survey data; Case studies will complement this study. Furthermore, we focus primarily on the supply-side factors in the digital transformation of SMEs. To better understand the dynamics of digital transformation in SMEs, it is also important to consider the demand side, such as consumer digital skills, distribution channels and socially responsible business models, or pressure from competitors.

7. Conclusion

This research helps us understand the resources SMEs need to deploy to succeed in their digital transformation. Leadership perception, Digital Technology, Digital Skills, Digital Strategy, and Corporate culture can help drive digital transformation, which in turn can improve the financial performance of SMEs. Based on studying the current situation of factors affecting the digital transformation of small and medium enterprises in Thanh Hoa, the study discussed and made suggestions for businesses and the government to promote the transformation process.

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PART 2.
DIGITAL ECONOMY, SUPPLY CHAIN & LOGISTICS

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Motives for Sustainable Consumption in Vietnam: A Case Study of Fast-Moving Consumer Goods

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ABSTRACT

The aim of this study is to investigate the motives behind sustainable consumption in the fast-moving consumer goods (FMCG) industry in Vietnam. Utilizing a qualitative approach through unstructured in-depth interviews, the research has identified several key motives, including health concerns, environmental knowledge, social influence, perceived quality/value, trust in suppliers, personal values, and demographic factors. The study provides managerial implications for businesses operating within the FMCG industry and serves as an initial groundwork for future quantitative research.

Keywords: sustainable consumption; motives; FMCG.

1. Introduction

Over the past decades, there has been a significant increase in research on sustainable consumption worldwide, with a central focus on products possessing sustainable attributes (Cohen, 2017). Consumers across the globe are progressively shifting towards green and environmentally friendly products, considering them as benchmarks for high-quality goods and services (Thogersen, 2010). They are willing to pay premium prices for products labeled with sustainable production standards (Lusk, 2009). This growing concern for sustainable development has prompted many companies to manufacture environmentally friendly products and demonstrate their commitment to environmental protection. Governments have also been developing policies to promote sustainable consumption, and most developing countries in Asia have implemented environmental protection laws. The increasing number of individuals willing to pay more for eco-friendly products is indicative of the expanding market for such goods.

The Fast-Moving Consumer Goods (FMCG) industry is recognized globally for its high competitiveness, as noted by Niedermeier et al. (2021). FMCG products are characterized by their quick turnover, relatively low cost, short lifespan, high demand, frequent purchases, quick consumption, low prices, and ability to be sold in large quantities (Kumar, 2007). However, the industry, along with its supply chains, has been a significant contributor to pollution and waste, primarily due to the use of plastic packaging, which aligns with a society characterized by overconsumption (Niedermeier et al., 2021). In response to these concerns, there has been a shift towards greener trends and sustainable alternatives in the development of home cleaning products. Consequently, the utilization of environmentally friendly FMCG products has become a practice aligned with sustainable consumption. By choosing such products, consumers not only satisfy their basic needs but also enhance their quality of life while contributing to environmental preservation and the well-being of future generations. It is important to note that research on sustainable FMCG products and consumer behavior towards these products in developed countries remains relatively limited.

Vietnam is currently grappling with environmental pollution, making sustainable production and consumption practices highly relevant (Le, 2018). To remain competitive in the market, the trend of "greening" branding is gaining popularity, with many businesses investing in production processes that prioritize the "green" and "clean" factors, establishing green brands associated with sustainable development. Research conducted by Nielsen Vietnam (2022) indicates that brands committed to being "green" and "clean" experience a relatively high growth rate of around 4% annually. Up to 80% of Vietnamese consumers are willing to pay more for products that contain environmentally friendly ingredients and are associated with "green" and "clean" brands (Nielsen Vietnam, 2022). However, sustainable consumption is often perceived as a disconnected and narrow activity with limited impact. Consequently, sustainability practices are not sufficiently advanced in Vietnam due to the lack of robust tools to regulate production and consumption behaviors. Additionally, the transition from consumer awareness to action is influenced by various factors. Research on consumer behavior in Vietnam, particularly within the FMCG industry, has provided minimal insights into the reception and choice of sustainable products.

This study aims to identify the motives that drive consumer buying behavior towards sustainable FMCG products. Through qualitative investigation steps, the research seeks to answer the following question: What motives do consumers consider when purchasing FMCG products with sustainable attributes?

2. Literature review

2.1. Sustainable consumption

Various definitions of sustainable consumption have been proposed by different authors, reflecting their focus on different aspects of this phenomenon. According to The Oxford Dictionary (2013), the term "sustainable" pertains to the capacity to maintain, uphold, or defend something, while "consumption" refers to the act or process of utilizing or using a resource. Kates et al. (2005) emphasize that sustainable development involves meeting current needs while ensuring that the ability of future generations to meet their own needs is not compromised. The concept of the triple bottom line, as discussed by Balderjahn et al. (2013), Norman and MacDonald (2004), and Slaper and Hall (2011), underscores the consideration of environmental welfare, economic gain, and social benefit in sustainable development. Aligned with this principle, sustainable consumption aims to adopt a well-balanced approach to consumption that is economically, socially, and environmentally beneficial, thereby contributing to the sustainable development of nations.

Lee (2014) defines sustainable consumption as an ecologically and socially responsible consumption habit, while Hornibrook et al. (2015) describe it as a consumption practice that addresses basic needs and enhances quality of life. Some researchers, including Hornibrook et al. (2015), Lorek and Fuchs (2013), and Wolff and Schönher (2011), approach sustainable consumption primarily from an environmental perspective, emphasizing waste reduction and the prudent use of natural resources. Conversely, other researchers, such as Bennett and Collins (2009), Lee (2014), and Mont and Bleischwitz (2007), focus on the aspect of safeguarding the needs of future generations.

As a broad concept, sustainable consumption can be viewed as unidimensional or multidimensional. Geiger et al. (2017) propose a cube model of sustainable consumption behaviors that comprehensively measures consumers' behavior, encompassing sustainable aspects (economic, social, environmental), consumption stages (purchase, use, disposal), and consumption sectors (food, housing, clothing, transportation, etc.). Quoquab et al. (2019) consider sustainable consumption as a multidimensional concept comprising three fundamental aspects: concern for environmental well-being, improvement of quality of life, and consideration for the well-being of future generations.

2.2. Sustainable consumption motives

Considerable research has been dedicated to exploring the motives behind sustainable consumption. Geng et al. (2017) identified several key motives driving sustainable consumption behavior, including education, sustainable awareness and attitude, social influence, effectiveness of energy saving and emissions reduction, and the differentiation of sustainable products. Vermeir and Verbeke (2006) conducted an examination of predictors of sustainable consumption and investigated multiple factors such as involvement, perceived availability, certainty, perceived consumer effectiveness, values, and social norms. Bulut et al. (2017) specifically focused on the impact of gender and generation on sustainable consumption. Sharma and Jha (2017) examined factors such as values, environmental attitude, and perceived consumer effectiveness in their study. Rezvani et al. (2018) explored hedonic motivations, gain motivations, and normative motivations in relation to sustainable consumption. Ukenna and Nkamnebe (2017) centered their study on the role of attitude as an antecedent of sustainable consumer behavior (SCB). Finally, Lee (2014) investigated the influence of parental factors, attitude toward sustainable development efforts, and supportive behaviors for environmental organizations. Table 1 provides a summary of the sustainable consumption motives identified in previous studies.

Table 1: Summary of sustainable consumption motives

Author and year	**Motives**
Geng et al. (2017)	Education, Sustainable awareness and attitude, Social influence, Effectiveness of energy saving and emissions reduction for sustainable products, Differentiation of sustainable products from regular products
Vermeir and Verbeke (2006)	Involvement, perceived availability, certainty, perceived consumer effectiveness, values, and social norms
Bulut et al. (2017)	Gender and generation

Sharma and Jha (2017)	Values, environmental attitude, and perceived consumer effectiveness
Rezvani et al. (2018)	Hedonic motivations, gain motivations, and normative motivations
Ukenna and Nkamnebe (2017)	Attitude
Lee (2014)	Parental factors, attitude toward sustainable development efforts, and supportive behaviors for environmental organizations

Source: Review from the literature

In Vietnam, the concept of sustainable consumption is still relatively new, and there has been limited research conducted in this field. Existing studies primarily focus on understanding the factors that influence intention and behavior related to sustainable consumption, with particular attention given to young consumers (Hoang Thi Bao Thoa, 2017; Hoang Trong Hung et al., 2018). Previous research conducted in Vietnam has predominantly adopted a quantitative research approach, utilizing established models such as the theory of planned behavior (TPB) to identify factors that affect green consumption. For instance, Nguyen The Khai and Nguyen Thi Lan Anh (2016) identified specific factors influencing consumers' green consumption decisions in Ho Chi Minh City, including attention to environmental issues, environmental awareness, altruism, social influence, and perceived effectiveness. Similarly, Le-Huy Tran et al. (2022) expanded on the TPB and TAM models by incorporating additional influencing factors such as attitude, behavior control, perception of consequences, responsibilities, and subjective norms. Nguyen Kim Nam (2015) investigated the role of trust in the purchasing behavior of organic food among young people and demonstrated, based on the TPB theory, that these aforementioned factors have a positive impact on the purchase intentions of consumers with high levels of trust, but do not significantly influence the behavior of those with low levels of trust. The influence of factors such as attitude, interest, and awareness (related to the environment) can be analyzed at both a general and local level (Ho Huy Tuu et al., 2018; Hoang Trong Hung et al., 2018). Furthermore, traditional factors including price, product quality, green product characteristics, and availability are also mentioned in the literature (Le Bao Han, 2020). Despite these efforts to identify and confirm various factors and their impact on sustainable consumption intentions and behavior, very few studies have specifically investigated the FMCG industry. Within the realm of sustainable consumption, food has been the most extensively researched sector in Vietnam, as consumers prioritize health concerns (Ha Thi Mai Vo et al., 2018).

2.3. FMCG and its sustainable attributes

The research focus on sustainable consumption has significantly increased, with considerable attention directed towards products with sustainable attributes. Sustainable products can be defined as those possessing positive social and/or environmental characteristics (Licht et al., 2010). Retail outlets offer a range of products with sustainability attributes, such as organic and fair-trade labels, non-GMO foods, self-declared quality, natural and safe standards, and environmentally friendly packaging (e.g., reduced packaging materials, biodegradable packaging) (Bangsa & Schlegelmilch, 2020). These product parameters and standards aim to provide consumers with assurance and information to engage in sustainable consumption. This is particularly crucial given that trust is often relied upon for assessing sustainability attributes, making it challenging for buyers to evaluate pre- and post-purchase information regarding the environmental and societal impact of products throughout their production processes, even when seeking information or drawing from experience (Janssen & Langen, 2017).

In the fast-moving consumer goods (FMCG) industry, businesses strive to adopt sustainable business models, encompassing practices such as greener product production, environmentally friendly packaging, sourcing of ecological raw materials, and the adoption of green transportation and logistics (Lehner et al., 2016). As consumer consumption habits in the FMCG industry undergo significant changes, the main challenge for manufacturers lies in gaining consumer acceptance of new, more sustainable product solutions (Lehner et al., 2016).

Globally, the FMCG industry is known for its high competitiveness (Niedermeier et al., 2021). FMCG and supply chains have contributed to pollution and waste, particularly due to the use of plastic packaging in our consumption-driven society (Niedermeier et al., 2021). Home cleaning products, in particular, have witnessed a shift towards green and sustainable alternatives. Therefore, the utilization of environmentally friendly FMCG products aligns with sustainable consumption practices. These products not only meet buyers' basic needs but also improve their quality of life while benefiting the environment and safeguarding the interests of future generations. However, research on sustainable FMCG products and consumer behavior towards such products remains limited, especially in developed countries, and even scarcer in Vietnam, creating a significant research gap in this field.

3. Method

This study employed a qualitative approach to address the research question, utilizing the in-depth interview method with an unstructured questionnaire. Unstructured interviews were conducted based on the concept that the interviewer did not predefine the interview's structure, its direction, or the specific questions to be asked (Qu & Dumay, 2011). The focus was on exploring the reasons behind consumers' decisions to purchase ecological FMCG products, without following a predetermined set of questions.

The number of participants in the in-depth interviews was determined using Kvale's method (2008), which suggests that the interview process can conclude when the researcher no longer encounters new ideas or insights after conducting multiple interviews with the same group. Additionally, McCracken (1988) suggested that a sample size of eight interviews can be sufficient for qualitative research projects. As a result, we selected a small yet diverse sample, comprising a total of 24 individuals: two manufacturers, seven distributors/retailers, and 15 consumers (Table 2).

Table 2: In-depth interview participants

Interviewees	Quantity (person)	Description	Interview time
Producer	2	- Director, sustainable home hygiene products, Vietnamese brand. - Manufacturer, environmentally friendly cleaning products, Vietnamese brand.	60-90 minutes
Distributor/ retailer	7	Distributors/retailers, home cleaning products using green technology	45-60 minutes
Consumers	15	Households (heads of households), those who tend to consume green in Hanoi, Hue, Da Nang and Ho Chi Minh City.	45-60 minutes

Source: Interview team

The data collection process involved engaging diverse stakeholders from the supply chain to ensure comprehensive perspectives. Online in-depth interviews were conducted between June and July 2022. The FMCG industry was categorized into two groups: the food group and the non-food group. For manufacturers and distributors, a green brand specializing in sustainable home cleaning products, which utilize safe natural ingredients as alternatives to chemical-rich products, was selected. As for consumers, unstructured questions were employed to encourage interviewees to freely share their insights, encompassing both food and non-food items.

Within the consumer group, individuals knowledgeable about green consumption and actively using sustainable products were targeted. This was achieved through personal relationships, referrals, and forums dedicated to discussions on green and healthy living. The interview process involved a combination of audio recording and note-taking. Subsequently, the collected data was aggregated and subjected to content analysis. This analysis followed the method of grouping recurring topics and selecting prominent ones, complemented by existing theoretical research. The analysis process involved reading, coding, and discussions with the research team, iteratively refining the coding process with the assistance of QDA Miner.

4. Results

4.1. Health concerns

In the majority of the interviews conducted, participants emphasized the significant role of health as the primary determinant influencing consumers' purchasing decisions when it comes to safe FMCG products. Expressions such as "beneficial for health," "reduced chemical usage," and "safeguarding the health of their families" were prevalent among the responses. According to the manufacturers and distributors who were interviewed, the health factor has emerged as a dominant concern and influential factor in consumers' decision-making processes.

One of the distributors stated, "Based on my observations, consumers exhibit a strong inclination towards health-related issues. They are persuaded by products that minimize harm in comparison to other alternatives."

Similarly, a producer highlighted, "Consumers opt to purchase this product due to its chemical-free ingredients. We also place significant emphasis on this aspect within our marketing content, aiming to disseminate information that facilitates the transformation of consumer purchasing habits. However, the transition towards environmental awareness may require more time."

4.2. Environmental knowledge

Consumer awareness and knowledge of environmental issues play a pivotal role in fostering pro-environmental interests, attitudes, and sustainable lifestyles. The interviewed consumers demonstrated a significant level of consensus in their responses regarding the link between environmental awareness and sustainable product purchasing behavior. Quoquab and Mohammad's (2020) in a recent comprehensive meta-study highlighted that consumers' comprehension of sustainable consumption, attitudes towards sustainability, and environmental concerns act as mediating factors, leading to consumer commitment and active engagement in sustainable consumption practices.

Moreover, individuals' occupational backgrounds and opportunities to access environmental information have a notable influence on their level of environmental knowledge. The interviewees further emphasized that environmental malpractices have a direct impact on human health and future generations. Consequently, they expressed that purchasing ecological products contributes to environmental protection.

While environmental concerns do promote green purchasing behavior, it remains a secondary consideration in the product communication process within Vietnam. The number of consumers who actively prioritize ecological factors when making purchasing decisions is still relatively low, often falling into the category of "conditional purchases."

4.3. Social Influence

When addressing environmental awareness, a considerable number of comments underscored the significance of "social influence." The community's role in the adoption of information and participation in the use of sustainable products was frequently emphasized in the interviews, both by retailers and consumers. The concept of social influence can be comprehended through the subjective norms proposed by Ajzen (1991) in the Theory of Planned Behavior (TPB). Subjective norms refer to an individual's perception of social pressures regarding whether or not to engage in a specific behavior. Consumers place great trust in their family, friends, and community members, and their inclination to make purchases is strongly influenced by the environmental factors they encounter on a daily basis.

One consumer stated, "With the advent of the internet and particularly social networking platforms like Facebook, access to information has become extremely convenient. However, this ease of access is accompanied by information overload, explosive forms of marketing, and advertising. As a result, buyers tend to be more skeptical and cautious. They feel more assured when they observe the behavior of those around them."

Furthermore, the advertising factor also exerts a significant influence on the green product purchasing behavior within the FMCG sector. Several interviewees acknowledged the effectiveness of green marketing across multiple channels when discussing the level of information accessibility and knowledge regarding sustainable consumption. This finding aligns with Piligrimiene et al.'s (2020) work, which identified the "sustainable consumption promotion" factor as a significant contributor.

4.4. Perceived quality (value)

Perceived quality or value, specifically the trade-off between quality and cost, is recognized as a significant factor influencing consumers' selection of sustainable products. In the interviews, manufacturers attributed the choice of green FMCG products by buyers to reasons such as health concerns, environmental benefits, and perceived quality. A majority of the interviewees indicated that products offering environmental and human benefits are positioned to target consumers of higher socio-economic status who possess better affordability. Previous studies have also identified perceived effectiveness and value as drivers of sustainable consumption behavior (Sharma & Jha, 2017) that distinguish these products from conventional alternatives (Geng et al., 2017).

One producer expressed, "Consumers are seeking safer products to promote a healthier and more sustainable lifestyle, which poses a challenge for producers in their sustainability efforts. Our brand targets middle-class customers, and when their preferences change, we must consider whether our product justifies its cost or not."

Furthermore, a consumer shared, "I frequently purchase shampoos made from natural ingredients, handmade soaps, and biodegradable dishwashing liquid for my family. I have completely abandoned certain chemical-based products and switched to green brands, despite their higher cost. To me, these green products offer superior quality."

4.5. Trust in suppliers

During the discussions, trust emerged as a crucial factor mentioned by participants in their decision-making process when purchasing eco-friendly and healthy FMCG (Fast-Moving Consumer Goods) products. Trust, widely explored in consumer behavior research, was highlighted as significant in relation to corporate reputation, which relies on product quality and social responsibility initiatives. These factors hold great value for consumers who possess knowledge and concerns regarding the environment and social responsibility.

Trust is fostered through environmentally friendly labels, packaging, and transportation, as these elements contribute to building consumer confidence. In the interviews, comments from environmentally conscious consumers consistently emphasized that products with third-party labels and certifications (such as ecological labels, organic labels, and safety labels) enhance customer trust. Furthermore, consumers increasingly prioritize green packaging and transportation, as they are deeply concerned about reducing plastic waste and minimizing shipping distances to ensure product quality and minimize negative environmental impacts. Respondents identified the use of ecological packaging and transportation as originating from consumers' environmental awareness and concerns.

4.6. Personal values and demographic factors

The discussions conducted revealed numerous factors that influence consumers' purchasing decisions in the FMCG industry, with a particular focus on personal values, lifestyle choices, and certain demographic factors such as education level, age group, occupation, income, family size, and residential area.

The adoption of a green, nature-oriented, and minimalist lifestyle was found to significantly impact consumers' preference for environmentally friendly FMCG products. Embracing minimalism not only aligns with environmental values but also offers economic benefits by reducing unnecessary expenditures. This motivates a segment of consumers to curtail their spending on conventional products and instead opt for ecological alternatives. During the interviews, it was observed that two distinct groups of green consumers emerged: the first group consisted of middle-aged individuals with higher incomes and a strong environmental awareness, while the second group prioritized values such as kindness, personal duty, self-responsibility, and tradition. Although the income of the second group might not be substantial, they still allocate a significant portion of their budget to purchasing green products, and their buying behavior remains relatively stable. Previous studies have identified personal values as influential factors, including attachment level, sense of belonging, benevolence, kindness, affinity for nature, perceived moral division, and personal preference (Marzouk & Mahrous, 2020).

We have summarized the research result in the Figure 1 below:

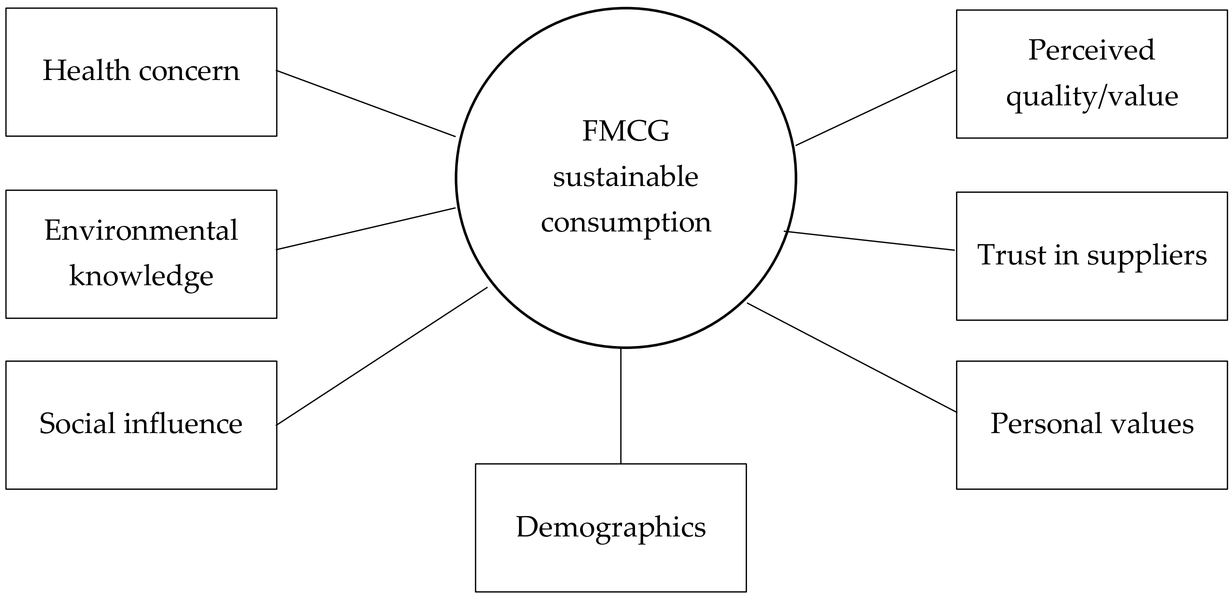

Figure 1: Motives for sustainable consumption in Vietnam

Source: Interview analysis result

5. Conclusion

Sustainable consumption has gained increasing attention in Vietnam, both from a production and consumption standpoint. Sustainable consumer groups have gradually emerged through the adoption of purchasing behaviors that prioritize products with sustainable attributes. The FMCG industry in Vietnam is undergoing a transformative process to adapt and contribute to sustainable development.

Utilizing an exploratory approach and qualitative methods, this study conducted in-depth interviews with 24 individuals knowledgeable about sustainable consumption. The study identified several motives that shape consumer behavior regarding the consumption of FMCG products with sustainable attributes, namely environmentally friendly and safe for health. These motives include health concerns, environmental knowledge, social influence, perceived quality (value), trust in suppliers, personal values, and certain demographic factors.

The research findings contribute to a deeper understanding of consumer behavior, particularly within the realm of sustainable consumption and the FMCG industry. Businesses need to employ flexible and nuanced marketing strategies tailored to specific consumer groups. A comprehensive understanding of the sustainable product market, from both the supply and demand sides, is essential for FMCG firms to develop sustainable business strategies and effectively communicate the message of a more sustainable lifestyle. Specifically, green marketing strategies should be carefully tailored to the niche market of sustainable consumption, focusing on consumers who prioritize green, organic, and safe products. Furthermore, green marketers should explore engaging strategies to attract less interested consumer groups through campaigns promoting green consumption.

As with other studies utilizing qualitative methods, this study has limitations in terms of generalizability. Given its aim of initially understanding the emerging sustainable FMCG consumer market in Vietnam, the study relied on in-depth interviews to gather extensive information. However, this method carries the disadvantage of subjective assessments from respondents in some cases. Future research should employ quantitative methods with larger sample sizes to develop the identified influencing factors. The motives identified in this study still remain relatively broad and would benefit from further clarification. More comprehensive relationships can be examined using quantitative models that apply existing theories of sustainable consumer behavior. Additionally, the experimental method represents an effective quantitative approach to explore this topic further.

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Factors Affecting the Use of E-Port in Cai Mep - Thi Vai Seaport Cluster, Ba Ria-Vung Tau Province

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ABSTRACT

The rapid development of the shipping industry and the growing significance of digitization have placed immense pressure on port operators to enhance operational efficiency through digital transformation and the implementation of E-Port systems. In light of this, the objective of this study is to identify and examine the factors that influence E-Port utilization within the Cai Mep - Thi Vai port cluster, aiming to advance the logistics and seaport sectors in Ba Ria - Vung Tau province, Vietnam. To achieve this, a comprehensive mixed-method approach consisting of a literature review, surveys, and interviews, was employed to gather comprehensive data. The findings demonstrate that transportation, infrastructure, finance, telecommunications, information technology, and human resources significantly impact E-Port utilization. Understanding the relative importance of these factors is crucial for optimizing logistics operations and facilitating informed decision-making. The insights gained from this research provide valuable guidance for policymakers, port operators, and stakeholders, empowering them to enhance E-Port utilization. Ultimately, this study contributes to an improved understanding of the factors that shape E-Port utilization, thereby propelling advancements within the logistics and seaport sectors.

Keywords: Cai Mep - Thi Vai seaport, E-Port, logistics, Information technology.

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1. Introduction

The Cai Mep - Thi Vai Seaport Cluster in Ba Ria-Vung Tau Province has become a crucial hub in Vietnam's logistics sector [1]. With the rapid growth of the shipping industry and the increasing importance of digitalization, it is essential to understand the factors influencing the utilization of E-Port in this cluster. In recent years, the shipping industry has experienced significant advancements driven by the ubiquity of the Internet and information technology [8]. However, the Russia-Ukraine conflict has disrupted businesses, particularly logistics enterprises and port operators [5]. The escalating freight rates and high logistics costs in Vietnam further highlight the urgent need to identify the factors affecting E-Port utilization [20]. Limited infrastructure, information systems, administrative procedures, transportation processes, and resources contribute to these rising costs. In this context, integrating digital technology, specifically through E-Port solutions, presents a practical and transformative approach for port operators to improve efficiency and maintain competitiveness.

In order to tackle these urgent challenges and capitalize on the opportunities brought about by digital transformation, it is crucial to examine the factors that impact the utilization of E-Port in the Cai Mep - Thi Vai Seaport Cluster. By researching these factors, we aim to provide insights into how transportation means, transportation infrastructure, finance, telecommunications, information technology, and human resources impact the utilization of E-Port in this cluster. Understanding these factors will enable us to identify areas for improvement and develop effective strategies to enhance E-Port utilization. Through this research, we seek to contribute to the ongoing efforts in the logistics industry and provide valuable recommendations for policymakers, port operators, and stakeholders to promote the efficient use of E-Port in the Cai Mep - Thi Vai Seaport Cluster.

In the subsequent sections, we will provide an overview of the Cai Mep - Thi Vai areas, conduct a comprehensive literature review, outline our research model, detail our methodology, and present the findings on the factors influencing E-Port utilization. Through thoroughly exploring these factors, our objective is to illuminate the critical aspects that significantly impact the effective implementation of E-Port in this prominent seaport cluster.

2. Literature Review

Transportation, transportation infrastructure, finance, telecommunications, information technology, and human resources are essential factors that significantly influence port operations and logistics efficiency. In this literature review, we discuss relevant studies that highlight the importance of these factors in the context of E-Port utilization.

2.1. Transportation

Transportation is critical in ensuring efficient port operations, encompassing road, rail, and waterway networks. Yos Sunitiyoso et al. [15] conducted a study to analyze the impact of different transportation modes on port performance. The findings revealed that an integrated and well-connected transportation network positively affects port efficiency and productivity. Additionally, the quality of transport connections significantly influences port selection, even in developed countries like France [9]. These findings highlight the necessity of establishing seamless intermodal transportation systems to optimize port operations and implement digital port solutions.

2.2. Transportation Infrastructure

The significance of transportation infrastructure for E-Port utilization has been widely recognized in the literature. Ziaul Haque Munim and Schramm [16] investigated the relationship between infrastructure development and port competitiveness. Their findings suggest that investments in port infrastructure, such as berths, handling equipment, and intermodal connectivity, are crucial for improving port efficiency and attracting more shipping activities. This aligns with the importance of transportation infrastructure in supporting E-Port utilization.

2.3. Finance

The role of finance in E-Port utilization is evident in studies that examine port financing models and financial strategies. Burns [2] analyzed recent trends and critical issues in financing container terminal development. The study emphasized the importance of sufficient financial resources and favorable financing mechanisms for port development, technological advancements, and infrastructure improvements. These factors ultimately contribute to optimizing E-Port utilization. Wu and Fu [14] also acknowledge the significance of finance in this context, highlighting its role in supporting the efficient utilization of E-Ports.

2.4. Telecommunications and Information Technology

Integrating advanced telecommunications and information technology systems is imperative for efficient E-Port operations. M. Attia [12] explored the impact of information and communication technology (ICT) on port efficiency and competitiveness. The study revealed that adopting ICT tools, such as real-time data exchange systems and digital platforms, improves communication and information flow, enhancing E-Port utilization. Adabere et al. [4] also examined the relationship between digitalization and port efficiency. They found that ports that embrace digital technologies exhibit higher levels of productivity and efficiency, underscoring the role of information technology in optimizing port operations.

2.5. Human Resources

The role of human resources in port operations and E-Port utilization has been studied extensively. Buchari and Hasan Basri [6] investigated the significance of human capital in port development. Their research highlights the importance of a skilled and knowledgeable workforce in optimizing E-Port utilization. Effective training programs, workforce development initiatives, and human resource management practices are crucial for enhancing operational efficiency and ensuring smooth cargo handling processes.

Building upon the insights from the literature review, this study aims to develop a comprehensive research model that integrates the critical factors of transportation, transport infrastructure, finance, telecommunications, information technology, and human resources in the context of port operations. The model will be empirically tested using a dataset collected from multiple stakeholders in the Cai Mep - Thi Vai port cluster, including port operators, shipping companies, and relevant government agencies. By analyzing the data, this study seeks to uncover the relationships and impacts of these factors on E-port utilization and identify potential areas for improvement and strategic interventions.

3. Overview of the situation of using E-Port at Cai Mep - Thi Vai areas

The Cai Mep - Thi Vai seaport cluster in Ba Ria-Vung Tau province has experienced significant formation and development, establishing itself as a prominent port hub in Vietnam renowned for its capability to handle super-large mother ships. According to The Container Port Performance Index (CPPI) 2022, the cluster ranks 12th globally regarding ship and cargo throughput [18]. The adoption of the E-Port system within this cluster has witnessed remarkable growth, revolutionizing the transaction process between customers and the various entities involved in the port ecosystem, including seaports, shipping lines, and logistics service providers.

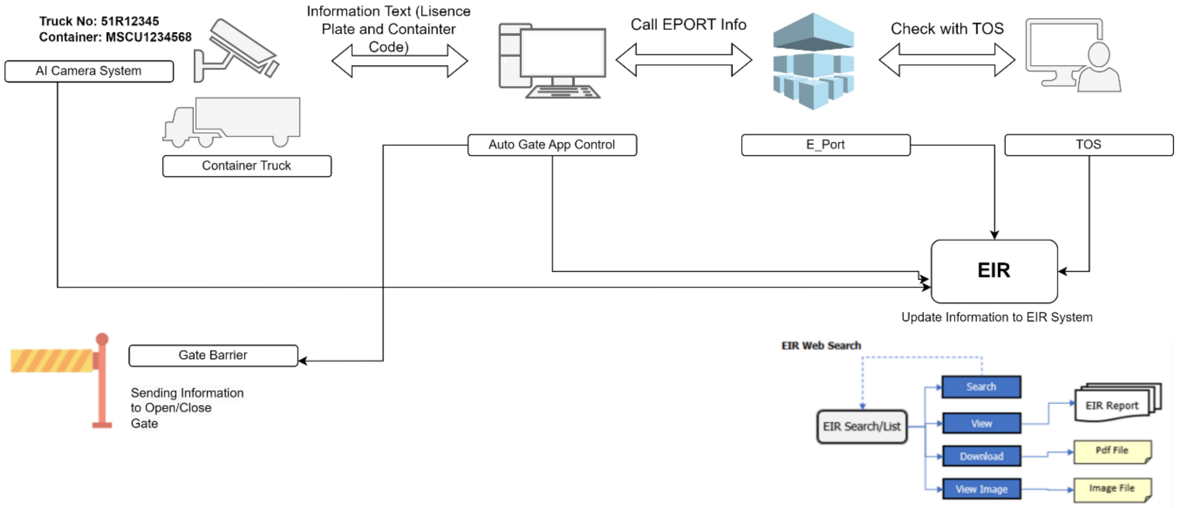
Implementing the E-Port system has delivered substantial convenience and benefits to users and management agencies. By digitizing operations and enabling online interactions, the E-Port system facilitates time and resource savings, streamlines document management, and enhances overall operational efficiency. Particularly noteworthy is the introduction of electronic delivery orders (EDO) by shipping lines in October 2019, further augmenting the capacity of the E-Port system and contributing to improved service quality and enhanced customer convenience. While Saigon Newport Corporation pioneered implementing the E-Port system in 2011, offering online platform services to customers, other ports within the Saigon Port system and Vinalines have also transitioned towards E-Port adoption [24]. However, their current offerings are limited in functionality and lack broader customer applicability.

Table 1.1 Statistics of E-port Usage at Cai Mep – Thi Vai

Enterprise	E-Port Implementation	Terminal Operations System
Saigon Newport Corporation	Tan Cang Saigon implemented the first E-Port in Vietnam at the beginning of 2016 and was internally developed by the Information Technology Department of Tan Cang Saigon Corporation. This is the earliest and most comprehensive E-Port system deployed to date in Vietnam.	TOPX (RBS) for planning and managing operations and TOPO for managing container data. TOPOVN is developed by RBS and TCIS (Tan Cang Information Technology Solutions Joint Stock Company)
Cai Mep International Terminal Co., Ltd. (CMIT)	Limited offers of services: cargo tracking, electronic invoices, online refunds, vessel departure reports	Navis (N4, SPARCS)
SP-SSA International Terminal (SSIT)	SSIT utilizes an application called Forecast, provided by Tideworks, to facilitate seamless communication between shipping lines, transportation companies, and other parties. The web-based platform allows customers to access a portal for cargo information and register for services before arrival at the port. This leads to reduced customer	Tideworks (Spinnaker, Traffic Control)

	service costs, improved transaction time at the port, and the elimination of unnecessary paperwork storage.	
Gemalink International Port	Gemalink uses the SmartPort technology provided by CEH IT Company for its port system, which includes a range of essential features for an electronic port, such as online order registration, online payment, electronic documents, E-DO, E-Gate, and integrated online data retrieval across multiple ports. This technology is also utilized in the port systems of Gemadept.	The company uses multiple suppliers for their port systems, including CATOS, SmartPort, and River Gate.

Figure 1. Model of using E-Port at Cai Mep - Thi Vai areas.



Gemalink International Port is the newest port in the Cai Mep - Thi Vai area to have implemented an intelligent port system on May 12, 2021 [21]. The port will refine its procedures and systems toward a completely innovative port model shortly.

Transport and port operating companies strive to provide services through digitalization in most regional ports. The reason is that a company with a modern information system allows for access to new and more successful business models. Additionally, adopting the E-Port system has been recognized as a crucial driver for enhancing the port's competitiveness, especially in developing countries like Vietnam. In the prevailing digital era, the deployment of the E-Port system has become indispensable for port operators to remain at the forefront of technological advancements and effectively meet the evolving needs of the industry.

4. Research Model and Data

To attract investors to the E-Port in the Cai Mep - Thi Vai port cluster, the research methodology of this project used a simple random sampling method [3,17,19]. The formula for determining the sample size n is calculated as follows: ε is the acceptable sampling error range of ≤

2%; the confidence level is 95%. The study selected a 5% proportion; therefore, the calculated sample size n is:

The calculated sample size for the survey is obtained.

$\varepsilon = 2\%$; $p = 5\%$; $q = 98\%$; $\alpha = 5\%$; $z_{\alpha/2} = z_{0,025} = 1,96$

$$n = \frac{Z^2(p.q)}{\varepsilon^2} = \frac{1,962^2 .0,05.0,98}{0.02^2} = 47$$

An official research survey table consists of 6 representative rating scales for the influencing factors (with 36 observed variables) and one representative rating scale for the satisfaction level of foreign direct investors in the enterprise (with three observed variables). Therefore, the minimum sample size for the study is n = 47 research subjects. The study collected data from 50 operating enterprises in the province of BR-VT (accounting for 10% of the total number of seaport, logistics, and transportation service enterprises). The survey was conducted from January 2023 to March 2023. The data was entered and processed using IBM SPSS software (Statistical Package for Social Science) version 20 and statistical algorithms [11].

The main content of the study is to collect, analyze, and propose solutions to increase the utilization of E-Port in the Cai Mep - Thi Vai port cluster in Ba Ria - Vung Tau province. The study mainly reflects the status of the factors: transportation infrastructure, telecommunications, finance, transportation vehicles, information technology, and human resources.

4.1. Research Methodology

To suit the conditions of the Cai Mep - Thi Vai port cluster in Ba Ria - Vung Tau province, the research team conducted a workshop with experts from port operators, logistics service providers, officials from the Customs Department, the Department of Industry and Trade, and the Department of Transport, to identify the key factors influencing the use of E-Port in the Cai Mep - Thi Vai port cluster.

Based on the results of the research workshop, the study proposed the main factors affecting the use of E-Port in the Cai Mep - Thi Vai port cluster, including:

(1) Transportation infrastructure (TI): Land area, road, port bridges

(2) Telecommunications (TC): Broadcasting stations, 5G network, smartphones

(3) Finance (FI): Payment methods, banks, capital sources, fixed and working capital

(4) Transportation (TR): Vehicles, road, rail, connecting traffic and waterways

(5) Information technology (IT): Computers, software, artificial intelligence (AI)

(6) Human resources (HR): Abundant labor force, trained labor, disciplined labor, language proficiency, and IT application skills.

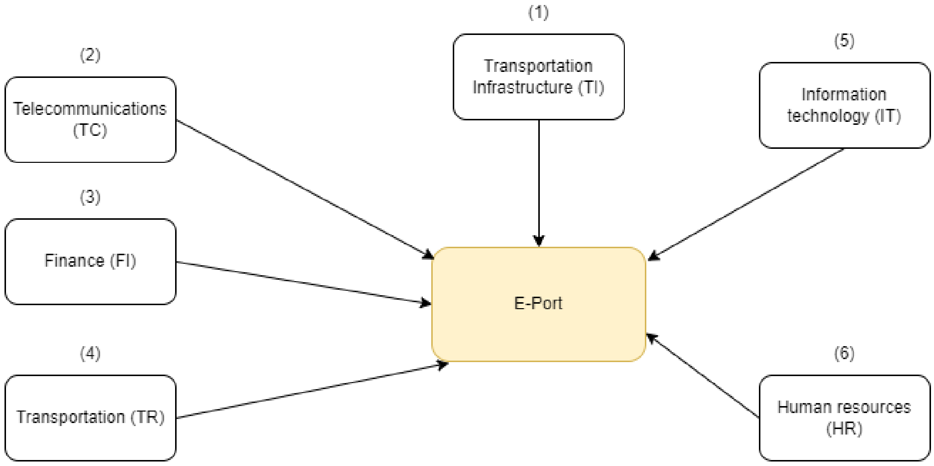


Figure 1. Research Model

5. Research Results

5.1. Research results

- *Step 1 Factor Analysis*

A study was conducted using six representative measurement scales for influencing factors (36 observed variables) and one measurement scale representing the level of E-Port usage (with three observed variables). After conducting Cronbach Alpha tests, the following results were obtained:

These factors are grouped into seven categories: transportation infrastructure (TI), telecommunications (TC), finance (FI), transportation (TR), information technology (IT), human resources (HR), and abundant labor force (AL).

Table 4.1. Characteristics And Measurement Scale of Good Quality

Measurement Scale	**Factors**	**Cronbach Alpha**
TI	Transportation infrastructure	0,915
TC	Telecommunications	0,926
FI	Finance	0,927
TR	Transportation	0,944
IT	Information technology	0,926
HR	Human resources	0,950
EP	E – Port	0,852

All measurement scales met the reliability requirement with a value greater than 0.7, where the lowest was the E-Port usage level with α=0.852 and the highest was the human resources measurement scale with α=0.950.

Testing the appropriateness of EFA:

Table 4.2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0,878
Bartlett's Test of Sphericity	Approx. Chi-Square	3,581.643
	Df	50
	Sig.	0,000

According to the Kaiser-Meyer-Olkin (KMO) test with a value of 0.878, which satisfies the condition of 0.5 < KMO < 1.0, exploratory factor analysis (EFA) is appropriate for real-world data. Bartlett's test of sphericity with a Sig. < 0.05 indicates that the observed variables have a linear correlation with the representative factor.

The EFA model reveals that all characteristic variables have factor loading coefficients greater than 0.55. Two representative factors affect the use of E-Port in the Cai Mep – Thi Vai port cluster, which is organized differently from the initial theoretical model. These factors are grouped into seven categories: transportation infrastructure (TI), telecommunications (TC), finance (FI), transportation (TR), information technology (IT), human resources (HR), and abundant labor force (AL). Based on the quality test of the scale and the EFA model test, there are seven representative scales for factors that affect E-Port and one representative scale for the degree of E-Port with 36 characteristic variables.

- *Step 2: Multivariate regression analysis*

In order to identify the factors that affect the use of E-Port in the Cai Mep – Thi Vai port cluster, a multiple linear regression model with the form E-Port = β0 + β1F1 + β2F2 + β3F3 + β4F4 + β5F5 + β6F6 + ei is utilized. Here, β1, β2…, βk are coefficients that need to be determined using the correlation between the degree of E-Port and the influencing factors. The variables for regression analysis are determined by calculating the scores of each factor.

The regression coefficients for the factors that affect the use of E-Port in the Cai Mep – Thi Vai port cluster are essential for identifying appropriate solutions, making adjustments, and creating high and sustainable profits for businesses operating in the cluster. The significance test results (see Table 4.3) indicate that the transportation infrastructure, telecommunications, and human resources variables have a Sig. < 0.01, thus the transportation infrastructure, telecommunications, finance, transportation, information technology, and human resources variables are significantly correlated with the degree of E-Port use with a 99% confidence level.

Table 4.3 Regression coefficients (Coefficients)

Model	Unstandardized Coefficients B	Sig.
(Constant)	0,000	1,000
F1- TI	0,375	0,003
F2-TC	0,192	0,004
F3-FI	0,285	0,002
F4-TR	0,183	0,008
F5-IT	0,424	0,001
F6- HR	0,162	0,000
F7- AL	0,052	0,783

It is transforming the level of correlation concentration insignificance with logistics capability to below 95% reliability (rejected). Based on the test results, the regression function of the E-Port level for the Cai Mep - Thi Vai port cluster in Ba Ria-Vung Tau province is E-Port level = 0.000 + 0.375 F1 + 0.192 F2 + 0.285 F3 + 0.424 F4 + 0.183 F5 + 0.162 F6. The regression function shows that out of the six tested factors, there is a positive correlation with the E-Port level. Among these factors, the information technology factor with a regression coefficient of β3 = 0.424 (Sig=0.003) is significant, strongly affecting the use of E-Port in the Cai Mep - Thi Vai port cluster in Ba Ria-Vung Tau province.

- *Testing the appropriateness level of the model and the level of explanation of the model:*

The level of using E-Port in the Cai Mep - Thi Vai port cluster in Ba Ria-Vung Tau province is explained by the factors (Transport infrastructure, Telecommunications, Finance, Transportation, Information Technology, Human resources). The test results on IBM SPSS 20 software are as follows:

R	R Square	Adjusted R Square	Change Statistics Sig. F Change	Durbin-Watson
0,672	0,452	0,389	0,000	0,751

Table 4.4 Model Summary

In the table above, the overall correlation coefficient is R = 0.672, indicating a relatively strong relationship between the degree of E-Port utilization and other tested factors. The six tested factors explain 38.9% (R2=0.389) of the variation in the degree of E-Port utilization. Thus, the variation in E-Port utilization at the Cai Mep-Thi Vai port cluster in the province of BR-VT is explained by independent variables such as transportation infrastructure, telecommunications, finance, transportation, information technology, and human resources.

The suitability of the variance analysis with Sig.<0.01 shows that the model fits the real data. In other words, the independent variables are linearly correlated with the dependent variable with 99% confidence.

5.2. Regression discussion:

The unstandardized regression coefficients determine the influence of independent variables: transportation infrastructure 23.13%, telecommunications 11.84%, finance 17.58%, transportation 26.16%, information technology 11.19%, and human resources 9.99%. Therefore, the order of influence of factors on the degree of E-Port is as follows: transportation, transportation infrastructure, finance, telecommunications, information technology, and human resources.

6. Solutions to promote digital transformation at the Cai Mep-Thi Vai areas

The research outcomes hold significant practical implications for fostering digital transformation at the Cai Mep-Thi Vai Seaport Cluster. By examining transportation, transportation infrastructure, information technology, telecommunications, finance, and human resources, the study offers valuable insights into the challenges and opportunities for implementing the E-Port model effectively in the region. Furthermore, a comparative analysis with previous studies enhances our understanding of the research's contributions and alignment with existing knowledge.

- Transportation:

Pham's study [13] reveals the direct impact of transportation on logistics performance. Nevertheless, the Cai Mep-Thi Vai port area experiences a disparity, where only 15% of containers undergo customs procedures at BR-VT and utilize roads. In comparison, the remaining 85% heavily depend on barges for transportation to HCMC and other locations for customs clearance. This lack of synchronous traffic connection with regional highways poses a significant challenge, hindering the smooth transfer of goods through the port system [13]. Consequently, meticulous planning and systematic implementation of transport infrastructure become imperative to address this issue effectively. Transportation contributes (26.16%) to E-Port deployment in the Cai Mep area, highlighting the importance of intermodal connectivity and integration of roads, rail, water, and air traffic networks.

- Infrastructure:

High-quality port infrastructure, including berths, handling equipment, and intermodal connectivity, is critical in enhancing logistics performance [16]. The modern handling equipment in the Cai Mep-Thi Vai port cluster facilitates efficient operations of large vessels on a global scale. Transportation infrastructure significantly (23.13%) influences E-Port utilization, driven by rising customer demands for operational efficiency amidst increasing logistics costs. To meet these demands, port operators prioritize rationalizing post-handling activities, optimizing supply chain management, and reducing turnaround time, enhancing operational efficiency and competitiveness.

- Telecommunications and Information Technology:

The successful implementation of the E-Port model in Cai Mep-Thi Vai heavily depends on robust telecommunications and information technology, contributing 11.84% and 11.19%, respectively. The complex nature of container shipping processes, involving multiple parties and intricate information security procedures, demands efficient IT and communication support. A notable example is Maersk Line's container shipment from Kenya to the Netherlands, which involved an intricate process with the participation of 30 parties and the handling of over 200 documents illustrating the intricacies of container operations [7]. Emphasizing the pivotal role of telecommunications and information technology aligns with previous studies [12,4], but the unique context of the Cai Mep-Thi Vai Seaport Cluster necessitates tailored solutions for successful E-Port model implementation.

- Finance:

Financial stability (17.58% contribution) is another critical factor for the success of digital transformation. The practical situation at the Cai Mep - Thi Vai Seaport Cluster demonstrates that despite substantial development efforts, several port projects have faced delays in becoming operational due to financial constraints [22], consistent with previous studies observations on funding challenges for container terminal development worldwide [2,14]. Securing sufficient financial resources is crucial for successfully implementing digital transformation in this port cluster, highlighting its role as a critical enabler in logistics domain initiatives.

- Human Resources:

Human resources significantly contribute (9.99%) to digital transformation's essential support and influence. Song's study emphasized the effectiveness of human involvement in handling exceptional cases during automation processes [7]. Consequently, the study highlights the importance of a skilled and well-trained labor force capable of meeting rapid development and digital transformation needs. The need for more highly skilled resources in Vietnam's maritime and logistics sectors necessitates collaboration with the government and universities to build a skilled workforce. Investing in training and development programs becomes imperative to enable human resources within the port cluster to utilize technological advancements and effectively drive overall growth and innovation.

The research results partially explain the challenges and opportunities for promoting digital transformation at the Cai Mep-Thi Vai Seaport Cluster. By integrating pertinent research findings, decision-makers can understand the determinants influencing digital transformation in the Cai Mep-Thi Vai regions. With this understanding, leaders can develop resilient strategies that capitalize on the potential of transportation, transportation infrastructure, and finance, prioritizing them accordingly. While information technology and human resources remain essential, they assume a secondary priority compared to the factors mentioned earlier. These strategies should possess flexibility, adaptability, and alignment with individual businesses' unique requirements and circumstances within the port system.

Leadership's proactive stance is vital for promoting digital transformation in the Cai Mep-Thi Vai areas. Leaders can foster successful digital transformation initiatives by developing short-term and long-term strategies, striking a balance between efficiency and cost, and considering the influence of key independent variables. This approach will empower businesses to embrace digital solutions, optimize their operations, and capitalize on the advantages offered by the E-Port model.

7. Conclusion

The present study's findings highlight the order of influence of factors on the degree of E-Port utilization in the Cai Mep - Thi Vai port cluster. The results indicate that transportation, transportation infrastructure, finance, telecommunications, information technology, and human resources play significant roles in determining E-Port utilization. The study reveals that transportation holds the highest influence, followed by transportation infrastructure, finance, telecommunications, information technology, and human resources. These results emphasize the importance of efficient transportation services, well-developed infrastructure, sufficient financial resources, advanced telecommunication systems, and a skilled workforce in optimizing E-Port utilization.

It is essential to acknowledge the limitations of the current study. Firstly, the research focused specifically on the Cai Mep - Thi Vai port cluster, and it may be necessary to enhance the generalizability of the findings to other port clusters or regions. Additionally, the study relied on data collected through surveys and interviews, which could be subject to respondent bias or limited representation of the entire population. Moreover, the analysis primarily considered the order of influence of factors on E-Port utilization without delving into the specific magnitudes of their effects.

Several recommendations and future directions have been proposed based on the findings and limitations. Firstly, conducting similar research in other port clusters or regions would provide a more comprehensive understanding of the factors influencing E-Port utilization across different contexts. This would help validate and expand upon the current findings. Furthermore, future studies could explore the quantitative measurement of the impact and magnitude of each factor on E-Port utilization. This would provide a more precise assessment of the relative importance of each factor and enable more informed decision-making. Investigating the interplay and synergistic effects between different factors could offer more profound insights. For example, we examine how integrating information technology and human resources within an optimized transportation and infrastructure framework can enhance E-Port utilization. Lastly, as technology evolves rapidly, future research could explore emerging trends and innovations such as blockchain, the Internet of Things (IoT), and artificial intelligence (AI) concerning E-Port utilization [10]. Investigating these technologies' potential benefits and challenges would help shape future strategies and investments. Moreover, it is essential to consider the growing trend of reducing CO2 emissions and implementing carbon credits in port operations. Exploring how these technologies can contribute to achieving environmental sustainability and supporting carbon reduction efforts in the port industry would be valuable for future research and decision-making.

This includes improving transportation systems, enhancing infrastructure capabilities, ensuring access to financial resources, integrating advanced telecommunication technologies, and nurturing a skilled workforce. By focusing on these factors and optimizing E-Port utilization, the logistics and seaport sectors in the Ba Ria - Vung Tau province can achieve increased efficiency, productivity, and competitiveness. The findings of this study contribute valuable insights for informed decision-making and resource allocation, facilitating sustainable development and economic growth in the region. Addressing the order of influence of transportation, transportation infrastructure, finance, telecommunications, information technology, and human resources on E-Port utilization underscores the importance of these factors in unlocking the full potential of the E-Port in the Cai Mep - Thi Vai port cluster and propelling the logistics industry forward.

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Logistics Performance of Southeast Asian Countries, Based on Agility Emerging Markets Logistics Index

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ABSTRACT

Based on Agility Emerging Markets Logistics Index, the paper aims to define whether some Southeast Asian countries (including Malaysia, Indonesia, Thailand, Vietnam, Philippines, Cambodia, and Myanmar) do really reach their full efficiency on logistics domestic opportunities, international logistics opportunities, business fundamentals and digital readiness, which are four main constructive pillars of the index, or not and how to improve the situation. Employing the data envelopment analysis, the research conducts extensive data-scanning to maximize the accuracy and correspondence of the model to the original index. The paper provides interesting suggestions for policymakers and governments in enhancing their own national logistics performance aspects.

Keywords: Logistics performance; Southeast Asian countries; DEA; AEMLI

1. Introduction

COVID-19, a pandemic, was the cause of a crisis on a global scale. The pandemic spreading out all over the world was first responsible for fatal human health problems and later economic crisis, as unpredictable labor shortages, operations interruption, transport restrictions and supply chain corruption… became the problem of all the nations (Le et al.,2021). Being known as an outstanding role model in that tough situation, Vietnam did not only put the pandemic under control but also remain a positive economic growth rate. Meanwhile, Vietnam's logistics was also highly graded by professional organization, ranked 8/50 in the emerging logistics market (AEMLI, 2021). Logistics became an "emerging force" during the pandemic setting. The national logistics and transportation industry received a lot of attention and continues to be defined as the "strategic industry" of the economy.

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Though the methodology was a bit different each year, this was not the first time Vietnam has been highly ranked in the index. First conducted in 2010 (AEMLI, 2010) by Agility – an exceptional international logistics service provider and Transport Intelligence (TI) – the leading logistics market research company, until 2018, the index was conducted with three sub-indexes, which were the market's size & attractiveness, compatibility, and market connectivity (AEMLI, 2010). However, since 2019, the sub-indexes were modified to domestic logistics opportunities, international logistics opportunities and business fundamentals. The complicated and serious situation of the global pandemic made digitalize become a must, the sub-index named Digital readiness was first officially recognized as a component of the index, which facilitated evaluation accuracy against the external trend (AEMLI, 2021). The index was conducted using the data from International Monetary Fund (IMF), Organization for Economic Co-operation and Development (OECD), World Bank (WB), national databases provided by related governments, Transparency International, United Nations and its specialized agencies, World Economics Forum, International Trade Center (ITC), International Air Transport Association (IATA), International Renewable Energy Agency (IRENA) and credit rating organizations…(AEMLI, 2023). Since the index structure changed, Vietnam has been named in the top ten in three years, 2019, 2021 and 2023.

Table 1. Vietnam ranking in AEMLI

Year	Sub-index	Vietnam ranking
2023	**Domestic Logistics Opportunities** **International Logistics Opportunities** **Business Fundamentals** **Digital Readiness**	**10**
2022		**11**
2021	**Domestic Logistics Opportunities** **International Logistics Opportunities** **Business Fundamentals**	**8**
2020		**11**
2019		**10**
2018	**Market Size and Growth Attractiveness** **Market Compatibility** **Market Connectedness**	**19**
2017		**19**
2016		**19**
2015		**19**
2014		**21**
2013		**25**
2012		**27**
2011		**25**

Source: AEMLI

Employing the secondary data, this research doesn't have the intent to further discuss the appropriateness of indexing methodology but to provide more insight on the total efficiency, the ratio of total input used to the expected outcome, then define the necessary improvement for efficiency enhancement. The next section would be used to present a collective summary of previous works on logistics performance, popular-used logistics performance indices and their supported scientific evidence. In the third section, more information about the Data envelopment analysis (DEA) together with a detailed description of data scanning and processing as well as model setup would be provided too. The result of the model would be quickly analyzed in the following section and end with discussion and implementation, where finally come the comment on the national logistics aspect's efficiency and improvement suggestions.

2. Literature review

Logistics plays a pivotal role in social-economic development and is considered as an actively promoting factor, which has a significant impact on trade, not restricted to goods but also tourists, fossil energy and distribution. Competitive logistics performance is proven to contribute to nationwide economic development as well as the national strategy (Fikru, 2021). Studying logistics performance, the previous academic work can be divided into two main streams, based on the approach: (1) microeconomic approach – restricted to enterprise/industry level, represented work for this group can be the work of Andersson et al. (1989), Kucukaltan et al. (2016) and (2) macroeconomic approach, which target on the region/country-level. In this paper, the author uses the second approach, as a result, all the following literature would share the same point of view.

Measuring the national logistics performance is a necessary step that need to be done for further policy assessment and reformation, whether it is about infrastructure or commerce. A country, which has an advantaged position in logistics can enhance international trade and get access to new markets and promote its own firms (Önsel Ekici et al., 2016). This can explain why there is plenty of research on logistics performance, purposing benchmarking, suggesting changes in infrastructure, service and process …to boost logistics performance (Önsel Ekici et al., 2016). Those papers about logistics performance and supply chain management are traditionally often based on three main pillars, including time, cost and accuracy (Shaw et al., 2010). However, not being defined as a single activity but a sequent, related actions, logistics performance can not be naïve measured by a simple clear lean-structured formula, but by a collective group of componence. Ideally, these components should be chosen and sustained as a system, complete and complement each other as a whole, only then it can detailly portray the status quo of logistics performance. Though most logistics performance measurement can not meet that requirement, sometimes the correlation between the factors are missed out, sometimes factors are somehow duplicated, omitted or undefined (Chris Caplice & Yossi Sheffi, 1995). Surveys, systems or frameworks for logistics performance with indicators or balanced-scored cards are popular methods used in defining logistics performance. According to Soh et al. (2021), there are some factors proven to affect logistics performance, such as government controlling competency, the innovativeness of logistics network, queue at container port/terminal, the integration of supply chain, operational and financial factors, import-export…

Besides, logistics performance can also be measured using indices of overall efficiency, parametric or nonparametric (Markovits-Somogyi & Bokor, 2014). The most popular indices on logistics performance at the moment are the Logistics performance index (LPI) of WB and the Agility Emerging Markets Logistics index, as already mentioned in the first section of this paper. LPI is a good one, which shows the evaluation of trade facilitation of countries, provides a holistic outlook on domestic logistics and marine transportation (Martí et al., 2017). As a survey-based index, the index reflects the professional judgment on international-active logistics providers on six aspects: (1) the efficiency of customs control, (2) the quality of trade and transportation-related infrastructure, (3) the connectivity of international transport system, (4) logistics service competency and quality, (5) track-traceability and (6) perfect shipment rate (LPI, 2023). There is a lot of research conducted based on this index (Soh et al., 2021): suggesting extending the database with both quality and quantity data, which makes it easier for the governments to benchmark; or using LPI to analyze the attractiveness of container ports international-wide. Despite being an effort-intensive and popular index, LPI is not an all-rounded one, this is also admitted by the LPI team in the report. First, it is an index on the perceived service quality, as a result, noise is unavoidable. Second, the sample is not randomly chosen as the informants have the total right to opt to give their assessment or not. Moreover, for some small and low-income countries, the limited number of informants makes the grade low and subjective. All of those make country grades poor-comparative. Another problem arising is that it is impossible to track the change from time to time as the index uses the Likert scale (LPI,2023).

Agility emerging markets logistics index – an annual index, which names top fifty promising markets all over the world. Unlike LPI – a survey base, AEMLI is more of a quantity index, as it is based on data from other international trust-worthy organizations, such as IMF, OECD, WB… (AEMLI, 2023). This makes the index become a reliable reference for professionals and policy-makers. Though, this index seems not to be well-exploited. Contrary to the rich of LPI-based papers, from the author's own research, until now, Kara (2022) is the only one, who uses AEMLI in her work. In defining this research gap, the author chooses to use AEMLI in this current paper. Since 2021, the index is constructed by four factors, which are: domestic logistics opportunities, international logistics opportunities, business fundamentals and digital readiness. The following paragraphs would present a quick description of each factor and correspondent scientific evidence

Domestic logistics opportunities is understood as economic strength; economic development and growth forecast; urbanization – which defines whether the manufacturer's centralized or decentralized strategy would be used and also, the establishment of retail chains; wealth gap – which affects the homogeneous of high-valued consumption pattern of the consumers; the development of economics clusters (AEMLI, 2023). It is not explained in the report how they come up with these factors, however, there are some independent researchers that share a similar viewpoint. Martí et al. (2017) in their research verifies that logistics performance is drastically affected by region/nation's income, the outdo of developed European countries demonstrates that. This is again confirmed in the paper written by Aldakhil et al. (2018), Civelek et al. (2015), Fikru (2021), Önsel Ekici et al. (2019) and Tang & Abosedra (2019). Despite being based on LPI, Sergi et al. (2021) also agree that the economic phase of development poses an impact on logistics performance too. Besides, the evidence that urbanization also has an effect on logistics performance is found by Magazzino et al. (2021) in empirical research that employs FMOLS regression, generalized methods of moments, and quantile regression (QR).

International logistics performance is about the current situation, potential, and the factors facilitating international logistics, including trade volume, customs policy, the diversity and frequency of international road and marine connections, customs clearance efficiency, logistics-intensive value – the equivalent good's value contributed by traditional logistics service; size and the potential of air and marine transport market as well as opportunities for international express (AEMLI, 2023). In this aspect, AEMLI is quite similar to LPI. As the backbone of the economy, logistics promotes the development of other domestic industries as well as commerce (Soh et al., 2021). Study on the relationship between logistics performance and international trade, most research focuses on the one-way impact of logistics performance on international trade volume, these are the work of performed by Kumari & Bharti (2021) and D. F. Wang et al. (2018). On the other way around, logistics performance depends on the efficiency of customs and border control (Önsel Ekici et al., 2016). The trade openness is also believed as an important factor in deciding logistics performance (Magazzino et al., 2021).

Business fundamental mentions the factors, which can either support or block the normal operation of the nation's economy, defined by economic policy, financial health, and the macroeconomy, such as the ease of accessing – is the foreign company have any difficulties in operating and compete at the country; are there any complicated administrative rule; market security – is there any chance of robbery, interruption/ suspense or terrorism; domestics stability – macro financial health, the enforcement of intelligence right, contractual responsibility; infrastructure and its impact on business development (AEMLI, 2023). As stated by Önsel Ekici et al. (2019), the logistics performance of each country depends on public service, intervention and policy, transportation infrastructure, policy on international trade and the quality of public-private partnership. Study on the effect of some factors on LPI in different regions of the world, Sergi et al. (2021) find that infrastructure plays a pivotal role in improving logistics performance, this works for Asian and African countries. Other authors, such as Erkan (2014), Fikru (2021), Maiboroda et al. (2020), Önsel Ekici et al. (2019) and Tang & Abosedra (2019) both have the same idea on that point. Apart from those, other factors such as the growth in the number of logistics service providers, perception of corruption (Koh et al., 2018; Magazzino et al., 2021; Uca et al., 2016) and social stability are found to have a voice too (Larson, 2021).

The digital readiness accesses how likely it is that the country would become a leading nation in digitalization, skillful, innovation-oriented and sustainable development practices in the future. This aspect is defined by: digital business – the popularity of digital skill, the strength of the variety of business models, the adaptability and e-commerce assessment; business ecosystem development, which provides the necessary support for innovative projects as well as e-commerce seeds, the growth of venture funds; and finally, sustainability – the emission and the use of renewable energy. With a panel-data-type database, Aldakhil et al., 2018 confirm the bilateral relationship between social-economics factors to logistics performance. Those are specifically mentioned in other papers as technology innovation (Magazzino et al., 2021; Önsel Ekici et al., 2019), logistics process automation (Maiboroda et al., 2020), human development index (Magazzino et al., 2021), the competency of the workforce (Jhawar et al., 2014; Önsel Ekici et al., 2019). The growth of e-commerce markets is also named as an impacting factor (Maiboroda et al., 2020). Another group of factors that receive a lot of attention from academics, is sustainability practice. Logistics performance is the antecedent and the consequent of sustainability at the same time (Larson, 2021). Liu et al. (2018), based on LPI, proved that international shipping reduces CO2 emission, meanwhile, timeliness has a detrimental effect on C02 emission volume in Asia. Aldakhil et al. (2018) find a causal relationship of CO2 emission on logistics performance.

In terms of methodology, adopting the efficient frontier approach to logistics performance, there are two papers, that deploy quite the same process as this research does. Aim to help policymakers to familiar with international indicators related to e-commerce and logistics performance such as B2C of UNCTAD, LPI and TAB of WB, the research of T. Wang et al. (2020) answers two questions: which countries lie on the logistics and e-commerce efficient frontier line; which still have the room for improvement and to which extend. Or Kara (2022), who uses the Market potential Index 2021 (MPI 2021) as input to define how countries are efficient in the first two aspects of AEMLI. The result shows that there are 26 and 30 countries reached their full-efficient level, respectively. As mentioned above, in this research DEA analysis and data from AEMLI are used, which makes it different from the rest.

3. Methodology

Charnes et al., originally create DEA as a method to access the production efficiency of a firm. However, later this method is widely used in various settings such as education, arm force, healthcare, sport, and transportation….to measure how efficient a decision-making-unit (DMU), which can be a team/ a firm/ a city/ a county…in "converting" inputs to outputs. The most special thing about this method is that it is not as rigid as the other method. Those can ensure the homogeneousness of results, comparable but most of the time face some criticism on the fit of their structure (Cherchye et al., 2006). DEA is rather flexibly adapted to the setting, as it bases on the most favorable and country-specific weight (Cherchye et al., 2006; Martí et al., 2017) to produce the result. As a non-parameter method, DEA is easy to use as the user is not required to have such an insight into "how the system works", or the nature of the "operations process" (Markovits-Somogyi & Bokor, 2014).

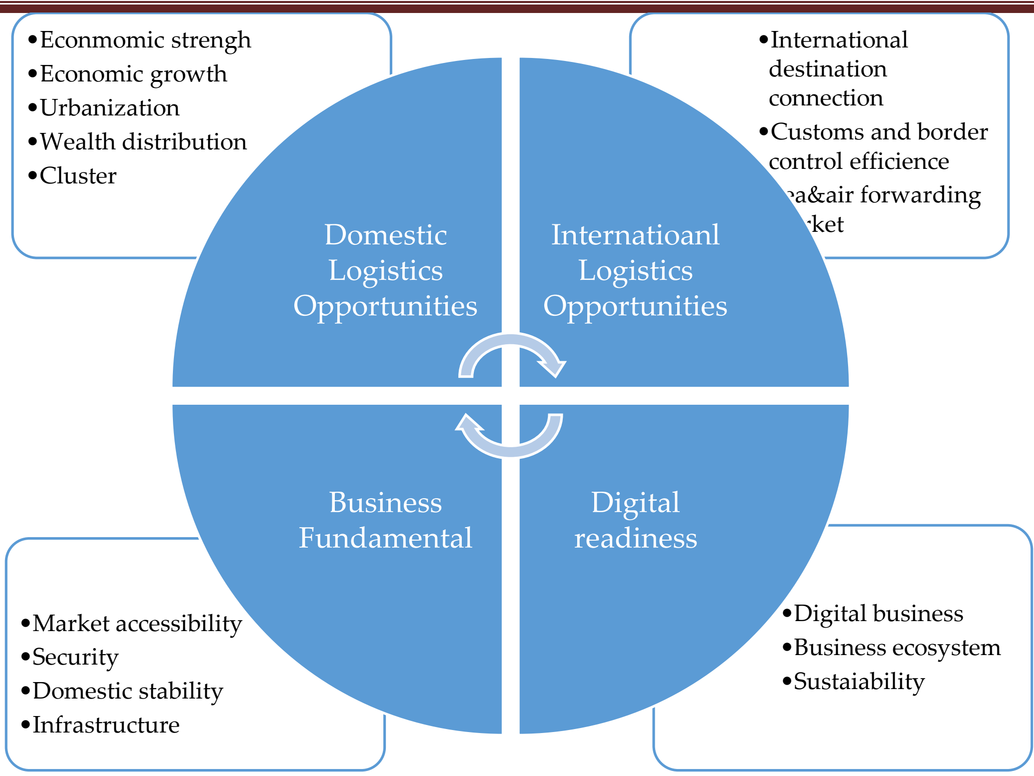

Figure 1. AEMLI's components

As, the author is mainly interested in the ASEAN region, especially the East-West Economic Corridor – EWEC, the data used in this research is just among that list. The four aspects of the AEMLI 2023 are taken as the output of the model (figure 1). Based on the description of the AEMLI team on the source of data used, an extensive data scanning is conducted to trace the exact origin date used by them. Apart from that, when the original data is not available or believed not suitable, other similar data is used too (Appendix A). For the input data, the latest available data is used, as long as it is not later than 2022. In some cases, the input data was retrieved from the 2020 dataset while the output data is achieved in 2022, for example. It is fully aware that this can cause some inaccuracy in the result, however, this is a problem with a not-yet solution. Though, this is accepted as this is not exclusive to this work only, but faced by others (Kara, 2022; T. Wang et al., 2020). Among seven ASEAN countries, there are 7/11 countries appearing on AEMLI 2023, so only those seven's situation would be analyzed. Rstudio would be the data-processing software. The model is set up with the following attributes: (1) Orientation: Output-oriented, which implies how output should be raised to reach the efficient frontier line (Kočišová, 2005) and (2) CRS model type, which assumed that the increase in inputs would lead to a proportion raise in output (Mario,2021). In addition to that, some raw material (GDP, for example) would be re-scaled or adjusted before entering the model to prevent ill-posed linear problems, caused by the different orders of magnitude or other model errors.

4. Result

4.1. Domestic Logistics Opportunities

O-DLO (domestic logistics opportunities), GDP (gross national product), GR (market grow rate) and URB (urbanization) are imported to the model, the result shows that there are 3/6 countries already at their full efficiency, including Malaysia, Philippines and Cambodia. Others are suggested to reduce their GDP volume to be efficient.

Table 1. Result on domestic logisitics opportunities (O_DLO)

AEMLI23's ranking	DMU	eff	Slacks				Target			
			Slack_input.GDP	Slack_input.GR	Slack_input.URB	O_DLO	GDP	GR	URB	O_ DLO
4	**Malaysia**	1	0	0	0	0	37.2981	5.32	0.640238	5.29
5	**Indonesia**	1.00515824	75.8879577	0	0	0	42.72134	6.34	1.094813	6.372703
8	**Thailand**	1.01148837	28.113227	0	0	0	22.48148	5.13	1.350956	5.168706
9	**Vietnam**	1.01018649	27.7044336	0	0	0	8.909325	5.02	1.825699	5.071136
15	**Philippines**	1	0	0	0	0	39.40864	5	0.6443436	5.02
21	**Cambodia**	1	0	0	0	0	2.696106	4.4	1.796959	4.45

4.2. International logistics opportunities

For this model, the inputs are LSC (Liner shipping connectivity), CC (Customs clearance efficiency), MT (merchandise trade), AIR (air transport), CONT (container port traffic). Thailand, Vietnam, and the Philippines are the only three countries with fully available data on all 5 inputs so this analysis is applied to them only. From the numeral result, except for Thailand, the other two countries have performed well on this aspect. For Thailand, in order to have an improvement, it should adjust the connectivity of liner shipping, international trade volume and air transport.

Table 2. Result on international logisitics opportunities (O_ILO)

AEMLI23's ranking	DMU	eff	Slacks						Target					
			Slack_input.LSC	Slack_input.CC	Slack_input.MT	Slack_input.AIR	Slack_input.CONT	O_ILO	LSC	CC	MT	AIR	CONT	O.ILO
8	**Thailand**	1.042087	34.55102	0	28.52068	4.930583	0	0	37.54413	3.3	25.40982	62.92577	10.43669	6.231681
9	**Vietnam**	1	0	0	3.33E-11	0	0	0	79.16998	3.1	62.8633	67.65066	18.35984	6.03
15	**Philippines**	1	0	0	0	0	0	0	29.98799	2.8	19.901	53.02831	8.491399	5.28

4.3. Business Fundamentals

In terms of business fundamentals, the input used is EA (ease of doing business), STAB (stability), EF (economic freedom) and I (infrastructure). The result implies that Vietnam and Cambodia are still far from efficient as these two are not competitive enough in the ease of doing business, market security and economics free.

Table 3. Result on business fundamentals (O_BF)

AEMLI23 's ranking	DMU	eff	Slacks					Target				
			Slack_input.EA	Slack_input.STAB	Slack_input.EF	Slack_input.I	O_BF	EA	STAB	EF	I	O_BF
4	**Malaysia**	1	0	0	0	0	0	12	1.138853	68.1	3.6	7.85
5	**Indonesia**	1	0	0	0	0	0	73	0.493527	64.4	2.9	5.77
8	**Thailand**	1	0	0	0	0	0	21	0.454216	63.2	3.7	5.77
9	**Vietnam**	1.184689	52.34639	0	0	0	0	17.65361	0.885398	60.6	3.2	6.646107
15	**Philippines**	1	0	0	0	0	0	95	0.071083	61.1	3.2	4.31
21	**Cambodia**	1.100761	137	0.203553	17.375	0	0	7	0.664331	39.725	2.1	4.579167

4.4. Digital readiness

It is the first time to have Myanmar in the model. And the unexpected thing is that "for once and only", Myanmar reaches the efficient frontier line, while other high-ranked are not. Those are suggested to decrease their sustainability to fix this condition. Note, DR and SDG stand for digital readiness and sustainability.

Table 4. Result on Digital Readiness (O_DR)

AEMLI23's ranking	DMU	eff	Slacks			Target		
			Slack_input.DR	Slack_input.SDG	O_DR	DR	SDG	O_DR
4	**Malaysia**	5.014162	0	70.30136	0	1.462728	0.078641	33.69517
5	**Indonesia**	3.471541	0	69.08969	0	0.935858	0.050315	21.55827
8	**Thailand**	5.027055	0	74.05913	0	1.318094	0.070865	30.36341
9	**Vietnam**	5.179871	0	72.69435	0	1.220997	0.065645	28.1267
15	**Philippines**	2.875569	0	66.5998	0	0.747764	0.040202	17.22538
21	**Cambodia**	1.709169	0	0.365699	0	4.73	0.254301	108.9595
22	**Myanmar**	1	0	0	0	2.79	0.15	64.27

5. Conclusion

Table 5. Efficiency of logistics performance aspect by country

AEMLI23's ranking	Country	O_DLO	O_ILO	O_BF	O_DR
4	**Malaysia**	Efficienent	Inefficient	Efficienent	Inefficient
5	**Indonesia**	Inefficient	Inefficient	Efficienent	Inefficient
8	**Thailand**	Inefficient	Inefficient	Efficienent	Inefficient
9	**Vietnam**	Inefficient	Efficienent	Inefficient	Inefficient
15	**Philippines**	Efficienent	Efficienent	Efficienent	Inefficient
21	**Cambodia**	Efficienent	Inefficient	Inefficient	Inefficient
22	**Myanmar**	N/A	N/A	N/A	N/A

In the setting of seven countries, we have both 1-digit ranked countries as well as the 2-digit ranked, the data is quite diverse. Those, which are highly ranked such as Malaysia or Indonesia, are not necessarily efficient in every/ almost aspect. Similarly, the one with a low-ranked like Myanmar is definitely not a "total loser" too. This similar scenario has been seen in the work of T. Wang et al. (2020) too and is explained by the author that it is totally possible that a high-ranked has a low-efficient in DEA and vice versa. That, unexpectedly quite a positive sign as the potential is still there, the country still has room left for further progression with available existing resources. Meanwhile, countries like Myanmar (in terms of digital readiness) or Cambodia (in terms of domestic logistics opportunities) seem to fall into a dead-end (T. Wang et al., 2020). To be more specific:

- Malaysia should increase its sustainability by lowering its SDG value, this is also suggested to all the countries except Myanmar.
- Indonesia should increase its economic strength by suitably decreasing its GDP value.
- Thailand ought to extensively escalate its economic strength, frequent and range of international sea & air connection, logistics-intensive and sea & air logistics market's performance and potential by decreasing GDP, liner shipping connectivity, transport to GDP, and volume handled by road and sea transportation, respectively
- Vietnam is believed to be more efficient if it increases economic strength, logistics-intensive and market accessibility. These can be done by lowering GDP, transport-to-GOD and improving the "ease of doing business" indicator.
- It is suggested that Cambodia should enhance its market accessibility, security and domestic stability by making it easier to do business for foreign companies and reducing its political stability & absence of violence; economic freedom value.

Table 6. Suggest on improvement[1]

AEMLI output	AEMLI input element	Malaysia	Indonesia	Thailand	Vietnam	Philippines	Cambodia	Myamar
Domestic Logistics Opportunities	**Economic strength**		+	+	+	-		N/A
	Economic development and growth forecast							N/A
	Urbanisation of the population							N/A
	Wealth distribution							N/A
	Cluster development	N/A	N/A	N/A	N/A	N/A	N/A	N/A
InternationalLogistics Opportunities	**Frequent and range of international destination connection across air and sea**			+				N/A
	Efficiency of customs and border controls							N/A
	Logistics -intensive trade			+	+			N/A
	Performance an growth opportunies of air and sea forwarding market			+				N/A
Business Fundamentals	**Market accessibility**				+		+	N/A
	Security						+	N/A

[1] On Table 6, [+] means improvement suggusted; [N/A] means no information; and blank means omitted item as no suitable index found.

	Domestics stability						+	N/A
	Infrastructure							N/A
Digital Readiness	**Digital business**							
	Business ecosystem development	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Sustainability	+	+	+	+	+	+	

Using a different set of inputs, the paper provides an extensive recommendation, which further supplements those proposed by Kara (2022). This can be a good reference for governmental organizations of related countries. Conducting this research, the author has found abundant research on the constructive contribution of logistics performance on macro-indicator such as GDP, urbanization, and sustainability but a lack of evidence on the other way around relationship. This can be considered as a future promising research path. By far, this is far from a flawless work as the author encounters a lot of difficulty in proper data gathering. This is again emphasized that this work is for reference only and can not firmly ensure an absolute right direction.

APPENDIX

Appendix A. Input-output list of the models

AEMLI output	Code	AEMLI input element	Index/Indicator input	Unit (if any)	Source	Latest updated-data used	Note
Domestic Logistics Opportunities (O-DLO)	GDP	Economic strength	GDP	10 billion dollar	WB	2021	
	GR	Economic development and growth forecast	Market growth rate		Market potential index (Michigan State University — International Business Center)	2022	

	URB	Urbanization of the population	Average Annual Rate of Change of the Percentage Urban by region, subregion and country, 1950-2050 (per cent)		UN	2018	
	WD	Wealth distribution	Gini index		WB	2020	Dismissed because of serious lack of data by country
	CD	Cluster development					No data
International logistics Opportunities (O-ILO)	LSC	Frequent and range of international destination connection across air and sea	Liner shipping connectivity index		UN	2022	
	CC	Efficiency of customs and border controls	Efficiency of customs clearance process		LIP-WB	2022	
	MT	Performance and growth opportunities of air	International merchandise trade	10 billon dollar	UN	2022	
	AIR		Air transport, freight	10 million ton/km	WB	2021	

	CONT	and sea forwarding market	Container port traffic	100000 TEU	WB	2021	
Business Fundamentals (O_BF)	EA	Market accessibility	Ease of doing business		WB	2019 - Ease of doing business rank (1=most business-friendly regulations)	
	STAB	Security	Worldwide Governance Indicators - Political Stability and Absence of Violence/Terrorism - Aggregate and individual governance indicators for six dimensions of governance: Voice and Accountability; Political Stability and Absence of Violence/Terrorism; Government Effectiveness;			2021	Adjusted to get positive value only

			Regulatory Quality; Rule of Law; Control of Corruption.				
	EF	Domestics stability	Economic Freedom index		The Heritage Foundation		
	I	Infrastructure	LPI - Logistics performance index: Quality of trade and transport-related infrastructure (1=low to 5=high)		WB	2022	
Digital Readiness (O_DR)	DR	Digital business	Digital readiness index		CISCO	2021	Adjusted to get positive value only
		Business ecosystem development					No indicator/ index
	SDG	Sustainability	SDG		The Sustainable Development Report based on the publication Sachs et al. (2022): From Crisis to Sustainable Development: the SDGs as Roadmap	2022	

					to 2030 and Beyond. Sustainable Development Report 2022. Cambridge: Cambridge University Press.		

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Reveal Digital Competencies and Human-Related Obstacles of Digital Transformation – Case Study at Danang Enterprises

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ABSTRACT

Digital transformation is the new driver of modern business and has been taken as a hot research topic now, with many aspects for investigation. The human aspect is one of them. Related to this, the paper studies the perceived digital competencies (DC) needed in the workforce as well as the human-related barrier that may possibly make DT difficult. Though this is not a new approach, or, put in another way, has been quite well-explored in previous works, it is assumed that the perceived competencies and obstacles may vary a lot with different contexts. Has been ranked as the top city advancing in DT for three continuous years until now (Da Nang's information portal), Da Nang is believed to be a typical and representative case of Vietnam, in terms of DT progression. The paper has two main theoretical contributions, through a summary of conceptual frameworks on those 2 issues and qualitative research conducted to see if the local firm's perception has any difference compared to the framework. Besides, it also helps practitioners by providing local SMEs with the very first brick supporting their DT journey.

Keywords: Digital transformation, digital competencies, obstacles, human-related

1. Introduction

Digital transformation (DT) has been growing strongly in today's world. The advancement of technology has helped to solve many problems in business. DT is now considered an indispensable requirement of all businesses and industries. In particular, DT in small and medium enterprises (SMEs) is an interesting topic for scholars and practitioners (Cha et al., 2015; Li et al., 2018). Many studies have pointed out the relevant and potential changes for SMEs in the context of Industry 4.0 (Parviainen et al., 2017). Industry 4.0 technologies present great opportunities for the SMEs sector to enhance its competitiveness. SMEs are more likely to be the big beneficiaries of this change (Matt et al – 2015). The benefits are quite clear, but to be able to make the DT process create value for SMEs is a long story to talk about. DT success depends largely on the way enterprise integrate and implement it. Fast pace changing and increasingly essential role of DT in business make digital technology integration and implementation increasingly challenging for all firms (Hess et al., 2016).

SMEs need to accelerate this process immediately, as this is the only way for them to keep up with the upward growth of digital platforms and digital businesses.

However, this will be a difficult task for SMEs. Though most businesses have adopted information technology into their organizational processes, but still can not fully leverage it as a strategic tools (Ghobakhloo et al., 2016). That is not really DT yet, as the process is much more demanding and complex. Many businesses today have not yet made the transition or have participated in the transformation, but to a very low degree. Their probability of failure is high. SMEs participating in digital transformation start with technological changes without a completed comprehension, a coherent plan and strategy (Stefanova and Kabakchieva, 2019; Bresciani et al., 2021a). Moreover, due to the limitations of SMEs such as limited resources, low financing, ..., the DT process becomes more and more difficult.

Therefore, in order to take advantage of DT, what needs to be done is to raise the awareness of SMEs about DT, improve the capacity of the workforce, and identify what are the barriers that hinder the transformation to go forward (Ulas, 2019). Businesses should really understand the importance of Industry 4.0 and the benefits of DT, in order to implement the DT process proactively rather than reluctantly adopting it (Theorin et al., 2017). The DT process is not only about technological transformation but more of an organizational change. Viaene once said, "When the pace of change inside an organization becomes slower than the pace of change outside, the end is near" (Viaene, 2018). In this research, we will focus mainly on the human aspect of the organizations, exploring the competencies that are needed for the transformation as lack of digital talent is also a problem, but not knowing what digital talent is, the problem is more serious (Liboni et al., 2019). In addition, this study will identify the human-related barriers that SMEs are likely to face. We don't think that this approach is brand-new, however, the perceived competencies and obstacles may vary a lot with different contexts. In the next session, we will give a summary of conceptual frameworks on those 2 issues. Then, qualitative research would be conducted to see if the local firm's perception has any difference compared to the framework. Has been ranked as the top city advancing in DT for three continuous years until now (Da Nang's information portal), we believe that Da Nang is a typical and representative case of Vietnam, in terms of DT progression. The paper is hoped to provide local SMEs with the very first brick supporting their DT journey.

2. Literature review

2.1. Digital transformation

DT has become "a must" for all organizations. It has a significant impact on every aspect of the organizations, it is not only a trend but more of a necessity for a competitive business model (Bharadwa, 2013). With the assistance of technology, especially Industry 4.0, DT has facilitated fundamental changes in working methods, which result in better outcomes, faster processing time – higher productivity, in short; changes in business models, and corporate culture (Ohali et al., 2018). These changes are the consequence of alterations in organizational structure, strategies, and objectives (Verhoef et al., 2019). The concept of DT in the literature base is quite of a mix. Some authors define DT as the act of implementing DTE as a managerial supportive method (Morakanyane et al., 2017). The antecedent importance of technology is undeniable, however, DT is not just about acquiring (Jones et al., 2021) and applying DTE (Jones et al., 2021; Janowski, 2015;

Morakanyane et al., 2017), but an evolutionary process, that takes time as its nature is an organizational adjustment, which involves process, culture and strategy (Antonopoulou, 2023). DT is far more about digitization, it is transformation, that is in the spotlight here (Liere-Netheler et al., 2018). The objects of transformation are not restricted, ranging from processes, management operations, or business models (Chen et al., 2016).

According to Bharadwaj et al., (2013), it's time to upgrade information technology – as a functional level strategy to an integrated factor of business strategy. This implies a shifting trend in defining IT's role in an organization. DT makes it possible to enhance customer experience or create new business models through the use of DTE (Piccinini et al., 2015b), by accelerating the transformation of business model, working processes (Hess et al., 2016), information on business activities, capabilities, and models through applying advanced DTE (Demirkan et al., 2016; Morakanyane et al., (2017). Hemerling et al., (2018) state that "DT requires a culture that embraces the change while still supporting the overall strategy of the firm. According to Verina (2019), human play a much more important role than that of technology (Verina, 2019) – as human is the promoter and implementor of DT (Kane, 2019a), therefore the need for all individual to engage and benefit from DT should be considered first, otherwise, the process can not reach its goal and mission (Verina, 2019). In general, despite the variety of opinions, one thing that all the authors both agree on is that DT is a process that changes every aspect of firms, from technology, process, culture, and strategy to business model. Named as "DT", it is not what it is without DTE tools, but technology alone can not promise success either.

2.2. Digital competencies (DC)

2.2.1. Digital competencies (DC) definition

To be able to apply DTE in the business setting, it is necessary that the firms own proper DC. A human resource with high DC is the key. This competence can allow employees to have better performance and be better at adapting to changes, regardless of what it is about Oberlander et al., (2020) state that DC can be broken down into 3 pieces: knowledge, skill and attitude. In the last 10 years, with the dominance of DT, there have been a lot of authors trying to give an as complete as possible definition of DT. From the early beginning, Ferrari (2012) define DC as a set of knowledge, skills and attitudes related to DTE, which is necessary for task performing, problem-solving, communication, information management, collaboration, content creating and sharing, as well as knowledge accumulation. Zhang and Zhu (2016) extended Ferrari's definition by adding "safety" and described DC as the capability of coping with information, communicating, creating content, safety and solving problems.

DC can also be knowns as the ability to efficiently apply DTE in every aspect of life to improve performance. DC is constructed from related knowledge, skill and attitudes, depending on which aspect of work and business sector you are in, the detailed set may look a little bit different (Ferrari, Neza, & Punie, 2014). Gekara et al., (2019) defined DC as a combination of digital knowledge, digital cognition, digital capability and attitudes in a specific aspect performed by the employee in this digital era. The main component proposed by him includes basic knowledge of technology and the digital environment; the ability to use technology; the ability to perform a task using technology; communication and interaction through DTE. Ala-Mutka (2011) believes that digital knowledge and the ability to practice it play an important role in DC. Extensive scan of the literature base, it can be said that DC is the integration of digital knowledge, information management, digital communication and interaction (Van Laar et al., 2017; Ferrari et al., 2012).

According to the work of Ferrari (2013), the first capacity in the set of DC is the capacity to search, synthesize, select, analyze and evaluate information available on the internet, using search engines. Second, it is the capability to communicate in a digital setting. DC of a person is his/her ability to use and combine other's knowledge, skills and attitude linked to technology, cognition and society to use new existing information technology to investigate, select and assess information for problem-solving and collaborative knowledge development. Defined by Van Laar et al., (2017) 21st-century DC as the capability necessary for the employee to deal with new challenges. Further extent the definition of Ferrari (2013), Ochoa Pacheco, 2023 explains DT as a set of knowledge, abilities, skills, attitudes, and other characteristics associated with digital technologies that are nurtured by an individual's personal, cognitive, social, and global competencies for communicating, collaborating, creating, and sharing content, managing and sharing information, solving problems, and adopting and spreading the digital culture, taking into account ethical and sustainable practices.

Human resources is always considered as the leading factor, which is key to the success of the firms, especially in a revolution that changes every aspect of the firm. The success of the DT is constructed on DC (Westerman et al., 2012). Only when the employees own a suitable DC, the companies can fully explore the benefit of DT. The workforce is defined as the key source fostering the accomplishment of DT in any other organization, employee's DC is a very first antecedence of a DT project (Silva et al., 2022) or put it in another way, the catalyst for better-performed transformation (Westerman et al., 2012).

2.2.2. The components of DT

DT is a multifaceted concept (Ilomaki et al., 2016), with the three most-cited aspects are know-what (knowledge), know-how (skills) and know-why (attitudes).

a) **Digital knowledge**

Knowledge is the result of a process of absorbing information through the act of learning. It is the collection of events, rules, theories, and practices related to a research topic or field of work (Ala-Mutk a, 2011). Knowledge can be categorized into how-what and know-how. Know-what is about having the knowledge of definitions, concepts and events, while know-how implies the necessary knowledge that supports the conducting of behavior (not necessarily the actual behavior) (Baartman & de Bruijn, 2011). Digital knowledge includes the comprehension on how computer applications work; possible risks on the internet and digital communication; the role of technology to creation and innovation; the value and reliability of digital information; the legal and moral rules in using digital technology (DTE) (Zahoor et al., 2023). Calvani et al. (2008) believe that there are many included items in digital knowledge, such as information knowledge, communication knowledge, DTE, computer know-how and technology know-what. Knowledge on DTE is related to the comprehension of definition, usage and the reason why it is used (Spiteri & Chang Rundgren, 2020). In general, in a digital environment, knowledge of the functions and benefits of DTE and its applications is the precedent of successfully integrating DTE into organizations (Jaipal & Figg, 2010; Voogt et al., 2013).

b) **Digital skills**

Nowadays, firms have to face a continuously changing flow of technology and new information, new ways of work, an unprecedentedly fast pace of digitalization and change in the required skills of the workforce (Mazurchenko, 2019). Digital skill is necessary for almost every job (Curtarelli et al., 2016). Advanced technologies, such as artificial intelligence, cloud computing, big data, automation with the use of robots, social communication, real-time interaction and virtual reality bring new tasks and roles for employees. Thus, digital skill affects how jobs are done through the use of digital tools and applications (Manuti & de Palma, 2018). Digital skill is not simply about technological ability but also about the ability to redesign and perform a digital workflow, in which, the new set of digital skills is essential (Brow n et al., 2018; Keep, 2021). Skill is the ability to apply gained knowledge, tips and tricks to complete tasks and solve problems. According to European Framework, skill is described as cognition (related to logical thinking, visual thinking and creative thinking) or empiricism (how well it is dealing with tools and methods). Helsper (2012) and Helsper & Eynon (2013) defined four types of skills categorized by function, including operational skill, which is a basic technical skill; information navigation skill or information seeking skill; creation skill or content creation skill and finally, social skill or communication skill.

c) **Digital attitudes**

Apart from knowledge and skill, another component of DC is personal attitude and belief in DTE as it has a significant impact on behavior as well as how smooth the learning process is (Ala-Mutka, 2011). Attitude presents how you think and what motivates your motivation. Attitude (Baartman & De Bruijn, 2011) can be understood as a set of beliefs about an object or a situation that guides personal behavior (Ajzen, 2001). Attitudes have an important impact on behavior, and decide how efficient it is. According to Aslan & Zhu (2017), attitude is a tendency to react positively or negatively toward a person, an object or an event. In the DT setup, it is about the positive and negative beliefs in using technology, about things that may be changed because of technology. The personal attitude of someone about DTE integration is formed based on his/her general assessment and belief about that integration (Instefjord & Munthe, 2017). For example, a good attitude toward digital information can be actively analyzing and storing digital information; a good attitude toward communication means finding digital communication valuable and desirable (Ala-Mutka, 2011).

Many authors have presented their own DC frameworks. The very first framework often focuses on the technological aspect (Gilster, 1999). As time passed, the frameworks were extended to information management, collaboration and communication. Now, frameworks often include the awareness of moral safety and life-long learning (van Laar, 2018). As defined by Ferrari (2013), the first component of DC is Internet-available information searching, synthesizing, selecting, analyzing and evaluating using search engines. The second component is communication, defined as the ability to communicate in the digital environment. The third one is digital content creation, which includes creating and modifying, synthesizing and rebuilding content and then uploading on digital platforms like blogs, websites, forums or profiles public on the internet. The fourth component is digital safety, which mentions the security of personal information, enterprise information or electronic devices security. The last one is about problem-solving capability in the digital environment.

Janssen et al., (2013) conducted a Delphi research with a group of academics and practitioners working on information technology. The research gives a collection of DCs, including digital communication and collaboration; creation; information management; a balanced attitude toward technology; general knowledge and foundational skills; privacy and security; technology awareness; legal and moral awareness. Besides, DIGCOMP – a project on DC for citizens, defines DC as the knowledge of information and data; the capability to present information demand; searching and accessing to data, information and content in the digital environment. Next, it is the ability to communicate and collaborate through the use of DTE, sharing resources through digital tools; and having a decent knowledge of digital communication tools in some contexts.

The necessary competencies for human resources are defined in many different research, in this work, we present a collective summary definition found in the previous papers in the below table.

Table 1. Digital competencies components

Digital competencies		**Definition**	**Source**
Knowledge	Fundamental knowledge of DTE	The basic comprehension on definition, tools and technology. Have a basic IT foundation, which can affect the success of IT adoption of the firms, especially at the SMEs.	(Ferrari, 2013; Ilomäki., 2011; van Laar et al., 2017)
	Legal and moral awareness	Knowledge of legal and moral aspect of using DTE and digital content.	(Janssen, 2013)
Skill	Digital content creation and edition	The ability to create and edit new content (from word, images and video), synthesize and rebuild from previous content	(Ferrari 2013, Janssen 2013)
	Problem solving	The ability to process information, think systematically and make good decision in both daily tasks as well as in dealing with unusual problem arise.	(Ferrari 2013, Janssen 2013)
	Information management	The ability to use DTE to improve information collecting, organizing, analyzing and	(Janssen,2013; Zhang and Zhu, 2016; van Laar et

		evaluating digital information	al., 2017)
	Software/ application operation	The ability to use software/ application	(Finch et al., 2013; Teng Xiaoyan et al., 2022)
	Digital marketing	The necessary ability to promote a brand, products or service online and through digital communication	(Vieru et al., 2015)
	Digital communication	The ability to use digital media and technology to communicate and interact, collaborate with and create networks	(Gekara et al., 2019; IPA, 2015; Ferrari, 2013; Ala-Mutka, 2011; Ferrari, 2012; Janssen et al., 2013)
	Information searching	The ability to realize and use digital tools to search for information, which is necessary for work.	(Gekara et al., 2019; IPA, 2015; Ferrari, 2013; Ala-Mutka, 2011)
	Creation and innovation	The ability to come up with creative solution, which helps firms to increase business value and better compete in the marketplace.	(Finch et al., 2013; Ferrari, 2012; Janssen et al., 2013)
Attitude	Positive attitude	A positive attitude gives a positive perspective on a negative situation, which bring you out of a poor experience.	(Finch et al., 2013; Teng Xiaoyan et al., 2022)
	Life-long leaning	An eager and willingness to gain new knowledge and update new skill whenever possible.	(Saad et al., 2013; Teng Xiaoyan et al ., 2022)

2.3. Human-related obstacles of DT

In the DT process, people play a leading role and participate directly, from planning to implementing. According to Westerman et al., 2013 “The barrier to DT is not technology, but people”. Therefore, the human aspect is one of the major barriers to successful DT. The workforce has been identified as a key resource for successful DT in any organization (da Silva et al., 2022); hence, personal and organizational resources should be aligned to face new technology adoption. A review carried out by Trenderry et al. (2021) highlighted skills and training as important dimensions that organizations must consider when looking for effective DT.

In addition to the factors that promote the success of DT, the factors that hinder DT is also an interesting topic to researchers and practitioners. Storm & Borgman (2020) considers the organizational structure and the lack of skills in certain departments as two important challenges for DT. Some other studies suggest that the role of the top managers is a critical success factor to move forward to theth next phases in data-driven culture maturity. Feliciano-Cestero (2023) shows the impact of human (soft side) and non-human components (i.e., knowledge, leadership, digital servitization, technological) of DT that can either allow or threaten DT and their impact on firms' internationalization. The barriers related to people can include the lack of awareness, the lack of capacity of the workforce, and the barriers related to leadership such as the ability to change, to execution…

In short, people are an important factor affecting the success of the organization and also an important barrier to the DT implementation process. Some aspects of human-related barriers include:

a) **Resistance**

Resistance is a challenge that organizations face during transformation (Solis, 2017). Resistance to change is a natural response and everyone reacts differently to it. There are many ways that resistance manifests in an organization. Change, whether positive or negative, bothers people because people want stability (Keyes, 2000). People resist change, as this involves changes in their work practices, roles, responsibilities, and behaviors. Resistance to change can generally stem from a fear of losing something valuable or important (Grashow, Linsky and Heifetz, 2013).

Organizational resistance can be seen in both employees and middle-level managers. Employees may fear losing their jobs as a result of increasing digitization and fear not having the right skills to handle new technologies. Over time the individual's role will change to include some new tasks and require more expertise (Horváth et al., 2019).

b) **The lack of awareness of the importance of DT**

DT creates a huge opportunity for the business. However, the lack of awareness about the importance of DT affects many organizations and is considered a major obstacle to DT (Fitzgerald et al. 2013). They are essentially inward-focused and are unaware of the opportunities and threats that DT presents to their businesses. Most people can not sense how their business environment is changing before it is too late. Organizations with a short-sighted attitude assume that current approaches meet their requirements and do not need to be changed. Kotter (2014) argue that people tend to be content with the status quo and that any successful process of change begins with creating a sense of urgency.

c) **The lack of vision and strategy**

The role of the leader in ensuring and accelerating the transition to Industry 4.0 is highlighted in the paper of Porfirio et al. (2021). The leaders can help companies succeed in the digital era through three habits: (1) following the trends of new technologies; (2) determining the changing direction of DT and investment strategy; and (3) leading the team to change quickly and accurately (Swift and Lange, 2018). In addition, the DT of SME business processes and organizational structure requires a clear and consistent digital strategy (Kane et al., 2015). Achieving DT is much easier when the vision is clear and clearly communicated from top to bottom within the organization. Leaders with a strategic vision, with the ability to understand and anticipate their needs and desire to conquer the market will have a stronger motivation to invest in and implement DT. Moreover, with a clear strategy, it is possible to help an organization navigate the way and lead its team to achieve its DT goals faster (Kane et al., 2015).

Therefore, when there is a lack of strategic vision, the DT, if successful, will only stop at the digitization step at some stages, some processes or the application of technology to solve some of the immediate needs of the business without making much difference compared to before the transition (Kumar et al., 2021). (Hung et al., 2022) comments on DT that the success of this fundamental change process is decided by the innovative application of DTE and the strategic exploitation of essential resources and competencies, in which leadership plays an essential role, or specifically mentioned as digital leadership in recent publications. Compared to conventional leadership, the digital version is more agile and flexible, with a strong aptitude for new technologies, digital literacy, an openness to innovation, and a digital culture lived by leaders.

Within the framework of this research, we conduct a qualitative study with interviews with leaders and managers in enterprises to test the perception of enterprises towards digital capabilities and related barriers

3. Research methodology

3.1. Research sample

There are 24 respondents, who are conveniently chosen to take part in this research. They are managers or senior employees, who are skillful and have a good knowledge of their job, currently working in Danang. This research sample is expected qualified enough to represent the majority of the labor force and help to reveal necessary skills and obstacles for employees in the process of DT. Table 2 provides a short description of our research sample.

Table 2. Sample description

Respondents (I)	Business sector	Position	Year of experience
I1	Food and beverage	Senior manager	5
I2	Website service	Junior manager	3
I3	Tourism	Junior manager	5

I4	Tourism	Senior manager	20
I5	Tourism	Junior manager	5
I6	Tourism	Junior manager	15
I7	Tourism	Senior manager	17
I8	Banking	Vice-director	15
I9	Commerce	Junior manager	5
I10	Logistics	Junior manager	5
I11	E-Commerce	Account Manager	3
I12	Retail	Junior manager	10
I13	Service	Junior manager	3
I14	Education	Junior manager	3
I15	Service	Junior manager	3
I16	Logistics	Junior manager	3
I17	Logistics	Junior manager	3
I18	Banking	Director	10
I19	Logistics	Junior manager	3
I20	Logistics	Junior manager	3
I21	Tourism	Junior manager	4
I22	Postal service	Junior manager	3
I23	Tourism	Junior manager	3
I24	Tourism	Junior manager	3

3.2. Research process

Defined as a qualitative research, with the aim to investigate the perceived necessary digital skills for DT in the employees and the possible employee-related obstacle in this process, we conduct

24 one-one 1-hour long interviews with each respondent. To ease the data collection, the team asks for recording permission but ensures that the respondent remains anonymous. All the questions are fixed and clearly listed on the questionnaire already. The first part of the interview is spent on "getting to know" the respondent about their personal information, especially professional experience. The second part focus on finding a set of digital skills, which is essential for DT. The last part defines the possible employee-related obstacle, which may block the way. For data enrichment, the respondents are encouraged to give any other comment or related extensions.

4. Result

4.1. Digital Competencies

DC is a personal competence, which enables one to analyze, choose and evaluate the job (Vieru et al., 2015). DC is often assessed on 3 components, which are knowledge, skill and attitude.

a) **Knowledge**

Fundamental knowledge of DTE is all mentioned by the respondents as a must for employees in this DT era.

"If you don't have a basic–level knowledge of this, you can be advanced performing well in others." (I5)

"In the middle of 4.0 technology revolution, you need to know about what is changing your life, at least." (I12)

"Without any knowledge on DTE, you will fall behind. To be able to perform DT, you need to know, to understand it." (I18)

"Not only the DTE knowledge that you need but also the knowledge on how to get the trusted-source information to ensure its reliability of." (I15)

b) **Skill**

The first skill mentioned by the respondents is information searching and digital communication.

"Communication is key. Technology now enables us to communicate faster and more conveniently through digital channels. Obviously, digital communication skill is necessary. At my company, Viber is very popular and I need to master at it to foster my work." (I13)

"Zalo is known as the business social network in Vietnam. It would be a lot of inconvenient if you stay out of it, while your customers/ partners are there. In short, being able to use DTE is essential to today life." (I7)

"Information is now considered as the most valued resource. The ability to search and obtain the right information would benefit you a lot." (I14)

"Information now is plenty and easy to access. What matters is whether you have the ability to get the right one, at the right time. Employees should be able to do it, that would help you a lot in improving your performance." (I10)

"Another skill, which is also discussed in the interviews is information management skill. As a firm would have to deal with a big amount of information once they start the DT, the ability to manage a large amount of information efficiently is necessary."(I9)

"With the help of technology, you have all the information at your fingertip. This makes it a requirement that you can logically categorize and control the having information." (I8)

"The more information you have, the more noise. Employees must be able to scan for the suitable one." (I10)

Some also mention other skills, which are digital marketing, which is believed necessary for some typical works; application/software master, the type of application/software is varied among firms; and finally innovation skill, which is not quite necessary to normal employees but essential to manager-level one.

"For some departments like marketing or sales, the ability to leverage digital marketing tools would help better promote the products." (I17)

"The work now is supported a lot by software and applications, varied from firm to firm and sector to sector. You don't need to be able to use all the available software but should be fluent in the current one used at your firm." (I6)

"Innovation skill is good to have for firms digitally transforming their business. For the operative-level employees, is it recommended that you should try your best to follow the current workflow." (I20, I10)

c) **Attitude**

For the attitude, there are two that are believed necessary by the respondents regardless of context, which are a positive attitude and a life-long learning attitude.

"Attitude weighs more than aptitude. Employees, those with a positive attitude are enthusiastic, are happy and satisfied dealing with the changes." (I7)

"Life-long learning helps you to keep up with and better adapt to the continuous revolution of the environment. It is the way to survive and not to fall behind." (I11)

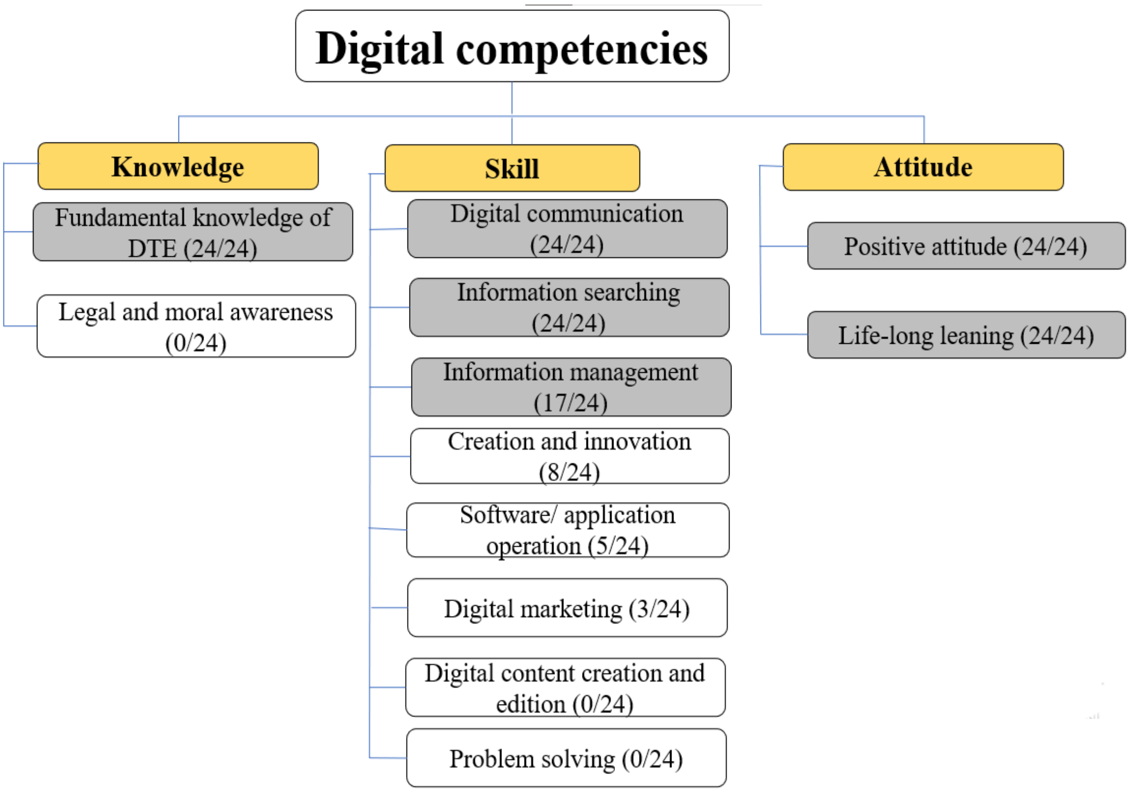

Figure 1. Digital Competencies

4.2. Obstacles

The main obstacles to DT are named as: mental resistance, lack of awareness about the importance of DT, lack of vision, and no detailed plan for DT.

a) **Mental resistance**

Mental resistance is a big barrier hindering firms from DT, this is quite a serious problem in mid-aged employees.

"The mid-aged employees are not familiar with applying technologies in their tasks, ad for them, the "traditional method" still works well. It is really difficult for them to keep up with the current technological revolution." (I6)

"Despite of the support from other colleagues, mid-aged employees still find it difficult to adopt technology as a new tool, probably because of their technology low-absorbed ability. They face difficulties in using Zalo, hate dealing with e-documents, for example." (I8)

The resistance also stems from the fear of being replaced by technology.

"The employees often joke around about the possibility of being replaced by technology, seeing that more and more things that technology can do. Although they are still open to adopting new technologies, the fear remains there. The elephant in the room, just nobody ever seriously mentions it." (I21)

b) **Lack of awareness about the importance of DT**

The lack of awareness about the importance of DT is also considered as a hindrance. Lack of this awareness, the DT may simply doesn't happen or may not succeed.

"We have 5 factories, and only 1 of them doesn't have a digital signature, so it is really inconvenient for contracting. The resistance in this case is caused by the lack of awareness from the top manager." (I10)

"I see a lot of firms do DT as a trendy thing, then quickly quick when problems arise or when there is no quick pay. However, I think it is not about how effective the DT itself but more about how right they do it, or how right they understand." (I9)

Lack of support from the top managers is also considered as factor blocking the DT process. This lack of support may stem from the fact that the managers are not ready and open to change, and lack of understanding about it.

"The top-manager commitment is the most important budling block to have. Without it, nothing works." (I18)

"The top manager may feel that his firm is still competitive compared to the competitors, so the changes are not in need. This mindset may change when they feel the threat." (I7)

"The first thing that should be changed is not technology, but the mindset." (I14, I8)

c) **Lack of a clear vision**

The lack of a clear vision, a strategy clearly is a barrier to change. Fostering change across the whole organization is complicated, so it needs to be well-planned and clearly directed.

"The manager without a clear vision may struggle a lot as they don't have a route map to get to the point. This makes DT not benefit the firm, but on the contrary, spoil everything and decreases firm performance." (I4, I5)

"DT is a process that costs a lot of time and effort, without a clear vision, it is impossible to get there successfully." (I11)

"It is not about technology, but the mindset." (I14)

In general, from the comment of the respondents, the obstacles perceived by them can be visualized in the following figure.

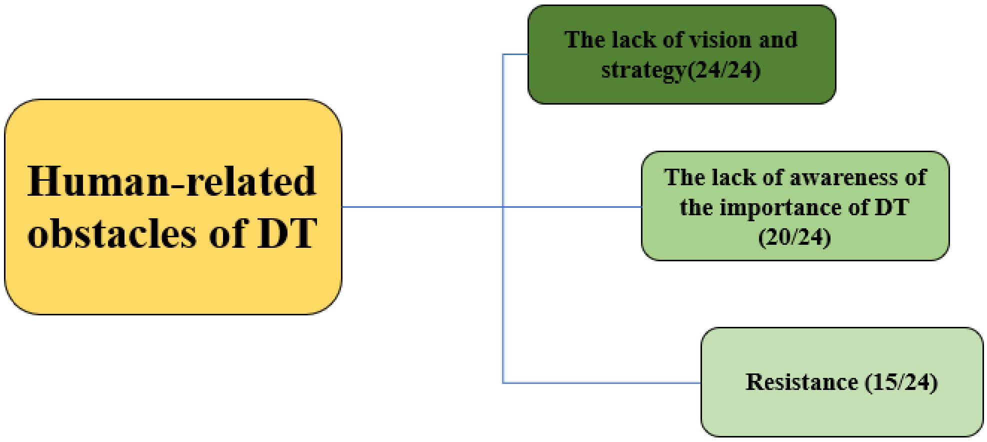

Figure 2. The human obstacle of DT

5. Discussion

DT is a phenomenon that affects the entire system of an enterprise. Previous studies have only emphasized technological challenges (Kane et al., 2015; Baraldi & Nadin, 2006; Kamalaldin et al., 2020) but overlooked the role of human resources (Legner et al., 2017). Applying a people-centered perspective, our research has focused on defining what DC needed by the employees for DT. Similar to other studies on employee digital capabilities, our research has built the necessary DC for employees (Siddoo et al., 2019; Blanka et al., 2022). However, we specifically define employee competencies in three key aspects: knowledge, skills and attitudes. As DT affects almost all aspects of an organization, employees as human resources will also have a significant impact on a company's ability to transform (Butschan et al., 2019; Colbert et al., 2016). In this context, employees do not simply have knowledge or skills, but must have comprehensive development of all three factors: knowledge, skills and attitudes. Identifying the right digital capabilities for employees is essential in organizations. Especially in each aspect of employee capacity, it is necessary to know what you need to improve. According to the assessment of the interviewees, there should be a shift in the individual's capacity from acquiring new knowledge to practicing skills appropriate to the current context. In terms of knowledge, employees should learn more basic knowledge about digital DTE because DTE is considered the foundation of DT and is also the factor that leads to other changes in the organization. As for the digital skill set, employees should focus on developing basic general skills: communication, information searching and management through the use of software and DTE. However, it doesn't finish there, especially when DT has a strong influence and brings many changes, employees should also have suitable beliefs and attitudes. This helps employees familiarize themselves with the challenges at all levels of DT and respond to them appropriately. Compared to the framework collected from previous work, our respondents do not perceive legal and moral awareness as necessary knowledge; either creation and innovation, software/application operation, digital marketing, digital content creation and edition, problem-solving as an item among essential skill.

In addition to identifying and building a competency set of employees in line with the orientation and goals of the enterprise, the study also considers a number of barriers related to people. Each individual in the organization is a part of the business, they greatly determine the success or failure of the organization in the current DT process. The results of the interview show that it is very likely that the results of DT will come from leaders and employees. In the interviews, most of the respondents argued that the organizations or rather the people who run the organizations are stuck in the process of adaptation, implying that they are struggling with discovering new opportunities while keeping the old ways of work. This finding has been supported by previous research where leaders continue with old habits and systems because they have worked well in the past up to the present (Andersson, Movin et al. Teigland, 2010). This is considered a great threat to businesses in the future. Accordingly, leadership plays an important role in the context of DT. Most respondents said that effectively communicating the vision, and clarifying it to employees before making the transition, is an essential step. According to Kotte (1995), establishing a clear vision and change message for the digital transition will continue to create momentum, which in turn also reduces resistance at the bottom (Bovey and Hede, 2001). Once the barrier comes from the leader of that organization, it will be very difficult to make the transition. The study also discovered that the barrier to implementing DT related to people not only comes from the leader but also at the employee level. The big change due to DT has made them feel insecure and worried about everything. This brings a negative to DT. Thus, when they feel negative, their work efficiency and productivity will decrease and begin to show signs of resistance to that change. It is important for leaders to promptly detect barriers from employees and have an effective way to manage it, as well as accompany employees to help businesses succeed in the transition.

6. Contribution and limitation

The research has just revealed the main DC and human-related obstacle, though not sector-specific, as firms coming from different business sectors is different. With a clear-defined set of DC, firms know what they should look for at the applicant, what to train and how to manage employees in the process of DT. For human-related obstacles, it is necessary for firms to know what is blocking them ahead and be prepared for that. Though, it would be great if other types of obstacles are mentioned too. Another limitation of this work is that no model has been proposed yet, we may further extend this work and develop it into a scale for measuring organization's digital competencies possibly.

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Innovations in Business Methods towards the Digital Economy: Patent Analysis Based on Vietnam Database

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ABSTRACT

Business methods have recently become a topic attracting several researchers and entrepreneurs in the world. The large number of organizations have been expecting to apply their innovative business methods for patents in order to protect their innovations under law. Nonetheless, a long debate about business method patentability has occurred in many countries. The patent office of the USA, Europe and Japan have conducted many examinations to clarify the eligibility of business methods for patenting. In addition, despite of the significant role of business method patents, scientists have focused on technological patents instead of business method patents. This motivates to learn about how the situation of business method patents in Vietnam is, especially in the current era – the digital economy. The research can provide researchers with some critical theories related to patents and business methods as well as open up new interests in business methods in the combination with patents for entrepreneurs.

Keywords: business methods, innovations, patents, digital technologies, digital economy

1. Introduction

According to Ozorhon, Abbott and Aouad (2010), innovation can help all industries and societies to improve their competitive advantages, contribute to the economic growth and enhance the quality of life by applying inventions. The development of a country is decided by the capability of innovation in its industries. If there is no innovative firm in a nation, this society is believed to be in poor conditions and this fact makes that country develop slowly (Serpell and Alvarez, 2014). Especially in enterprises, Anbari (2005) claims that the application of new knowledge, ideas and technologies to implement new or improved products or services is so necessary that it can help organizations to maintain their operation, grow their business, make profits and please their clients.

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Innovations include not only technologies but also new ideas in business processes which can go with each other to help firms to affirm their positions in the market (Moehrle, Wustmans and Gerken, 2017). In recent years, in Industry 4.0, the considerable development of information and communication technologies as well as the spread of the internet all over the world have led to the growth of innovative ways of conducting business. Business methods provide companies with several "business opportunities", improve their business efficiency and effectiveness, and bring occasions for the emergence of new firms or industries (Lee and Sohn, 2017). Therefore, the fact that more and more new business methods (for instance in e-commerce) have been appearing and developing is the reason why many enterprises look for protection for them under laws (Wu, 2005).

In order to encourage innovations, many nations are making their effort to create a good and pleasant condition for innovation growth, especially implementing many methods to protect intellectual properties (IP) (Woo, Jang and Kim, 2015). Among some popular ways like patents, trade secrets, copyrights and trademarks, patents are often mentioned by most organizations or people who want to hold an exclusive right on their inventions and prevent others from commercial use of such inventions (Ellis, 2016). Commonly, patents are a tool to protect only technological innovations (Archibugi and Pianta, 1996). Nevertheless, since the 1990s, the proliferation of patent applications for business methods has raised questions about the patentability of this field and an argument over "a technical effect" of business method patents. After a long debate and several lawsuits, business method patents have been accepted in three of the largest patent offices of the world (USPTO of the USA, EPO of Europe and JPO of Japan) as people cannot deny the relationship between computer technologies and business methods in the current era (Wu, 2005), particularly in the digital economy (Blaschke *et al.*, 2017). This issue results in a question about the situation of business method patents in emerging countries, for instance Vietnam whose IP system is still in the improvement process with several problems but Dzung (2007) believes that IP development in Vietnam also has many opportunities for the promising future. Thus, this study is implemented in order to learn about business method patents in Vietnam over time and in particular in the digital economy. Business method patents should receive great care but studies on business method patents are still limited, while it is really easy to search many researches on the development of technological innovations and patents (Moehrle, Wustmans and Gerken, 2017). Specifically, all these facts open up the research questions below.

RQ1: Are business methods patentable in Vietnam?

RQ2: How have business methods patents grown in Vietnam over time?

RQ3: How have business method patents evolved towards the digital economy in Vietnam?

The research is carried out by using the patent database of Vietnam and the research methodologies of patent analysis and patent co-classification analysis. The paper is organized with six sections. Section 1 was the introduction of business method patents and the research questions. Section 2 will present some points of the literature review of business methods and its patentability. The explanation of the research methodology and data source will be in section 3 and 4 before some findings and discussions will be clarified in section 5. The conclusion will be given in section 6.

2. Literature review

Innovation is seen to be one of the most crucial elements for a sustainable economy (Lee and Sohn, 2017). Besides technological innovations, "business method inventions" have been got special attention as they bring many benefits to companies, industries and economies. However, "business method patentability" has been a controversial issue for a long time (Spulber, 2011).

2.1. Business methods

In the age of information technologies and the internet, in particular in the Fourth Industrial Revolution, business methods and processes have quickly gained great interest. They are a significant source of innovations for enterprises to promote sustainable development (Lee and Sohn, 2017). Scientists give some explanations of how a business method is. Their ideas do not contradict but complement each other. Moehrle, Wustmans and Gerken (2017) propose that business methods are a group of activities which are organized in a clear structure with the aim of providing firms and industries with advantages. In addition, many scholars refer to technological foundations when analyzing business methods. Spulber (2011) and Kim, Jeon and Kim (2015) claim that "a business method invention" is defined as "a commercial technique" which is identified to carry out business issues and look for several opportunities regarding many processes in finance, organization, operation, transaction, administration, management, etc. in companies. In this study, the latter definition is chosen since it demonstrates business activities more clearly and it also mentions technologies which are really needed to foster business operation (Kim, Jeon and Kim, 2015). Moreover, Wu (2005) asserts the role of technical features for business methods in the debate about business method patentability, which leads to the motivation of this research.

According to Spulber (2011), it is because of the nature of business methods that business methods are a springboard for the sustainable development of existing businesses and the appearance of new enterprises and industries. In other words, business methods can result in significant changes of the economy and boost the development of economies due to the importance of business methods in many business activities. Thus, Wu (2005) points out that in order to protect their inventions in business methods, many organizations have been applying for patents.

2.2. Patents and business methods

Patents are originally a field related to only technological innovations. Nonetheless, a long controversy has led to a question about the eligibility for business methods patenting in many areas in the world because of the presence of technologies in business methods (Wu, 2005).

2.2.1. What are patents?

A patent is a useful tool to develop research and science (Walsh, Lee and Jung, 2016). It is an arrangement between the inventor and the patent office in a particular country or region to provide patent holders with an exclusive right on their invention in a maximum of 20 years (Ellis, 2016) and to protect their new technologies from being copied by others (Moehrle, Walter and Wustmans, 2017).

Organizations or inventors as well as the community can receive many advantages by adopting patents. Organizations may legally apply their patented inventions in creating their products/ services or in licensing their rights to other parties to get revenues (Walsh, Lee and Jung, 2016). Other organizations and people, who are not patentees or license holders, are not allowed to use patented inventions in any ways to return money in the region these inventions have been protected, excluding the purpose of research (Vulić et al., 2017). If they commercially exploit ideas which have been patented by others (maybe to generate similar goods with lower costs), they will get legal troubles, suffer financial damages for courts, lose their clients' trust, and negatively affect their company's images and profits (Ellis, 2016). This is also the reason why patents are considered as valuable items and many companies often pay the large amount of money to get the inventions they need (Kang and Bekkers, 2015). Patents not only makes a great contribution to companies' business values and achievement as well as their customers' confidence in their goods but also gain the competitive advantages over their competitors (Maresch, Fink and Harms, 2016), thereby promoting the growth of economies (Vulić et al., 2017). Furthermore, Li et al. (2017) suggest that patents supply engineers and designers with a huge source of knowledge of their own technology area and many solutions to deal with issues to improve their products. Otherwise, when studying patents, they may find some expired patents which are free to apply and these technologies might be useful for them and their companies (Ellis, 2016). On the other hand, patents are also helpful to the whole society, especially laymen, as new knowledge of the inventions are spread to the public (Ellis, 2016) or new technologies are invested to transfer to products or services supplied to clients for their life (Walsh, Lee and Jung, 2016). In addition, protection of new ideas or technologies can generate more new jobs and industries for societies and increase the quality of life for people (Vulić *et al.*, 2017).

Nonetheless, the protection of inventions also causes some difficulties. Woo, Jang and Kim (2015) propose that competitors might not have any opportunities to operate or succeed in the market in the same field of enterprises owning patents due to too many exclusive rights on inventions hindering commercialization. Besides, in some cases, patentees get some troubles as they are not allowed to forbid people from using their inventions outside the country or area where patents have been granted (Vulić *et al.*, 2017), so to deal with this fact, they may decide to apply for a patent abroad if they think that they can have any advantages in other countries (Archontakis and Varsakelis, 2017).

Although there are some differences among various patent offices in applying for patents due to their own law and resources as well as different relationships between patent examiners and applicants in each country, in general, standards to make an invention become a patent are similar. They are 'novelty, non-obviousness and utility' (Webster, Palangkaraya and Jensen, 2007). Ellis (2016) gives the explanation of those criteria:

- Novelty: That invention has never generated before or it may be an improvement on existing products or methods.
- Non-obviousness: The invention provides better results and it must give some benefits like reducing cost, improving quality, providing more characteristics, etc.
- Utility: It can help its company not only to gain competitive advantages and prestige in the market but also to get higher prices.

Heo and Kien (2011) point out that in the same way as many developed countries, Vietnam has the patent standards: 'novelty, industrial applicability, and inventive steps'. And according to Law of Intellectual Property in Vietnam 2005 and 2009, an invention is seen to be novel if there have not been its publications by any means/forms in any places in the world before (including in Vietnam and foreign nations). In addition, Vietnam also applies the 'first-to-file principle' to its patents system. When there are two or more organizations or people expect to apply to the patent system for the same invention, a patent will be provided for the one who meet all requirements for the patent grant and file documents for the patent first, regardless of who has the ideas for the inventions first.

2.2.2. Business method patentability

There are three most popular classification systems of patents in all over the world, which are IPC (International Patent Classification built by the World Intellectual Property Organization WIPO), USPC (The United States Patent Classification created by the United States Patent and Trademark Office USPTO) and CPC (Cooperative Patent Classification developed by the collaboration between the European Patent Office EPO and USPTO) (Ellis, 2016). In each system, patents are often classified into various groups in various fields based on some particular standards. These categories are very useful for the patent process. When some organization or person desires to apply for a patent, their inventions will be properly arranged in proper classifications in the patent classification system and sent to patent examiners with suitable specialties (Cavalheiro, Joia and Van Veenstra, 2016). According to WIPO (2017), IPC is more popular in many nations including Vietnam. IPC is 'a hierarchical classification system' with some levels: section, class, subclass, group and subgroup. Section is the highest level of this system, which is divided into 8 sections of technological fields from A to H.

Consequently, all common patent classification systems demonstrate that traditionally, only technologies are protected by patents. Nevertheless, since 1990s, there have been numerous business method patent applications in the USA, but the USA, Japan and Europe did not accept patents for business methods. This fact causes a serious discussion of the eligibility of business methods for patents (Wu, 2005). In 1998, the State Street Bank and Trust and Signature Financial Corporation had a dispute over patent infringement on business methods. Further, later on, in some lawsuits to require business method patents, for instance, the Bilski case, or the Alice Corporation vs. CLS Bank International, the court decided not to accept patents in business methods due to some restrictions in law (Moehrle, Wustmans and Gerken, 2017). Nevertheless, in 2000, the Trilateral Patent Offices (USPTO, EPO, and JPO) carried out a process of testing business methods and made a decision that business methods can be patentable if they have evidence showing their relationship with computer technologies to cope with business issues. It means that a technical feature is necessary to patent a business method and "pure business methods" are not in patent classifications (Wu, 2005). When giving some concepts to classify technologies in patents, Schmoch (2008) refers to the subclass G06Q which represents business methods and he also assists that there are some strong relationship among business methods, "telecommunication", "digital communication", "basic communication processes" and "computer technology". This subclass includes six main groups showing business methods related to computer technologies, for instance "administration; management", "payment architectures", "commerce", "finance" "tourism", and so on (Kim, Jeon and Kim, 2015).

In conclusion, business method patents are the integration of business methods and computer software or technologies (Wu, 2005). The reason why many organizations have made their effort for patenting business methods because they can benefit greatly from this kind of patents like affirming their position in the market, gaining their competitive advantages, getting financial benefits, protecting their commercial techniques from other companies, thereby fostering the economy and opening up "business revolution" (Spulber, 2011). However, Schmoch (2008) claims that in many nations, business method patents are not acceptable, which motivates to learn about whether business methods are patentable in a developing country like Vietnam or not, in particular in the current time - the digital economy. It is the one, which is the combination of digital technologies and traditional business frameworks in the old economy, has developed significantly in Asia (Li *et al.*, 2020).

3. Research methodology

In order to answer three research questions, the research methodologies of patent analysis combined with time series analysis to look for business method patents in Vietnam over time, and patent co-classification analysis to see if and how business method patents move to technologies in the digital economy in the same country. The reasons why patent analysis and patent co-classification analysis are selected for this study are explained in the following.

Firstly, patent analysis is one of the most reliable approaches to analyze the development of technologies and technology movement (Jeong, Kim and Choi, 2015). The major knowledge of technologies is provided by patent data source, which is considered to be the newest and most reliable one (Caviggioli, 2016). A patent provides with several kinds of information such as its inventors and applicants, its technology fields (which are put properly in patent classifications), applicant time, the invention description and so on (Lei, Qi and Zheng, 2019). Further, related patents can be searched to serve the time series analysis to identify the growth of a particular technology field over time (Kim and Kim, 2012). Hence, patent analysis is suitable to see how business method patents (in the subclass G06Q) develop in Vietnam.

Secondly, patents supply a critical signal of technology movement as a patent may involve various areas of knowledge (Preschitschek et al., 2013). A granted patent is categorized into one or more classification codes by patent examiners (Ellis, 2016). The fact that a patent is put in at least two classes ("co-classification") shows a signal of the movement of technologies to another one (Kim and Kim, 2012). Classification codes are provided on the publication dates of granted patents so the needed data is available and adequate. Patent co-classification analysis is an accurate method to look for technology movement (technology convergence (Song, Elvers and Leker, 2017). Thus, in this study, IPC classifications of all patents in G06Q will be compared with all IPC classifications related to computer technologies and communications like Schmoch (2008) proposes above, especially technologies in the digital economy to see how business methods move to digital technologies and how this relationship grows over time.

The analysis will be implemented in the three-step process:

• Step 1: Collect bibliographic patent data (including patent title, classification codes, application date, inventors, applicants and so on) based on the subclass G06Q on the database of IP Vietnam (IP Vietnam, 2023)

• Step 2: Analyze collected patents in the time series to determine the growth of business method patents

• Step 3: Compare IPC classifications of each patent in the collected patent data with IPC classifications of computer and communication technologies to identify the technology movement from business methods to such technologies

4. Results and discussions

The analysis process is performed step by step.

• Step 1: Business method patents in Vietnam was collected in June 2023 based on their application dates. The data source appears in the time frame from 2006 to 2023, which is presented in Table 1 and Figure 1. The first year that Vietnam had the very first business method patents is 2006, which is suitable to the condition of this issue in the world as according to Wu (2005) business methods have been accepted to be patented by USPTO, EPO and JPO since 2000. In addition, Figure 1 shows the patent counts dramatically decreased since 2021, so the data is excluded from 2021 onward for two reasons. First, all IP offices need a period of time (18 months in case of Vietnam (IP Vietnam, 2023)) to do the examination process after receiving patent applications so the data in recent years is not complete (Moehrle, Wustmans and Gerken, 2017). Second, the Minister of Science and Technology presented that by the end of 2022, about 20.000 patent applications have been pending (VOV, 2023). The deleted data is highlighted in grey in Figure 1 and from now on the analysis is implemented till 2020.

Table 1. The number of business method patents in Vietnam over time.

Application year	The number of patents	Application year	The number of patents	Application year	The number of patents
2006	6	2012	42	2018	202
2007	16	2013	39	2019	135
2008	27	2014	56	2020	288
2009	13	2015	69	2021	93
2010	26	2016	117	2022	25
2011	33	2017	119	2023	4

Source: Authors (based on patent data collected from IP Vietnam (2023))

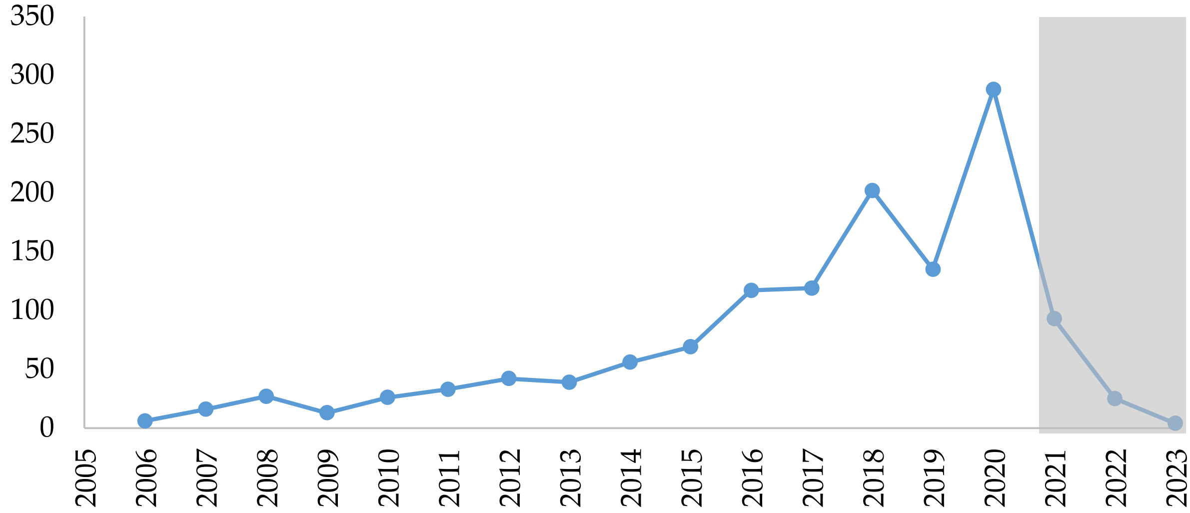

Figure 1. The development of business method patents in Vietnam over time.

Source: Authors (based on patent data collected from IP Vietnam (2023))

• Step 2: There are only 1188 business method patents found in Vietnam from 2006 to 2020. And based on data from Table 1 and Figure 1, the compond growth rate (CGR) of business method patents in Vietnam from 2006 to 2020 is calculated:

$$r = \sqrt[n]{\frac{E}{B}} - 1 = \sqrt[15]{\frac{288}{6}} - 1 = 29{,}4\%$$

In which, r is CGR of business method patents, E is the number of patents in the end year (2020), B is the number of patents in the beginning year (2006) and n is the number of years in the period (Paquette, 2005).

The absolute number of patents is quite small in comparison with business method patent counts in the USA (for instance, 6649 patents in business methods in the USA till only 2005 Wu (2005)). It is easy to understand as the patent system in Vietnam is just in the beginning of its development with several challenges and strengths (Dzung, 2007; Vu, 2012). Nonetheless, both Table 1 and Figure 1 demonstrate that the number of business method patents applied in Vietnam increased quite strongly from 2006 to 2020 (CGR = 29,4%), especially from 2016, and it reached the peak in 2020. The result got from the patent data means that there is a promising growth of business method patents in Vietnam – an emerging country, for the present and future.

• Step 3: As mentioned above, Schmoch (2008) claims that business method patents need to combine with four technology fields, which are “telecommunication”, “digital communication”, “basic communication processes” and “computer technology”. The list of IPC patent classifications in such technologies is in Table 2.

Table 2. The list of IPC classification codes of technologies needed to combine with business methods for patents.

Technology areas	IPC classification codes
"Telecommunication"	"G08C, H01P, H01Q, H04B, H04H, H04J, H04K, H04M, H04N-001, H04N-007, H04N-011, H04Q"
"Digital communication"	"H04L"
"Basic communication processes"	"H03#"
"Computer technology"	"(G06# not G06Q), G11C, G10L"

Source: Schmoch (2008)

When comparing all IPC classifications of each patent in G06Q in Vietnam in the collected data from step 1 with all IPC classification codes in Table 2, many IPC codes in Table 2 do not have any relationship or have a small relationship with G06Q. However, the result shows that G06Q patents in Vietnam move to only H04L ("digital communication") with 91 co-classified patents from 2006 to 2020 and G06F (one code in "computer technology") with 168 co-classified patents in the same period (Tables 3&4 and Figures 2&3). It is so surprised as Bielig (2022) who applies the list of technology fields of Schmoch (2008) arranges three kinds of technologies: "digital communication" (H04L), "computer technology" (especially G06F) and business methods (G06Q) into digital technologies. According to the IPC Publication of WIPO (WIPO, 2023), "digital communication" H04L includes technologies related to "transmission of digital information", in particular, "transmission of data or signals" in a "digital form". G06F is technologies in "processing or transporting electric digital data". Hence, business method patents in Vietnam have developed in the environment of digital technologies. Moreover, Figures 2&3 express that the number of business method patents co-classified as H04L and G06F has raised moderately since 2006 till 2020 (with CGR as 23,4% and 31,7%, respectively), and also strongly since 2016. This means that business methods (which are itself one of digital technologies) in Vietnam are trending to move towards other kinds of digital technologies - a significant element in the digital economy (Williams, 2021).

Table 3. The number of business method patents co-classified as "digital communication" (H04L) in Vietnam over time.

Application year	Co-classified patents	Application year	Co-classified patents
2006	1	**2015**	6
2008	3	**2016**	8
2010	6	**2017**	10
2011	1	**2018**	20
2012	1	**2019**	13
2013	1	**2020**	19
2014	2	**2021**	5

Source: Authors (based on patent data collected from IP Vietnam (2023))

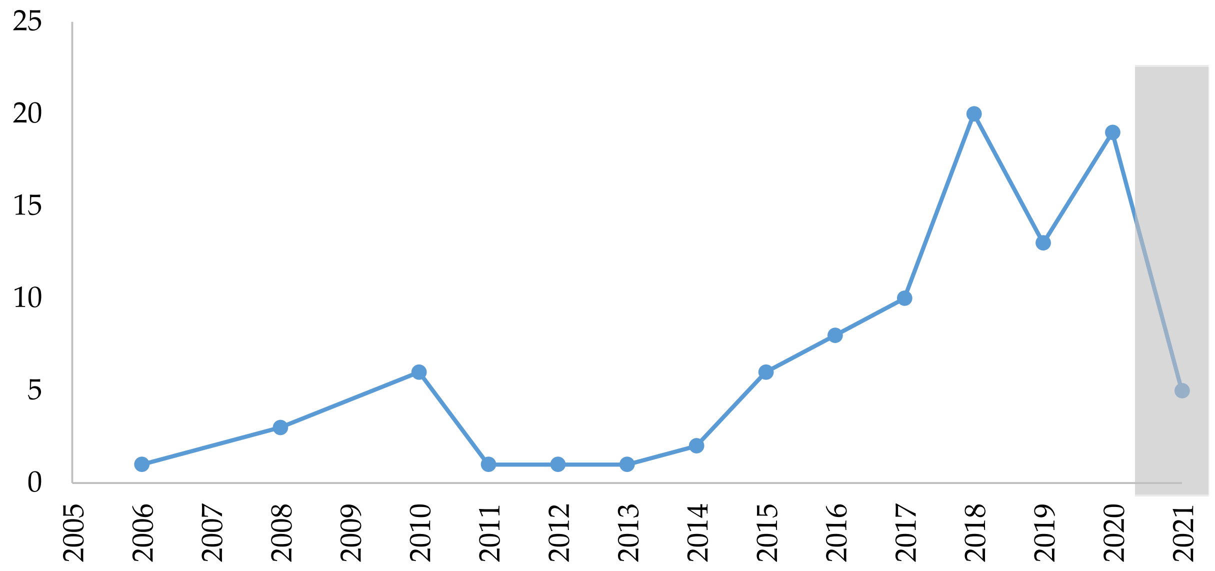

Figure 2. The development of the number of business method patents co-classified as "digital communication" (H04L) in Vietnam over time.

Source: Authors (based on patent data collected from IP Vietnam (2023))

Table 4. The number of business method patents co-classified as "computer technology" (especially G06F) in Vietnam over time.

Application year	Co-classified patents	Application year	Co-classified patents
2007	1	**2015**	15
2008	4	**2016**	12
2009	1	**2017**	20
2010	7	**2018**	24
2011	3	**2019**	20
2012	5	**2020**	47
2013	4	**2021**	17
2014	5	**2022**	3

Source: Authors (based on patent data collected from IP Vietnam (2023))

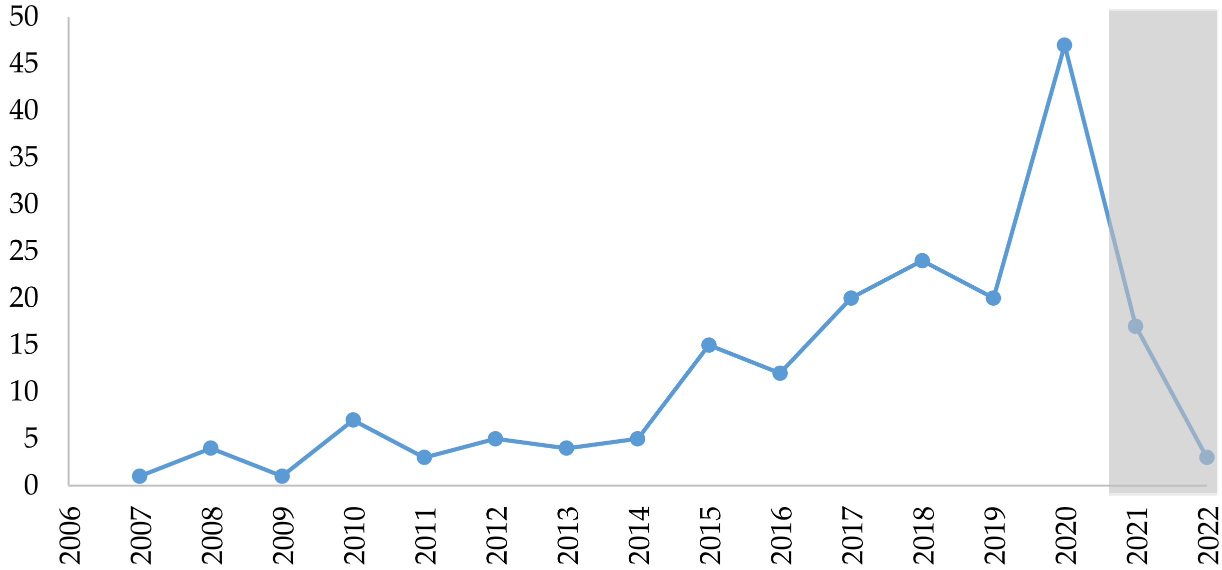

Figure 3. The development of the number of business method patents co-classified as "computer technology" (especially G06F) in Vietnam over time.

Source: Authors (based on patent data collected from IP Vietnam (2023))

In conclusion, patents in business methods in Vietnam have some signal of the strong growth in the future. Further, they are a cornerstone in the growth of digital technologies in the digital economy in Vietnam.

5. Conclusion

Recently, the development of business technologies and the internet have made the emergence of e-commerce. Business methods have rapidly become a phenomenon gaining several interests. Many organizations have been trying to look for a way to protect their intellectual properties of business methods. In 2000, after a long time of controversy over the patentability of business methods, this kind of innovation was eventually approved to be patented in the USA, Europe and Japan with the hard requirement that business methods must combine with information technologies (Wu, 2005). This fact is the motivation of this study.

Based on the patent data base of Vietnam – an emerging economy, the study comes to answer the three main research questions.

RQ1: Are business methods patentable in Vietnam?

RQ2: How have business methods patents grown in Vietnam over time?

RQ3: How have business method patents evolved towards the digital economy in Vietnam?

Firstly, the patent data shows that there are 1310 business method patents in Vietnam since 2006. This also means that business methods have been eligible to be patented in Vietnam. Secondly, based on Table 1 and Figure 1, the number of business method patent has risen significantly since 2006, especially 2016. Although its patent count is still not high, the result of CGRs delineates that the IP system in Vietnam has started to attract this kind of innovation. Thirdly, the co-classification of business method patents as "digital communication" and "computer technology" expresses that there is a very clear signal of the movement of business methods to digital technologies in Vietnam, which opens a prospect of the promising development of the digital economy in this country in the future.

For theoretical implications, our study opens a new insight into business method patents towards the digital economy in Vietnam. The research systematizes theories related to business methods put in the combination of the protection of patents under IP law of Vietnam. It also provides the overall picture of business methods in the relationship with digital technologies in the era of the digital economy. In the particular case of Vietnam, this paper affirms the fact that innovation in business methods is protected under law and opens up a new direction of research for scholars in Vietnam who expect to learn more about patents and business methods as we cannot find any researches on this field in Vietnam at the moment.

For practical implications, the results of our study may help enterprises' managers in information about business method patentability in Vietnam. From this point, several companies who have not known or interested in this issue can consider for patenting their innovative business methods to obtain their competitive advantages and protect their innovations. Additionally, the research also presents the movement of business methods towards the digital economy, so it can remind entrepreneurs about the current trend of business methods and patents in Vietnam.

Nevertheless, the study also has some limitations. Firstly, the study just has looked at IT business methods based on the patent database in the IPC classification G06Q in Vietnam. "Pure business methods" (without any technical features) have not been mentioned. Secondly, we apply the bibliographic patent data to see the co-classification to look for the movement from business methods to digital technologies. Nevertheless, the inner nature of the movement has not been explained.

Thus, further research can be performed to cope with such limitations. Firstly, quantitative and qualitative analyses can be carried out by using surveys or semi-structured interviews with firms' managers to understand more clearly the development of not only IT business methods but also "pure business methods" in the digital economy in Vietnam. Secondly, the patent citation analysis (based on the idea that one patent cites another (Yoon and Park, 2007)) or the semantic patent analysis may be used to dive into the nature of IT business method patents in the relationship with digital technologies towards the digital economy.

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APPENDIX

Data base is collected from the patent data source in IP system in Vietnam: http://wipopublish.ipvietnam.gov.vn/wopublish-search/public/patents?1&lang=en&query=*:*

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E-Payment in E-Commerce: A Systematic Literature Review and Some Future Research Directions

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ABSTRACT

The recent growth and development of technologies has led to considerable improvement in internet technologies. Largely, electronic business services are fulfilling consumers requirements. E-payment system is increasingly becoming a daring means of payments in today's business world. This is due to its efficiency, convenience and timeliness. Business transactions are continuing to move away from cash-based transactions and toward electronic-based transactions as a result of the Information and Communication Technology (ICT) Era and digital innovation. The e-payment system was developed as a superior substitute for currency and trade barter, not to completely replace cash. E-payment is a crucial component of online business. As a result, many studies were conducted around the globe by scholars on epayment adoption. This study aims to analyze the existing literature on e-payment systems on e-commerce with a view to emphasizing the breadth of the e-payment system and the technique employed by previous researchers in order to identify research gaps and propose future studies. In addition, the authors identify the directions for future including: (1) Perform a multi-factor combination study to evaluate the effect of e-payments security on e-commerce; (2) Use quantitative criteria combined with qualitative to identify the factors affecting e-payment adoption in e-commerce.

Keywords: e-payment; e-commerce; review; systematic; directions

1. Introduction

The E-Payment System is a vital component for ensuring secure and efficient transactions in the realm of e-commerce. E-commerce is experiencing rapid growth, presenting companies with

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lucrative opportunities to boost sales through online channels [23]. In today's world, both individuals and businesses are well-acquainted with e-commerce as a means to sell and buy products and services [29]. However, the emergence of e-commerce has also given rise to new financial demands that traditional payment systems often struggle to address efficiently [5]. Consequently, an electronic payment system has emerged as a replacement for cash-based transactions [3]. The implementation of e-payment systems has led to a substantial increase in the volume of sales for goods and services, making electronic payments an increasingly vital component of the overall payment landscape [35].

E-Payment refers to a system that offers tools for conducting online transactions to pay for services or goods [8]. The E-payment system facilitates seamless transaction processing in e-commerce, benefiting both consumers and sellers [27]. Its utilization brings numerous advantages for payers, payees, e-commerce platforms, banks, organizations, and governments, which can contribute to the widespread adoption of electronic payment systems globally [37]. An efficient and reliable e-payment system enables swift payments, improved transaction tracking, transparent financial exchanges, reduced processing time, cost savings, and enhanced trust between sellers and buyers. The development and integration of technology within e-payment systems encompass financial transactions, user digitalization, and high-quality e-payment technology that shape the perceptions and expectations of users [4]. Currently, popular electronic payment methods include transactions through ATMs, credit or debit card usage, online banking, and mobile banking. Embracing e-payment solutions can significantly reduce costs associated with traditional paper-based payment methods [30].

The process of online payments entails various financial risks that can arise during transactions, these negative impacts are often attributed to several factors [2]. Due to the inherent nature of the internet, technologies not specifically designed for e-commerce cannot guarantee the authenticity and security of online payments. Therefore, there is a need for an electronic payment (e-payment) system that not only provides a secure payment infrastructure but also possesses crucial features such as online customer and seller authentication, proof of authorized transactions for both sellers and banks, and protection of customer privacy and transactional data [21]. Consequently, online purchasing goods or services can sometimes lead to uncertainty and inherent risks. Despite the advancements in e-commerce technologies over the years, concerns about the security of hard-earned money still remain unanswered [12].

This paper aims to explore the concept of electronic payments, encompassing its definition, types, evolution, and potential risks associated with the use of electronic payment systems. This research endeavors to thoroughly explore multiple facets of the E-Payment System, encompassing its importance, functionality, challenges, and prospects. Additionally, this research will analyze various studies conducted on the implementation of electronic payment systems in different countries. The analysis will consider the methods employed, factors influencing the systems, and the scope of these studies, providing valuable insights and serving as a reference for future research in this field. Through a comprehensive analysis of existing studies and an examination of the current e-commerce landscape, this research aims to enhance our understanding of how the E-Payment System influences and shapes the world of e-commerce.

2. Electronic Payment (E-Payment) System

2.1. The Definition of E-Payment

Electronic payments is a payment mechanism that uses electronic media that do not involve cash [20]. Dennis [13] defines e-payment system as a form of financial commitment that involves the buyer and the seller facilitated via the use of electronic communications. Briggs and Brooks [10] see e-payment as a form of inter-connections between organizations and individuals aided by banks and inter-switch houses that enables monetary exchange electronically.

Electronic payment systems can also be defined as a type of inter-organizational information related to transaction systems, linking various associations, and linking to individual clients. Need for a complex interaction between partners, technology and environment. Electronic payments may be defined as an electronic value transfer of a payment from the payer to the recipient through an electronic payment mechanism. The e-payment service comes with a web-based user interface that allows customers to access, and manage their bank accounts and transactions remotely [22]. In general, e-payment refers to electronic payment in the context of e-commerce online transactions conducted over the Internet. Electronic payments can also be defined as a paperless payment process [23].

According to the aforementioned definitions, an e-payment system may be summed up as a system of parts and procedures that enables two or more parties to trade and exchange money electronically.

2.2. Types of E-payment Services

Nowadays most used electronic payment systems are the following: Smart card-based e-payment system, Online payment systems, Mobile phone-based payment system, E-Wallet Payment Systems, and the E-Cheque Payment System. New payment types are continuously discovered and additional methods exist or are being developed continuously each year.

- Smart card-based electronic payment system

The Smart card uses a plastic card with an embedded integrated circuit chip providing users with mobility and data portability. It combines plastic and magnetic cards used for different identification purposes into one card, which can access multiple services, networks and the Internet allowing it to be used for multiple functions and applications [39].

The smart card payment system provides a three-factor authentication security mechanism for the verification and authentication of a given user. These are personal identification number (PIN), digital signatures, and fingerprint biometrics. This mechanism increases the security level of this payment system [5]. Credit cards, debit cards and prepaid cards currently represent the most common form of electronic payments.

- Online payment system

Online payments are based on Internet Banking and involve transferring money or making a purchase online via the Internet. Consumers can transfer money to third parties from their bank account, or they can use credit, debit, and prepaid cards to make purchases online.

The Online payment system allows customers of a financial institution to conduct financial transactions on a secured website operated by the institution, which can be a retail bank, virtual bank, credit union or building society [39]. To access a financial institution's online banking facility, a customer using his Internet connection must have a registered account for verification. This allows the customer to link his customer number to several accounts which he controls, which may be cheques, savings, loan, credit cards, and other accounts [41].

- Mobile phone based payment system

This system allows consumers to use their mobile phones in order to pay for transactions in several ways. Consumers can send an SMS message, transmit a PIN number, use WAP to make online payments or perform other segments of their transaction with the phone. As phones develop further, consumers are likely to be able to use infrared, Bluetooth, NFC and others to transmit full account data in order to make payments securely and easily from their phone.

Mobile devices may include mobile phones, PDAs, wireless tablets, and any other device that connects to the mobile network and allow payments to be made. Mobile payments can become an alternative to paper money, cheques, credit cards and debit cards. It can also be used for payment of bills, electronic funds transfer, Internet banking payments, direct debit, and electronic bill presentation [16]. SMS banking is a service that is offered from banks to their customers, permitting them to operate selected banking services over their mobile phones using SMS messaging [41].

- Electronic Wallet Payment System

The electronic wallet (e-wallet) provides all of the functions of today's wallet on one convenient smart card eliminating the need for several cads. The e-Wallet will also provide numerous security features not available to regular wallet carriers [41].

The most common example of e-wallet is Paypal. PayPal allows payments and money transfers to be made through the Internet. It is a fast way to pay and get paid online. With Paypal money is sent without sharing financial information. People also have the flexibility to pay using their account balances, bank accounts, and credit cards.

Another popular example of an e-wallet on the market that can be used for micro-payments is Windows Phone Wallet developed by Microsoft. This e-wallet eliminates the reentering of personal information on the forms, resulting in higher speed and efficiency for online shoppers.

A new emerging e-wallet is Google Wallet, which has a similar function as PayPal to facilitate payments and money transfers online. It also features a security that has not been cracked to date, and the ability to send payments as attachments via email. Google Wallet allows an easier way to pay in stores, online or to anyone in the US with a Gmail address. It works with any debit or credit card, on every mobile carrier. Functions like "Tap and pay" are key elements that allow users to pay in-store at millions of locations.

- Electronic Cheque (eCheque)

Payment System Electronic cheques are the equivalent of paper-based cheques. The electronic cheques are initiated during an on-screen dialog and the funds are transferred over a computer network at the time of the transaction. Authorized users are assigned a portable electronic cheque book which is an amalgam of a secure hardware device and specialized software.

The payer writes the e-Cheque on a computer, cryptographically signs it, and e-mails it via the Internet. The payer signs the e-Cheque using the secure hardware device, and includes its authenticating certificate, signed by the issuing bank. The payee receives the e-Cheque, verifies the payer's signature on the e-Cheque, endorses it, writes a deposit slip, and signs the deposit slip [5]

2.3. The Evolution of the Electronic Payment System

The payment system has grown significantly along with technological advances. In 1914 a shopping center, oil company, and western union issued a customer card to provide convenience to customers in making payments for the goods or services they would use, along with this, the banking industry issued credit cards [3]. Since that time, electronic currency became widespread. Initially, all paper-based credit card payments, until the 1990s when the card was fully transformed into electronics [36]. The evolution of electronic payments began in 1918 when the Federal Reserve Bank first transferred currency via telegraph [26].

With the evolution of e-commerce and technological advancements, electronic cashless payments are now used conventionally even though they have been designated in 1960. The research community has made tireless efforts so in the development of various online payment models such as Model Asokan N. and JW models [36]. Due to the increasing number of credit cards usage, the industry has grown rapidly which lead to the introduction of debit cards too. Debit and credit cards are now used in transactions payments for all types of purchases and or services rendered all over the world.

As electronic payment systems continue to evolve, they face challenges and opportunities in various areas. Technological advancements, such as the adoption of mobile wallets, contactless payments, and blockchain-based systems, offer new possibilities for further streamlining and enhancing the payment experience [32]. Additionally, regulatory frameworks and consumer expectations play a crucial role in shaping the future of electronic payment systems, ensuring consumer protection, privacy, and fair competition [22].

In conclusion, the payment system has experienced remarkable growth since its early beginnings in the early 20th century. From customer cards to credit cards and the eventual transition to fully electronic payment methods, the evolution of electronic payments has significantly transformed the way transactions are conducted [49]. As technology continues to advance, the ongoing development of electronic payment systems promises increased convenience, security, and efficiency, shaping the future of financial transactions worldwide [27].

3. Research Methodology

The authors systematically review previous academic studies. The research uses qualitative and quantitative research methods to thoroughly understand the e-payment system, and research theories used in previous publications.

3.1. Search procedure

The authors use a variety of approaches to identify and categorize relevant articles, initiating manual searches and sifting through articles related to e-payment. By examining keywords, article titles, and abstracts, the authors built a list of related articles on Scopus, Elsevier Science Direct, and PubMed. The team also expanded the search by looking at a list of references to previously related articles, otherwise known as the Backward and Forward Reference Search method [56].

3.2. Inclusion criteria

All articles are further assessed based on the following criteria:

Firstly, international articles must be published in peer-reviewed journals to ensure the quality and reliability of research results. For studies in Vietnam, the scope of the search is expanded, including some articles from unassessed journals that have a great impact on many fields.

Secondly, this article focuses on evaluating empirical research and theoretical research that is eliminated to prioritize the flexibility of the subject in the investigation in different aspects and contexts, as well as ensuring that the subject of research is closely followed.

3.3. Evaluation methods

In this study, the researcher employed meta-analysis as a quantitative approach to synthesize and summarize the findings of various research studies. Meta-analysis involves the re-examination and statistical analysis of primary data collected from multiple studies [17]. A total of 48 research papers focused on the e-payment system in e-commerce were identified, covering the period from 2005 to 2020 and originating from various countries. The purpose of this research was to provide insights into the scope of the e-payment system and the methodologies employed by previous researchers. Additionally, the study aimed to identify research gaps and provide recommendations for future studies in this field.

4. Analysis of results

Much of the research on electronic payments to date has been published in numerous journals. After reviewing the relevant literature, the authors found a lot of different views on e-payments and e-payments in e-commerce by previous scholars and how this has changed over time.

First, the papers mainly study the competitiveness of products in a particular country/region (80.7%), with little research linking countries, continents, or the world. Tella & Abdulmumin [57] aimed to investigate the influence of e-payment systems on user satisfaction at the University of Ilorin, Nigeria. Hidayanto et al. [22], Preetha & Divya [34], Suwunniponth [40], and Khan et al. [26] studied about e-payment systems in developing countries in Asia. Research conducted by Ayo & Ukpere [9], Singh & Shahazad [38], Nwaolisa & Kasie [31], and Aigbe & Akpojaro [5] has primarily focused on Africa. Do Khanh Huyen [58] has delved into researching solutions to improve e-payment at Commercial Bank in Viet Nam.

Second, the results of a review on relevant studies show that each study uses a combination of different research methods. However, most studies use primary methods such as Questionnaires [10,12,15,21]; InterviewInterview & Questionnaire [6,24,26]; Observation [28,29]; Experiments [49,51], and others [22,31,54,54].

Third, research results on e-payment in e-commerce have not been finalized, and still exist conflicting results. Most of the recent topics focus on e-commerce or e-banking innovation adoption in developed countries [59,60,61,62,63]. A few works are done to address e-payment and solely focus on developed countries with an advantage in IT knowledge [64]. Many verifiable studies have also revealed the e-payment systems with some investigating factors that affect its uses and adoption [65]. The lack of an efficient way may hinder the success rate of e-commerce development [65].

4.1. Scope-demographic

Table 1 highlights an important observation regarding the focus of research on e-payments, indicating that many studies have primarily examined e-payment systems within specific countries or regions, with limited research exploring the connections between countries, continents, or the global landscape.

Several studies mentioned in the table, such as those by Gandawati [1], Hascaryani [20], Kabir et al. [3], Junadi [23], Kaur & Pathak [24], Hidayanto et al. [22], Preetha & Divya [34], Suwunniponth [40], and Khan et al. [26], have primarily focused on developing countries in Asia. These research efforts aim to identify the key factors that play a crucial role in building trust among customers of online electronic payment systems, as well as investigating consumer intentions to use electronic payments. This indicates a strong interest in understanding and enhancing the adoption and usage of e-payment systems in the Asian context, where technological advancements and digital transformation are rapidly taking place.

Similarly, research conducted by Ayo & Ukpere [9], Singh & Shahazad [38], Nwaolisa & Kasie [31], and Aigbe & Akpojaro [5] has primarily focused on Africa. These studies explore various aspects of e-payment systems in the African region, including factors influencing their adoption and the implications for businesses and consumers. This suggests a growing recognition of the potential of electronic payments to drive financial inclusion, economic growth, and digital empowerment in African countries.

Table 1. Some research on electronic payment

Author/year	**Research name**	**Magazines/publishers**
Antwi, S. K., Hamza, K., & Bavoh, S. W. 2015	Examining the effectiveness of electronic payment system in Ghana: the case of e-ZWICH in the Tamale metropolis	*Research Journal of Finance and Accounting*
Gallardo, R. K., Olanie, A., Ordóñez, R., & Ostrom, O. 2015	The use of electronic payment machines at farmers markets: results from a choice experiment study	*International Food and Agribusiness Management Revie*
Briggs, A., & Brooks, L. 2011	Electronic payment systems development in a developing country: The role of institutional arrangements	*The Electronic Journal of Information Systems in Developing Countries*
Hanzaee, K. H., & Alinejad, S. 2012	An investigation about customers perceptions of security and trust in e-payment systems among Iranian online consumers	*Journal of Basic and Applied Scientific Research*
Hidayanto, A. N., Hidayat, L. S., Sandhyaduhita, P. I., & Handayani, P. W.	Examining the relationship of payment system characteristics and behavioral intention in e-payment adoption: a case of Indonesia	*International Journal of Business Information Systems*

2015		
Ebiringa, O. T. 2010	Automated teller machine and electronic payment system in Nigeria: A synthesis of the critical success factors	*Journal of Sustainable Development in Africa*
Kavu, T. D., Rupere, T., Nyambo, B. M., & Hapanyengwi, G. T. 2013	An electronic payment model for small and medium enterprises in Zimbabwe	*International Journal of Scientific and Engineering Research*
Masihuddin, M., Khan, B. U. I., Mattoo, M. M. U. I., & Olanrewaju, R. F. 2017	A survey on e-payment systems: elements, adoption, architecture, challenges and security concepts	*Indian Journal of Science and Technology*

Source: Research team synthesized

Yang [42] contributes to the research landscape by examining the state, challenges, and future expectations of electronic payment systems in Europe. This research sheds light on the unique characteristics of e-payment systems in the European context and provides insights into the opportunities and hurdles faced by the region in the adoption and development of digital payment technologies.

Turning to the Middle East, research conducted by Dastan & Gürler [12], Hanzaee & Alinejad [19], and Zokaee et al. [43] provides valuable insights into e-payment systems in the region. These studies delve into various aspects, including the adoption, usage patterns, and challenges specific to the Middle Eastern context. Understanding the intricacies of e-payment systems in this region is crucial for fostering financial innovation and facilitating digital transactions in economies that are undergoing rapid transformation.

In summary, while much of the existing research on e-payment systems has predominantly focused on specific countries or regions, it is essential to foster more cross-country and cross-continental collaborations. By expanding the scope of research and investigating the links between countries, continents, and the global payment landscape, a more comprehensive understanding of e-payment systems can be achieved. Such collaborative efforts will be instrumental in driving innovation, facilitating knowledge exchange, and promoting the adoption of secure, efficient, and inclusive electronic payment systems worldwide.

4.2. Geographical characteristics of papers

Table 2 provides insights into the distribution of empirical e-payment system research conducted in various regions, particularly in the context of e-commerce. The data reveals that Asia accounts for a substantial proportion, approximately 45.8%, of the research conducted in this field. This indicates a significant focus on understanding and analyzing e-payment systems in the Asian region. Africa follows closely behind, with 27.1% of the empirical research focused on e-payment systems conducted in the continent. This suggests a growing interest in exploring and investigating the adoption and impact of electronic payment methods in African countries.

The Middle East region accounts for 16.6% of the empirical e-payment system research, indicating a notable level of attention given to studying the e-commerce landscape and associated payment systems in this area. This suggests that researchers are keen on understanding the unique dynamics, challenges, and opportunities related to electronic payments in the Middle East.

In contrast, the research conducted in Europe and America, when combined, shows a comparatively lower percentage. This discrepancy might be attributed to the higher level of technological advancement and adoption of electronic payment systems in developed countries within these regions. The relatively lower numbers could reflect the maturity and widespread usage of e-payment systems in these areas, resulting in fewer research studies being conducted.

Table 2. Place of research and publication

Place	Total Research
Africa	13
Asia	22
The Midlle East	8
Europe & America	5

Source: Research team synthesized

4.3. Methodology

Methodology in previous studies is very substantial because it provides rocks for research. The research design used in the review studies has something in general because most of the studies used survey research design. Research Methodology of this research shows that 67% of the literature under study uses survey methodology and the others used an inquiry methodology. This suggests that many empirical studies are conducted using e-payment survey methods. Thus, future research will be strongly recommended to use other methods of data collection.

Table 3. Analysis of Data Collection Instruments

Instrument	Number of Papers
Questionnaire	27
Interview	7
Interview & Questionnaire	5
Observation	3
Experiment	2
Others	4

Source: Research team synthesized

With regards to the methodology, the questionnaire method is the dominant instrument used in data collection from all the empirical works so far reviewed. This is evident from Table 3 as it records more than 50% of the past studies employed the used of the questionnaire. However, some studies have combined the use of the questionnaire with other secondary source of data. In light of this, therefore, future research in this area would be highly recommended to go for other methods of data collection. Though some studies such as Ebiringa [14], Senyo (2013), and Gallardo et al. [15] were qualitative in nature, further qualitative studies would enhance and bring out hidden issues with regards to some matters especially about customers' perception on e-payment usage.

Further analysis relating to the methodology is the composition of respondents used in previous research. Table 4 shows the analysis on the respondents aspect indicating that most of the respondents used in the previous study were all based on demographics including gender, age, education level, study program, and job status as done by Antwi et al. [7], Dastan & Gürler [12], Hamza & Shah [18], Maadi et al. [28], Mathur [25], Mulyasari [26], Sanghita Roy [34], Ab Hamid [4] this suggests that research is widely conducted among sectors public.

Table 4. Respondent

Respondent	Number of Research
Customer	3
Employee	4
Students	6
Profesional	4
Demographics	10
Academic & Non Academic staff	2

Source: Research team synthesized

5. Discussion and Conclusion

5.1. Research gaps

Research results on electronic payment have not been finalized and conflicting results still exist. However, much empirical studies had been conducted on e-payment systems to investigate factors that influence its use and adoption. Many researches focused on the user acceptability of e-payment system except for Antwi et al. [7] that investigate its effectiveness and Nzaro [32] and Kavu et al. [25] on the role of e-payment system in financial institutions and Small and Medium Enterprises respectively. Further studies could look into payment cultures, demographic and lifestyle characteristics, the readiness of consumers to use electronic banking and the use of Point of Sale (POS) in transactions payments [11]. In the studies given, most of the studies investigated the direct link between factors affecting electronic payments, but ignored the interplay between factors. Therefore, there is a need for a systematic theoretical basis to comprehensively explain all about e-payments, especially e-payments in e-commerce.

There have been many domestic studies on e-payments. However, so far there has been no comprehensive, complete, and up-to-date study on this issue. Moreover, in the process of reviewing the relevant studies gave the author a lot of information in guiding future research.

5.2. Research orientation

One of the main goals of a systematic literature review is to "resolve ambiguities about definitions and provide an integrated view of the current state of knowledge" [44]. Combining the changes with findings from a systematic literature review, we identified three directions for future research that will have a major impact on the team's understanding of e-payments in ecommerce: (1) Perform a multi-factor combination study to evaluate the effect of e-payments security on e-commerce; (2) Use quantitative criteria combined with qualitative to identify the factors affecting e-payment adoption in e-commerce. Below, we briefly discuss each research direction and offer initial proposals that can serve as sources of ideas for future studies.

5.2.1. Perform a multi-factor combination study to evaluate the effect of e-payments security on e-commerce

Information and communication technology has changed how business models conducted, primarily to automate existing business processes [45]. The number of internet users has been steadily increasing, and this growth has provided encouragement and opportunities for global e-commerce. Financial transactions are also increasingly turning from cash-based to electronic-based systems, made it curious to investigate the information technology complexity impacts on the business [3]. E-payment is an essential part of e-commerce transactions that include electronic payment for buying and selling goods or services being offered by organisations over the internet. The existence of e-commerce cannot be separated from the availability of e-payment) to create an efficient, secure, and sufficient processing system [47]. The e-payment system has several favorable characteristics, including security, reliability, scalability, anonymity, acceptability, privacy, efficiency, and convenience [48]. E-payments have modified many opportunities and services for customers offered by financial institutions [3]. According to Al-ma'aitah and Shatat [49], an e-payment needs a set of safeguard mechanisms to ensure to protect and secure the customer information and validate the financial transaction.

Reports on e-commerce security threats from the media can undermine trust in e-payment security (EPS) and cause people to decline on the interpersonal trust that arises in human interactions [46]. The emergence of e-payments security motivated many studies to investigate its aspects such as user intention, user satisfaction, and the perceived obstacles to the technology behind e-commerce's acceptance. Unfortunately, those studies focused more on identifying and giving a little attention to exploring a fit model that explains its determinants and consequences [50, 51]. Since then, in future studies, the authors are oriented to show how e-payments security affects e-commerce.

5.2.2. Use quantitative criteria combined with qualitative ones to identify the factors affecting e-payment adoption in e-commerce

The utilization rate of e-payment channels is less than their development rate [52]. Issues such as data privacy, data security, and safety, information disclosure by sellers and third parties, remain strong concerns in e-payment. These issues have a direct negative impact on utilizing e-payment and the trust of customers [53]. Wan et al. [54] suggest that the factors influencing e-payment utilization are easiness, valuableness, user-friendliness and reliability. Consumer trust is a special factor affecting utilization of the e-payment channels [55]. As high security improves trust, the perception of good security and trust will increase the use of e-commerce [48]. From there in future studies, the authors aim to identify the factors affecting e-payment adoption in e-commerce.

5.3. Conclusion

The extent of the research, the publications, and the research techniques utilized by earlier scholars are all highlighted in this study of historical research. In terms of the scope, more research is required on how to build user confidence in electronic payment systems, customer interest in using these systems, the significance of security in these systems as it may affect user confidence, and research on the potential growth of electronic payment systems. It is strongly advised that in future research techniques, the data collecting employ different ways, enhancing and producing answers to hidden difficulties about many concerns, particularly those with future electronic payments.

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PART 3. SUSTAINABLE DEVELOPMENT & LEADERSHIP

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The Role of Education in Promoting Sustainable Lifestyles: An Empirical Study on Students in HCMC – Vietnam

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ABSTRACT

This study investigates the role that education plays in promoting sustainable lifestyles among students in Ho Chi Minh City (HCMC), Vietnam. To acquire data from a representative sample of students, a quantitative research design employing structured questionnaires was employed. The focus of the study was to examine the direct relationship between education and sustainable living behavior, as well as the mediating variables of consciousness, attitudes, beliefs, and personal values. The results indicate that education has a significant direct effect on environmentally responsible behavior. These results emphasize the significance of education in nurturing environmental consciousness and promoting sustainable practices. The study contributes to an understanding of the educational strategies and interventions that can effectively promote sustainable lifestyles among students in HCMC, emphasizing the need to take contextual factors and mediating mechanisms into account. Implications for policy include the significance of increasing educational attainment and incorporating environmental education into the curriculum in order to promote sustainable behavior change.

Keywords: sustainable behavior; education; theory of planned behavior; value-belief-norm theory; environmental education; promoting sustainable behavior.

1. Introduction

Sustainability is a topic of rising importance worldwide, with many nations promoting sustainable lifestyles and policies (Segovia-Villarreal & Rosa-Díaz, 2022; Rodriguez-Domenech *et al.*, 2019). There is a rising interest in promoting sustainability in Vietnam, with the government and civil society groups pursuing many projects to encourage sustainable behavior (Asia News Monitor, 2020). Education has been highlighted as a crucial driver of sustainable behavior (Avelar & Farina,

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2022; Abbas *et al.*, 2019), with research indicating a correlation between increasing environmental awareness and pro-environmental behavior and higher levels of education.

Although studies have shown a correlation between education and eco-friendly practices (Komenda & Monroe, 2023; Piao & Managi, 2023; Viviani, 2022; Tapia-Fonllem et al., 2017), there is still a significant knowledge gap when it comes to the factors that mediate this connection. In order to fill this void, this study will perform an empirical analysis of students in HCMC, Vietnam, examining the role that awareness, attitudes, beliefs, and personal values play as mediators.

Rapid development, pollution, and resource depletion pose serious threats to the natural environment of HCMC (Nguyen et al., 2023; Luong et al., 2020). Studying the function of education in encouraging sustainable lifestyles among students is vital because it shapes students' attitudes, beliefs, and behaviors towards sustainability. The purpose of this study is to shed light on the particular ways in which a student's education impacts their sustainable living choices in HCMC.

This research is grounded in a number of theoretical frameworks, including the value-belief-norm theory, the theory of planned behavior, and the self-determination theory. Schwartz's theory of fundamental human values and the value-belief-norm theory both suggest that individual values play a significant influence in promoting environmentally responsible actions (Schwartz et al., 2001; Stern et al., 1999). Behavioural intentions, which in turn predict conduct, are determined by attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991). For lasting behavior modification, "intrinsic motivation" and "self-determination" are essential, as proposed by the self-determination theory (Van den Broeck et al., 2021).

Ultimately, this study aims to contribute to the expanding body of literature on sustainable behavior and offer significant insights into the role of education in encouraging sustainable lives among students in HCMC. Its findings may have significant consequences for politicians, educators, and organizations working to encourage sustainable behavior and foster the development of a more sustainable society.

2. Theoretical background and hypothesis development

2.1. Education's Role in Encouraging Sustainable Lifestyles through Awareness, Attitudes, and Beliefs

Education about sustainability has emerged as an essential part of the movement to encourage people to adopt more eco-friendly ways of living, as it helps people develop the knowledge, perspective, and values they will need to make better decisions about their consumption and other environmental impacts (Ding *et al.*, 2022; Jiang *et al.*, 2022; Badea *et al.*, 2020). Education also plays a significant role in encouraging sustainable lifestyles by increasing knowledge about environmental concerns, affecting how people think about those issues, and changing their behavior as a result (Ma *et al.*, 2023; Fiedler *et al.*, 2021; Fisher-Maltese *et al.*, 2018).

2.1.1. Theoretical Frameworks

According to the *theory of planned behavior*, attitudes, subjective standards, and perceived behavioral control are all factors that might affect a person's intention to engage in a certain activity (Ajzen, 1991). This theory proposes that sustainable conduct may be encouraged by disseminating information about the benefits of caring for the planet, the promotion of mutually beneficial social norms, and enhancing individuals' perceptions of their agency (Kollmuss & Agyeman, 2002).

Value-belief-norm theory (Stern et al., 1999) suggests that per proponents of this idea, people's actions to protect the environment are influenced by their own set of values, their perceptions about the state of the environment, and their sense of moral duty to do something (i.e., personal norms). It is a guide for thinking about how schools might shape the development of morals and ethics that support eco-friendly practices.

2.1.2. Environmental Problems Awareness

Educating people on the importance of protecting the environment is vital in encouraging more eco-friendly practices. Many studies (for example., Ca & Danh, 2021; Johnson & Činčera, 2021) have shown that environmental education programs favor pupils' knowledge of ecological concerns and foster pro-environmental attitudes. Increasing environmental awareness and concern can result from educational initiatives informing people about environmental problems, including global warming, biodiversity loss, and resource depletion (Luthy, 2019; Ghaderi *et al.*, 2022).

In addition, education is a driving force in increasing people's understanding of environmental issues and their possible effects on individuals and society (Nwachukwu *et al.*, 2021; Teane, 2021; Eppinga *et al.*, 2019). Individuals acquire understanding of ecological systems, climate change, biodiversity loss, and resource depletion through formal and informal educational contexts (Demaidi & Al-Sahili, 2021). Education programs that emphasize environmental consciousness have been found to improve students' familiarity with and aptitude for solving sustainability problems (Sumrall & Sumrall, 2021). Education creates awareness by showing how human actions affect the environment and inspires people to make positive changes (Cheng & Yu, 2022).

2.1.3. Attitudes Regarding Sustainable Ways of Living

A significant role in determining one's choices and actions is played by sustainability education in life. In recent studies, attitudes play a crucial role in determining an individual's intentions and actions (Su & Shi, 2023; Youn *et al.*, 2021). Those who engage in sustainability education hope to instill in their students' values that place a premium on caring for the planet and acting in a manner that minimizes it (Ronen & Kerret, 2020). According to the research mentioned above, pro-environmental attitudes and a heightened feeling of environmental responsibility have been found to result from participation in environmental education programs (Janmaimool & Khajohnmanee, 2019). These beliefs have also been found to endure, demonstrating the potential for education to have a long-lasting effect on people's beliefs and behaviors related to sustainability (Hay *et al.*, 2019).

A person's perspective on eco-friendly practices can be greatly influenced by their educational background. The opinions, feelings, and inclinations of an individual in regards to environmental concerns are all included in their attitude (Baierl *et al.*, 2022; Alajärvi *et al.*, 2021). It has been discovered that pro-environmental values and a sense of responsibility towards the environment are fostered through educational programs that incorporate sustainability principles (Siegel *et al.*, 2018; Kollmuss & Agyeman, 2010). For instance, studies show that youth-oriented environmental education programs can increase the likelihood that students would adopt sustainable practices (Basheer *et al.*, 2023; Murphy *et al.*, 2021; Boca & Saraçl, 2019).

2.1.4. Beliefs Regarding Sustainability

Environmental beliefs greatly influence sustainable activities, such as confidence in one's ability to make a difference and appreciation how many ecological systems are interdependent (Leonidou *et al.*, 2022). Sustainability education may encourage these views, allowing students to investigate the link between their activities and their larger environmental surroundings (Jordan, 2022). Research has shown that environmental education programs may greatly increase people's ecological attitudes and openness to adopting sustainable activities (Jeronen *et al.*, 2017).

Education has the ability to shape an individual's worldview and ethical framework in relation to sustainability by influencing their beliefs and values (Hess & Maki, 2019). By examining the interrelationships between society, the economy, and the environment, education can foster a transition toward a more ecologically conscious mentality (Palmer, 1998). Educational interventions that integrate ethical considerations and emphasize social and environmental justice have been shown to contribute to the development of values compatible with sustainable living (Lin *et al.*, 2021). These values, which include equity, stewardship, and intergenerational responsibility, are essential for promoting sustainable behavior and decision-making (Reddy, 2021).

Based on the above research, we suggest the following hypothesis:

***H1**: Education will have a positive impact on awareness, attitudes, and beliefs around sustainability by encouraging sustainable lifestyles.*

***H2**: Awareness, attitudes, and beliefs will have a positive impact on sustainable living behavior.*

2.2. Education's Role in Encouraging Sustainable Lifestyles through Personal Values

Promoting sustainable lifestyles requires fostering personal values that support environmental stewardship and responsible consumption (Jasrotia *et al.*, 2023). The role of education in shaping these values is crucial, as it contributes to the development of individuals who are environmentally aware and committed to sustainable practices (Delia & Krasny, 2018). This section examines the relationship between education and personal values in encouraging sustainable lifestyles.

2.2.1. Theoretical Frameworks

Value-Belief-Norm Theory (Stern et al., 1999): This theory posits that individuals' environmental behaviors are driven by their values, environmental beliefs, and the perceived moral obligation to act (i.e., personal norms). In sustainability education, this theory provides a framework for understanding how education can influence the formation of values that promote sustainable lifestyles.

Schwartz's theory of basic human values (Schwartz, 1977) suggests that ten basic human values are organized into a circular structure, with values that are similar in motivation located close together and values that are opposed in motivation at opposite ends. The theory can be used to examine the role of education in promoting specific values associated with sustainability, such as universalism and benevolence.

2.2.2. Personal Values and Sustainability Education

Values are essential in determining how people behave and make choices, particularly those that affect sustainability (Rickaby *et al.*, 2020). According to research, universalism, altruism, and self-transcendence positively correlate with pro-environmental behavior (Katz-Gerro *et al.*, 2017; Delistavrou, 2021). Sustainable practices and ecologically conscious behavior are encouraged via sustainability education (Cotton & Winter, 2010; Nowotny *et al.*, 2018; Wamsler, 2020).

Studies show that these pro-environmental beliefs might evolve due to environmental education programs. Studies have shown, for instance, that involvement in environmental education programs may raise the value of universalism and self-transcendence ideals (Dervişolu & Tankuş, 2015; Barton & Hart, 2023).

Furthermore, educational strategies emphasizing reflection, critical thinking, and experiential learning can be particularly effective in developing character traits promoting sustainability (Seidel *et al.*, 2018; Briede & Drelinga, 2020). These methods encourage a better feeling of accountability and dedication to sustainable practices by allowing students to reflect on their values and beliefs and their activities' social and environmental repercussions (Bertossi & Marangon, 2022).

Education uses a variety of methods to instill individuals with lasting values. One approach is value-based education, which explicitly incorporates values related to sustainability into educational curricula and programs (Moorthyet *al.*, 2021). Such educational initiatives aim to cultivate an individual's ethical framework and awareness of environmental responsibility (Subakir, 2020). Promoting transformative learning experiences, in which students reflect critically on their values, beliefs, and assumptions and investigate alternative perspectives that emphasize sustainability, is another strategy (Avsec & Ferk Savec, 2021; Cottafava *et al.*, 2019). Research indicates that transformative learning experiences can result in adjustments in personal values and subsequent changes in behavior (Spieles, 2017).

2.2.3. Personal Values and Sustainable Lifestyle Behaviour

According to self-determination theory (SDT), people are driven by three fundamental psychological needs: autonomy, competence, and relatedness. According to Deci and Ryan (1985), these demands must be met for an individual to participate in intrinsically motivated behavior. When individuals participate in actions consistent with their personal beliefs, they are more likely to experience autonomy and competence, which can boost their intrinsic desire to engage in sustainable behavior (Schultz *et al.*, 2008).

Empirical data is supporting the connection between individual values and sustainable living practices. Studies have demonstrated, for instance, that those with environmental values are more likely to engage in pro-environmental behavior (Vukelić & Rončević, 2021). In addition, research has shown that values that stress benevolence and community are connected with environmentally responsible behavior (Faiola *et al.*, 2019). In addition, research indicates that people who view their actions as consistent with their beliefs are more likely to engage in sustainable actions (Sharma & Jha, 2017).

Based on the literature review and the proposed research framework above the following hypothesis are as a result of this formulated:

H3*: Sustainable lifestyles via education will have positive impact on personal value around sustainability*

H4*: Personal values have positive impact on sustainable living behavior.*

H5 *Sustainable lifestyles via education will have positive impact on sustainable living behavior*

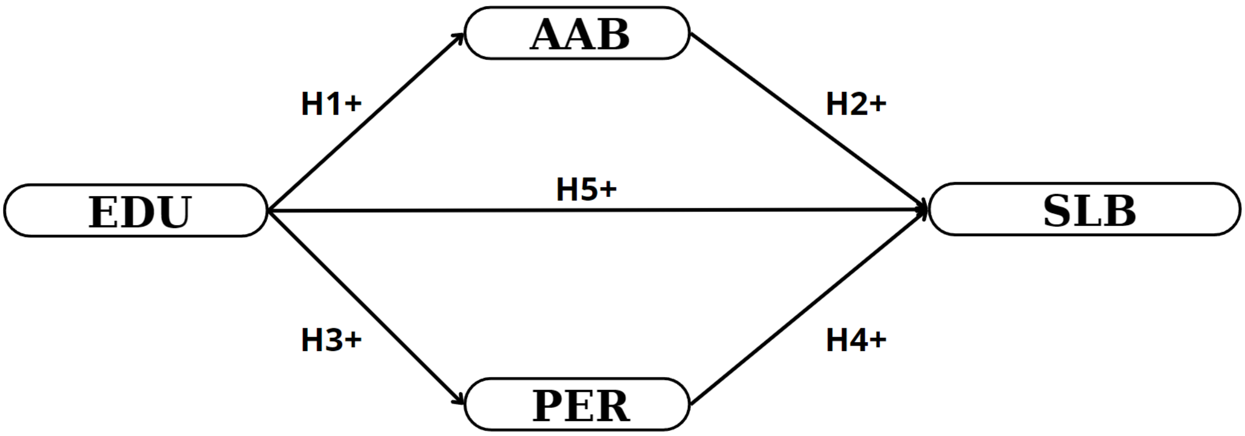

Figure 1. Proposed Research Model

3. Methodology

3.1. Sample

We prepared 250 questionnaires. The overall response rate was 100%. After checking and selecting the data, we deleted 12 incomplete questionnaires. The final sample of 238 undergraduate students came from several different universities in Ho Chi Minh.

3.2. Measurement

For this study's variable measurement, a questionnaire will be administered. The questionnaire will be divided into two major sections: the respondents' profiles and their environmental awareness and sustainable behavior, and the variables under investigation, which will include questions on:

- Education promoting sustainable lifestyles, coding as EDU – developed by Ajzen (1991); McKenzie-Mohr & Smith (1999); Mochizuki & Fadeeva (2010); Gifford & Nilsson (2014); Wals (2014);
- Awareness, attitudes, and beliefs regarding sustainability, coding as AAB – developed by Lorenzoni *et al.* (2007); Whitmarsh & O'Neill (2010); Poortinga *et al.* (2013);
- Personal values regarding lifestyle behavior, coding as PER – developed by; Maio & Olson (1998); Stern *et al.* (1999); Schultz *et al.* (2004); Han *et al.* (2010); Jansson *et al.* (2011);
- Sustainable lifestyle behavior, coding as SLB – developed by Bandura (1997); Gatersleben *et al.* (2002); Steg *et al.* (2005); Bamberg & Möser (2007); Steg & Vlek (2009); Abrahamse & Steg (2009).

Our survey will measure all factors using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). It will determine the degree to which respondents agree or disagree with each statement.

SPSS (version 20) was utilized for descriptive statistics (e.g., variable mean, standard deviation) and AMOS for Structural Equation Modeling (SEM). SEM is a multivariate statistical approach combining factor and multiple regression analyses. It is employed in the social and behavioral sciences to examine structural correlations backed by theory. This technique solves the primary constraints of traditional regression models by simultaneously estimating many linked correlations between dependent and independent variables (Henseler *et al.*, 2009; Christ *et al.*, 2014).

4. Results

4.1. Demographic Profiles of Respondents

52.1 percent of the 238 respondents were male, while 47.9 percent were female. The majority (32.8%) were between the ages of 29 and 33, a few (28.2%) were between the ages of 18 and 23, a smaller amount (24.4%) were between the ages of 24 and 28, and the remainder (14.7%) were older than 34. 39.9 percent of the student population possessed a Bachelor's degree. Another 29% held a Master's degree. Few (15.5%) of the population held a Diploma, while 15.5% held other educational certificates. In terms of the residential situation, 46.6% resided with roommates. Few (37%) individuals lived alone, while 16.4 lived in families.

4.2. Mesurement Model Testing

The factor analysis was conducted using principal axis factoring and promax rotation. The independent and dependent variables (the SLB) were listed in Table 1. All factor loadings ranged from 0.53 to 0.91. Two items (ex. EDU1, EDU4) with inadequate measurement properties were eliminated from the analysis.

The factor analysis results demonstrated that AAB items such as AAB1, AAB3, and AAB4 are relatively low compared to other constructs. Each scale's Cronbach's alpha reliability was greater than 0.7, confirming the internal consistency of each construct. As demonstrated in the literature review, it is believed that there were some problems with the AAB construct's face validity and content validity.

4.3. Confirmatory Factor Analysis (CFA)

Both the convergent and discriminant in the CFA were evaluated for validity. As shown in Table 1, the composite reliability (proposed by Fornell and Larcker 1981) was also calculated, with values ranging from 0.80 to 0.90. Figure 2 demonstrates that all factor loadings were statistically significant, with a p-value of 0.05 (Hair et al., 2014).

All of the scales' convergent validity was satisfactory, with the average variance extracted falling within the range of 0.46 and 0.7 (see Table 1). Chi-square, the Goodness of Fit Index (GFI), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), and the Root Mean Square-Error of Approximation (RMSEA) were among the goodness-of-fit metrics we used to examine our measurement model as proposed by Bentler (2007). The results were excellent across the board (chi-square = 452.951 (p = 0.000); GFI = 0.838; TLI = 0.876; CFI = 0.893; RMSEA = 0.086).

Table 1. Factor Analysis, Reliability, Composite Reliability, and Average Variance Extracted

Code	Items	Factor			
		EDU	AAB	PER	SLB
SLB1	I try to reduce my consumption of single-use plastics.				0.912
SLB5	I make a conscious effort to reduce my water usage.				0.903

Code	Items	Factor			
		EDU	AAB	PER	SLB
SLB3	I try to buy products with environmentally-friendly packaging.				0.800
SLB4	I regularly turn off lights and unplug electronics when not in use.				0.700
SLB7	How easy or difficult is it for you to make sustainable lifestyle choices?				0.689
SLB6	How confident are you that you can consistently perform sustainable lifestyle behaviors in different situations?				0.644
SLB2	I often use public transportation, walk, or bike instead of driving alone.				0.730
PER5	To what extent do you prioritize sustainability when making decisions about purchases or consumption?			0.798	
PER4	How much do you agree with the statement, "Living a sustainable lifestyle is consistent with my personal values"?			0.782	
PER1	To what extent do you agree with the statement, "I believe it is important to protect the environment for future generations"?			0.758	
PER2	How important is it to you to live a sustainable lifestyle?			0.697	
PER3	How often do you engage in sustainable behaviors such as recycling, reducing water usage, and conserving energy?			0.639	
EDU5	To what extent do you feel that your education has provided you with the necessary tools (skills, knowledge, and resources like access to information, technical expertise, financial resources, supportive social networks, or	0.870			

Code	Items	Factor			
		EDU	AAB	PER	SLB
	strategies) to overcome barriers to sustainable behavior?				
EDU3	To what extent do you feel that your attitudes towards sustainability have changed as a result of your education?	0.824			
EDU2	To what extent do you feel that you have the knowledge and skills necessary to make sustainable choices?	0.843			
AAB5	To what extent do you believe that individual actions can contribute to addressing sustainability challenges? (beliefs item)		0.797		
AAB2	I believe that it is important for me to reduce my energy consumption to help protect the environment. (beliefs item)		0.766		
AAB4	I am willing to pay more for products that are environmentally friendly. (attitudes item)		0.566		
AAB3	I feel a personal responsibility to take actions that promote sustainability. (attitudes item)		0.546		
AAB1	I am aware of the impact that my daily activities have on the environment (awareness item).		0.536		
Cronbach's Alpha		0.821	0.814	0.847	0.915
Composite Reliability (CR)		0.884	0.813	0.851	0.917
Average Variance Explained (AVE)		0.718	0.467	0.534	0.614

4.4. Research Model Testing

We estimated the research model by conducting a SEM analysis. Figure 3 showed a good fit for the model, with chisquare = 456.503, GFI = 0.837, TLI = 0.876, CFI = 0.892, RMSEA = 0.086).

As shown in Table 2, EDU positively impacted AAB (β = 0.423, $p < 0.001$). AAB were found to have a positive effect on SLB (β = 0.639, $p < 0.001$). EDU were found to have a positive effect on AAB (β = 0.423, $p < 0.001$). In addition, it is proved that EDU positively predicted SLB (β = 0.154, $p < 0.05$). PER did not have a positive effect on SLB (β = 0.011, $p > 0.05$). Thus, hypotheses 1, 2, 3, and 5 were fully supported.

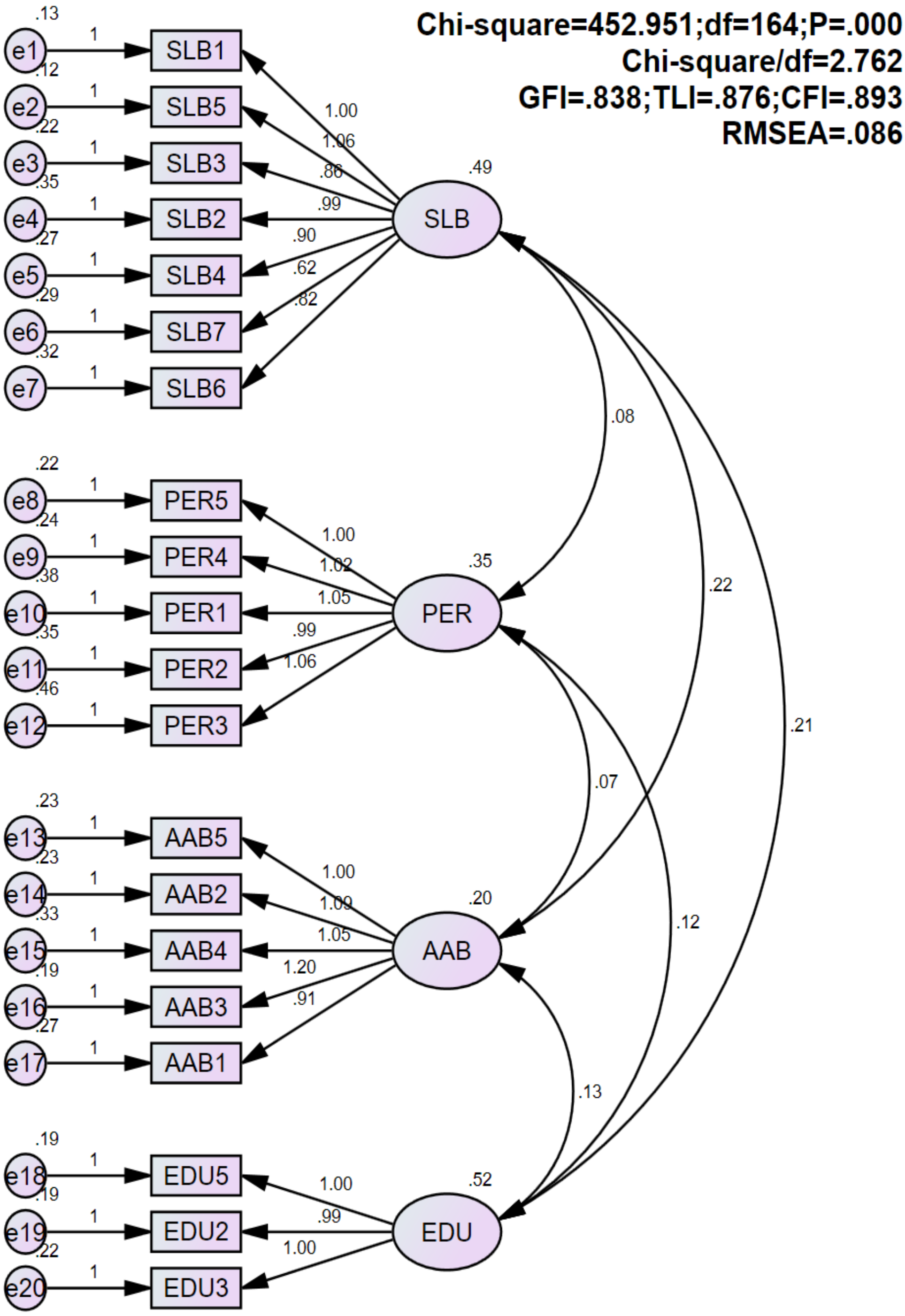

Figure 2. CFA Results

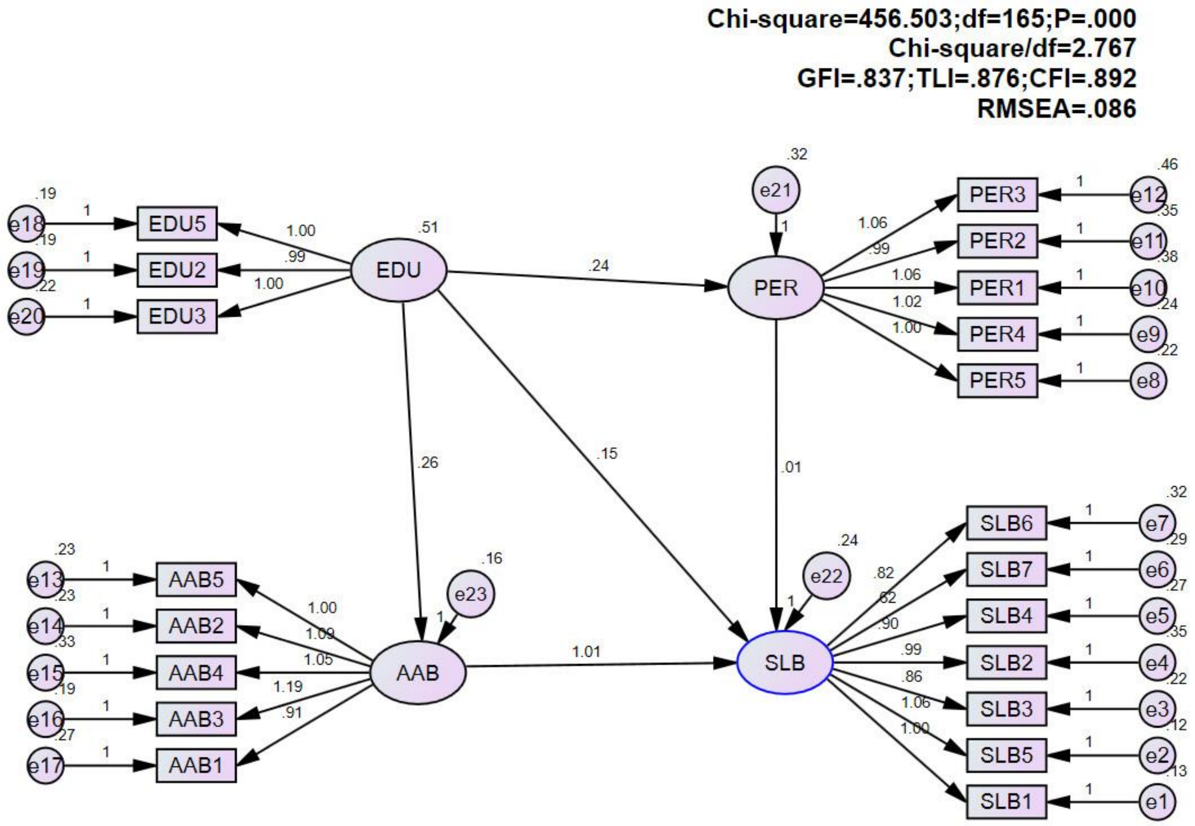

Figure 3. SEM Results

Table 2. Hypotheses Testing

Hypothesis	Path	Standardized Regression Weights (beta)	P	Description
H1	EDU → AAB	0.423	***	Supported
H2	AAB→ SLB	0.639	***	Supported
H3	EDU → PER	0.423	***	Supported
H4	PER → SLB	0.011	0.853	Rejected
H5	EDU → SLB	0.154	0.021	Supported

5. Discussion

In the first two hypotheses, this study investigates the direct effect of education on sustainable lifestyles via awareness, attitudes, and beliefs. The usual regression weight for the effect of education on awareness, attitudes, and beliefs is β =0.43, whereas the standard regression weight for awareness, attitudes, and beliefs on sustainable living behavior is β =0.64.

5.1. Compatibility with TPB:

Compatibility with TPB: Education may affect sustainable lifestyle attitudes, beliefs, and awareness, which drive sustainable lifestyle behaviors. The typical regression weight of education on awareness, attitudes, and beliefs ($\beta = 0.423$, $p < 0.001$) indicates that education can favorably affect these components, increasing sustainable living behaviors.

In addition, the conventional regression weight of awareness, attitudes, and beliefs on sustainable living behavior (0.639) indicates that attitudes impact sustainable lifestyle behavior. This result is consistent with the TPB, which proposes that attitudes predict behavior.

5.2. Consistency with the VBN:

Environmental concerns and stewardship beliefs can be influenced through education, leading to an increase in sustainable lifestyle practices. It is consistent with the VBN's emphasis on the significance of personal values in behavior that promoting sustainable living beliefs might result in increased participation in sustainable actions.

The results of the first and second hypotheses indicate that the function of education in promoting sustainable lifestyles through awareness, attitudes, and beliefs is congruent with the TPB and the VBN theoretical frameworks. Education may alter attitudes, beliefs, and awareness of sustainable lifestyle behaviors, which can then affect sustainable lifestyle behaviors. Promoting personal belief associated with sustainable living behaviors might result in higher participation in sustainable practices, underscoring the significance of personal belief in behavior.

The third and fourth hypotheses examined the connection between education, personal values, and sustainable living behavior. In line with the value-belief-norm theory and Schwartz's theory of fundamental human values, the findings of structural equation modeling also demonstrated a substantial direct effect of education on personal values ($\beta = 0.423$, $p < 0.001$). Consistent with previous research showing that education has a positive impact on eco-friendly behavior, our findings lend credence to the claims made by Michael & Elser (2019) as well as Seidel et al. (2018). According to the Self-Determination Theory, however, the effect of personal values on sustainable living behavior was insignificant ($\beta = 0.011$, $p > 0.05$). These results show that education plays a significant role in establishing personal beliefs that support sustainability but that personal values may not be the major driver of sustainable lifestyle behaviors. More research is needed to determine what other factors might affect sustainable behavior.

The final hypothesis revealed that education significantly directly affects sustainable living behavior ($\beta = 0.154$, $p < 0.05$). This finding supports the notion that education is crucial in promoting sustainable lifestyles. These results are consistent with the literature demonstrating the beneficial effects of education on environmentally responsible actions (Agu et al., 2022; Janmaimool & Khajohnmanee, 2019). Individuals' awareness and comprehension of the effects of their actions on the environment can be raised through education on environmental issues and sustainable practices. This awareness can lead to changes in behavior, such as reducing energy consumption, using public transportation, and recycling. The result's significance level ($p < 0.05$) indicates that the observed relationship between education and sustainable living behavior is not due to coincidence. This suggests that policies and interventions aimed at increasing educational attainment may be effective in promoting individuals' sustainable lifestyles.

However, it is essential to note that this study only provides evidence of a correlation between education and sustainable living behavior, not causation. Other variables, such as socioeconomic status, cultural norms, and individual values, may also influence sustainable living behavior. Further research is required to investigate the fundamental mechanisms of this relationship and identify other factors that may play a role in encouraging sustainable living behavior.

6. Implication & conclusion

6.1. Theoretical Implication

The theoretical implications of this research for the importance of education, personal values, awareness, attitudes, and beliefs in fostering sustainable lives are discussed. According to the value-belief-norm theory and Schwartz's theory of basic human values, the findings suggest that education substantially directly influences sustainable lives through personal values. This supports the idea that schooling may play a pivotal role in instilling sustainable attitudes and promoting more environmentally responsible actions. In line with the theory of planned behavior, the findings also indicate that one's mindset may play a major role in shaping sustainable actions.

Notwithstanding the study's findings, participants' awareness, attitudes, and beliefs did not significantly predict their values, suggesting that other variables may play a role in forming their values concerning sustainability. The lack of a substantial direct relationship between personal values and sustainable living behavior suggests that personal values alone may not be sufficient to promote sustainable behavior. Future studies might look at cultural standards and social influences to further understand the elements that lead to sustainable behavior.

The findings of the study, taken as a whole, offer policymakers and teachers valuable information on the role that education may play in encouraging people to adopt more environmentally friendly practices. To encourage sustainable actions, policymakers and educators should create programs highlighting the importance of individual values and attitudes and give training and resources to assist the growth of such values and actions. An improved society and planet may be the result of such efforts.

6.2. Managerial Implication

The findings suggest that interventions designed to promote sustainable behavior should focus on enhancing individuals' education, attitudes, beliefs, and awareness regarding sustainability. By implementing educational programs, individuals could be equipped with the knowledge and skills necessary to comprehend environmental challenges and the advantages of sustainable practices. Interventions could also target the attitudes and beliefs of individuals regarding sustainable living, using social norms, messages, and incentives to promote positive attitudes and beliefs regarding sustainability.

Findings from this research have a variety of managerial implications for businesses that want to encourage sustainable behavior among their staff and other stakeholders. The research stresses the need to learn to foster values conducive to a sustainable lifestyle. In order to encourage sustainable actions and create a sustainable culture, businesses may consider giving their staff training and educational programs on sustainability.

The second major takeaway is the study's emphasis on the role of values in influencing environmentally responsible actions. Campaigns that educate workers about the effects of their actions on the environment, or programs that incentivize and reward workers for adopting sustainable practices, are two programs that companies may use to alter their workers' perspectives on sustainability. The absence of a significant direct effect of personal values on sustainable living behavior suggests that interventions centered solely on personal values may not effectively promote sustainable behavior. Interventions should instead take a holistic approach, considering the interaction between personal values, attitudes, beliefs, and awareness to promote sustainable behavior.

Finally, other variables outside personal values may also be essential in fostering sustainable behavior, as shown by the study's result that personal values may not be the major driver of sustainable behavior. Hence, businesses should consider adopting methods that consider other aspects, such as social norms and contextual considerations, to encourage sustainable behavior among their staff and other stakeholders.

Overall, the results of this study may be used by businesses to foster environmentally conscious attitudes and practices among their employees. Organizations may make meaningful progress toward a more sustainable society and a healthier planet by placing a premium on education, attitudes, and other variables that impact sustainable behavior.

6.3. Conclusion

This research looked at how learning, values, awareness, and beliefs all play a part in encouraging people to live more sustainably. The findings corroborated the value-belief-norm theory and Schwartz's theory of basic human values by demonstrating the importance of education in forming sustainable value systems. The results also corroborated predictions from the Theory of Planned Behaviour that attitudes play a key role in shaping sustainable actions.

However, the study found that personal values might not be the major driver of sustainable behavior, suggesting that variables other than personal values might also be relevant in encouraging sustainable behavior. The study's findings call for more investigation into the abovementioned aspects and creation of more efficient techniques for promoting sustainable behavior.

Policymakers, educators, and organizations working to encourage sustainable behavior will find the study's conclusions highly relevant. Policymakers and educators may take actionable measures toward building a more sustainable society by emphasizing education, attitudes, and other variables that impact sustainable behavior. Businesses can also set up ways to deal with these problems to encourage their employees and partners to act sustainably.

The study's results add to the increasing body of literature on sustainable behavior and stress the importance of education, attitude, and other elements in fostering sustainable living. Further study is needed to determine the full range of elements that may affect sustainable behavior and to design efficient ways for promoting sustainable behavior at a societal level.

7. Limitations

Some limitations of this study include using a self-reported survey, which may be subject to response bias, and the limited sample size, which consisted only of participants from universities in Ho Chi Minh City.

The study focused on the direct effects of education, personal values, awareness, attitudes, and beliefs on sustainable behavior but did not explore potential moderating or mediating factors that may influence these relationships. Future research could explore these potential factors to gain a more comprehensive understanding of the determinants of sustainable behavior. Therefore, caution should be exercised when generalizing the findings to other populations or contexts.

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Factors affecting Hotel Employee's Ecological Behavior: A Study in Vietnam

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ABSTRACT

In this study, the researchers integrated the to examine factors that affect hotel employees' ecological behaviors using the theory of planned behavior. The data, obtained through purposive sampling, involved 200 respondents who were employees in hotels located in urban districts of Vietnam. By utilizing SPSS, the collected data was analyzed to gain a deeper understanding of the interconnections between the TPB (Attitude, Subjective norm, and Perceived behavioral control), environmental employee attitudes (environmental knowledge, environmental awareness, and environmental concern), and ecological behaviors. The findings of the study reveal robust correlations among the theory of planned behavior, environmental employee attitudes, environmental behavior intentions, and ecological behaviors.

Keywords: TPB, environmental attitude; ecological behavior; hotel employee.

1. Introduction

Green tourism can have a good economic impact. Sustainable tourism frequently entails assisting local companies, such as lodging, restaurants, and tour operators, to produce money and job possibilities for local communities. It also promotes the construction of sustainable infrastructure, such as renewable energy projects, which can lead to job creation and economic progress. Businesses employ environmentally friendly practices to acquire a lasting competitive edge as these practices hold immense significance in forging a favorable brand reputation and fulfilling customers' needs and expectations. Prior studies have focused on the impact of eco-friendly practices on a variety of factors, such as financial performance (Dowell & Muthulingam, 2017; Miroshnychenko, Barontini, & Testa, 2017), corporate strategies (Esfahani, Nilashi, Rahman, Ghapanchi, & Zakaria, 2015), environmental innovation (Rezai, Sumin, Mohamed, Shamsudin, &

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Sharifuddin, 2016), customers (Atzori, Shapoval & Murphy, 2018; Yi, Li & Jai, 2018), and employees (Chan et al, 2014, 2017). Therefore, this study will continue to inherit to study one aspect of green practice - ecological behavior.

A few studies investigated the effect of hotel employees' environmental attitudes on ecological behavior (Okumus et al., 2019; Chan et al., 2014, 2017; Tapia-Fonllem, Corral-Verdugo, Fraijo-Sing, & Durón-Ramos, 2013). In the outcomes, Okumus's study shows that there are substantial correlations between employee-related parameters and their ecological behavior. The study's findings revealed that employees' intention to implement green practices resulting from their work environment has a moderating effect on the relationships between three employee-related factors (environmental awareness, environmental concern, and environmental knowledge) and ecological behaviors in Turkey (Okumus et al., 2019). Besides, there are also some studies using the theory of planned behavior to explore environmental behavior (Ajzen, 1985, 1991; Greaves et al., 2013; Wang et al., 2019). The studies mentioned above employed the Theory of Planned Behavior (TPB) framework, which incorporated three key factors (Attitude, Subjective norm, and Perceived behavioral control) to elucidate behavioral intentions. Furthermore, Okumus et al (2019) said that future studies can further explore the subject norm component to further analyze the impact of this element on ecological behavior within the scope of the paper. Thus, the research objective is to examine factors that affect hotel employees' ecological behaviors using the theory of planned behavior in Vietnam.

Hence, the findings of the study can assist managers in devising and executing strategies to enhance the adoption of green practices within hotels. This is significant because the implementation of green practices in hotels can influence employees' inclination to engage in such practices, leading to long-term operational and strategic benefits for the companies involved. The initial part of this document offers a comprehensive evaluation of ecological practices within the hospitality industry. Following that, the subsequent segment outlines the methodology adopted for conducting this study. The third section entails the presentation and analysis of the study's findings. Lastly, the closing section summarizes the key conclusions drawn from this research and provides recommendations for future investigations.

2. Theoretical framework

The existing body of literature exploring the influence of TPB and employees' environmental attitudes on ecological behavior in the tourism industry is still in its infancy (Okumus et al., 2019; Greaves et al., 2013; Wang et al., 2019). However, this present study seeks to make a notable contribution by combining the literature on TPB and employees' environmental attitudes, specifically investigating their effects on the ecological behavior of hotel employees.

2.1. Environmental behavior intentions and Ecological Behavior

Behavioral intention is defined as a powerful internal motivator and is commonly regarded as the driver of behaviors (Moisander, 2007). The theory of planned behavior posits that intentions have an indirect influence on predicting behavior through several factors (Ajzen, 1991). Intention, as a direct predictor variable, plays a prominent role in the relationship between attitude, perceived behavioral control, subjective norm, and pro-environmental behaviors (Untaru et al., 2014). Environmental behavioral intention refers to an individual's perceived subjective inclination to engage in environmental behaviors, reflecting their readiness to participate in specific environmental actions (Kaiser and Gutscher, 2003).

Axelrod and Lehman (1993) define ecological behavior as "actions that contribute to environmental preservation and/or conservation." Several research (Arnold, Kibbe, Hartig, & Kaiser, 2018) explore the antecedents of individual ecological behaviors and how these antecedents can be evaluated. Kaiser et al., (1998), for example, applied the theory of planned behavior to explain the drivers of ecological behavior arising from behavior intention by examining two factors: attitude toward behavior and subjective norms. Kaiser and Wilson (2004) created a general scale of ecological behavior that includes energy conservation, mobility and transportation, waste avoidance, recycling, and vicarious social behaviors toward ecological behavior. Developing from previous studies, Greaves et al (2013) used TPB including 3 factors (Attitudes, Subjective norms, and Perceived behavioral control) to explore environmental behavioral intentions in the workplace. In recent years, studies conducted by Chan et al. (2014) and Chan et al. (2017) considered energy and water conservation, reusing shopping bags, and recycling used paper are examples of ecological behavior. Employees' ecological behavior is regarded as one way of obtaining and maintaining a competitive edge in a changing market and the successful implementation of green practices relies on employees' knowledge, awareness, and concern about environmental programs (Kollmuss & Agyeman, 2002). Also in their study, Chan et al (2014) investigated the relationship between environmental knowledge, awareness, concern, and ecological behavior. The group of authors argues that hotel employees' environmental knowledge, awareness, and concern influence their ecological behavior to implement green practices in hotels. Therefore, to protect the environment, environmentally friendly employees can perform ecological actions when performing their different job tasks and even when serving customers. Thus, previous studies have examined individual factors that impact ecological behavior.

In summary, there have been numerous studies on ecological behavior that have addressed various constituent factors. However, in this study, the theory of planned behavior (attitudes, subjective norms, and perceived behavioral control) will be integrated with the following three factors employees' environmental attitudes (environmental knowledge, environmental awareness, and environmental concern) to assess their influence on environmental behavior intentions and ecological behavior (Greaves et al, 2013; Okumus et al, 2019; Liu at el 2020). The proposed relationships and hypotheses among these factors are discussed in the following sections.

2.2. *Environmental attitudes (environmental knowledge, environmental awareness, and environmental concern)*

Previous research has defined environmental knowledge, as stated by Fryxell and Lo (2003), as "a general understanding of facts, concepts, and interconnections related to the natural environment and its primary ecosystems." Environmental knowledge is considered as "one's ability to understand and evaluate the impact of society on the ecosystem" (Haron, Paim, & Yahaya, 2005). E. S. W. Chan's (2008) study highlights that a key obstacle to implementing a formal Environmental Management System (EMS) in hotels is the insufficient environmental knowledge necessary for the system. This suggests that enhancing environmental knowledge has the potential to promote more informed ecological practices. According to Frick, Kaiser, and Wilson (2004), different forms of environmental knowledge have distinct effects on conservation behavior. The research conducted by Ibrahim, Aliagha, and Khoo (1999) has also observed that information and knowledge regarding recycling play a significant role in predicting recycling actions and other environmentally friendly behaviors. Similarly, several scholars (Aman, Harun, & Hussein, 2014) have demonstrated that knowledge generally influences pro-environmental attitudes, which subsequently drive ecologically responsible behavior. Building on this line of thinking, we propose that the environmental knowledge of hotel employees contributes to their ecological behavior by fostering environmental awareness and subsequent concern within their respective companies. Hotel employees have various ways of fulfilling their environmental responsibilities. Therefore, in this study, the concept of environmental knowledge proposed by Haron, Paim, & Yahaya (2005) will be adopted for investigation.

Aside from the definition provided by Kollmuss and Agyeman (2002), which defines environmental awareness as "knowing the impact of human behavior on the environment," it can also be defined as an individual's level of attentiveness and sensitivity to environmental issues. Recognizing the severity of the greenhouse effect exemplifies environmental awareness. It is believed that an individual's environmental awareness prompts them to take action to address the issues, leading to an escalation in their ecological behavior. For instance, heightened awareness of environmental problems may motivate people to purchase products with eco-labels, consume organic foods, and actively participate in recycling programs. Following the realization of the detrimental effects of chlorofluorocarbon emissions and the subsequent depletion of the ozone layer, there has been a decline in the use of aerosol hair spray (Stamm, Clark, & Eblacas, 2000). Several previous studies have highlighted the significance of environmental awareness. For example, Musser and Diamond (1999) conducted research on the factors influencing the enhancement of environmental awareness among kindergarten students. Environmental awareness refers to "knowing of the impact of human behavior on the environment" (Kollmuss & Agyeman, 2002). Perron et al. (2006) examined the advantages of environmental education and awareness training in companies. Gadenne, Kennedy, and McKeiver (2009) explored the relationship between various stakeholders and environmental awareness, as well as how this awareness translates into actions taken by businesses to reduce their environmental impact. Huang, Zhang, and Deng (2006) investigated the public's perception of local environmental quality, awareness levels, and willingness to make environmentally-friendly purchases. Uzunboylu, Cavus, and Ercag (2009) focused on the utilization of mobile technologies, data services, and multimedia messaging systems to foster students' environmental awareness. When analyzing obstacles to implementing energy-saving measures in organizations, Zilahy (2003) identified environmental awareness as one of the most significant factors. Thus, this study will adopt the perspective of Kollmuss & Agyeman, 2002 as a foundation for the present article.

According to Zimmer et al. (1994), environmental concern is defined as "a general concept that can refer to feelings about many different green issues." Environmental concern is defined as the "evaluation of or an attitude towards facts, one's behavior, or others' behavior with consequences for the environment" (Fransson & Gärling, 1999). This term is often used interchangeably with the term environmental attitude (Luo & Deng, 2008), which is defined as "the collection of beliefs, affect, and behavioral intentions a person holds regarding environmentally related activities or issues" (Schultz, Shriver, Tabanico, & Hazian, 2004). Individuals who are concerned about the greenhouse effect, for example, believe that attention and immediate action are necessary to address the problem. Numerous studies have shown a positive relationship between a person's environmental concern and their environmentally friendly behavior, although this concern may not be directly associated with environmental knowledge (Kellstedt, Zahran, & Vedlitz, 2008). For instance, Ellen, Wiener, and Cobb-Walgren (1991) found that a general attitude of environmental concern significantly predicts the purchase of environmentally safe products and engagement in recycling, environmental concern is defined as the “evaluation of or an attitude towards facts, one's behavior, or others' behavior with consequences for the environment”. Other studies have also confirmed that environmental concern has a positive impact on pro-environmental behavior intentions and behavior (Mostafa, 2006). In the tourism industry, it has been suggested that female wine tourists who hold stronger environmental attitudes toward protecting wine region destinations may be willing to pay for environmentally friendly wines (Barber, Taylor, & Deale, 2010). All of these studies indicate that environmental concern is a significant predictor of an individual's ecological behavior. On the contrary, several other studies have found a weak or moderate correlation between environmental attitudes or concern and ecological behavior (Axelrod & Lehman, 1993), and some studies have even reported the absence of such a relationship (Gamba & Oskamp, 1994). Additionally, empirical studies examining the connection between environmental attitudes or concerns and environmental performance have yielded mixed results. For example, Schaper (2002) found no association between positive personal environmental attitudes and positive environmental performance, whereas Naffziger and Montagno (2003) discovered that managers with high levels of environmental concern allocate more time and resources to environmental initiatives compared to those with low levels of concern. Drawing on the findings from previous studies, we adopt the reasoning of environmental knowledge and propose that environmental concern motivates individuals to engage in more environmentally friendly behaviors. E. S. W. Chan and Hawkins (2010) also found that nearly all hotel employees interviewed in their study are willing to undertake additional green tasks due to the significance they attach to their jobs. Kuo (2007) further asserted that hotel employees with positive attitudes generally perform better. Therefore, the article will adopt the perspective of Fransson & Gärling, 1999 as a foundation for the study.

2.3. TPB and practice green

The Intergovernmental Panel on Climate Change (IPCC) stated in its 2007 report that evidence for climate change is unequivocal and attributed planetary warming to human activity, particularly the emission of greenhouse gases (GHG; IPCC, 2007). The report indicated that globally, industrial GHG emissions are three times higher than residential consumption (IPCC, 2007), while in the UK, businesses, and agriculture contribute approximately double the GHG emissions compared to the residential sector (Department of Energy and Climate Change, 2010). It is evident that the industry has a crucial role in reducing GHG emissions; however, efforts in the UK to reduce GHG emissions have primarily targeted the domestic sector (DEFRA, 2006). Despite organizations taking steps to reduce energy consumption by updating infrastructure such as lighting, heating, and cooling (Davis & Challenger, 2009), less attention has been given to the role of employee behavior in driving environmental improvements. Since environmental issues are largely influenced by human behavior (Oskamp, 2000a, 2000b), addressing them necessitates changes in human behavior. To explore the potential for leveraging employee behavior to achieve environmental improvements, Greaves's paper (2013) presents research that develops and applies a measure based on the theory of planned behavior (TPB; Ajzen, 1985) to investigate intentions for enhancing environmental behaviors in a workplace context.

Psychologists can explore pro-environmental behavior by utilizing social psychological theories such as the Theory of Planned Behavior (TPB; Ajzen, 1985, 1991). According to the TPB, an individual's intention toward a behavior is the primary determinant of their actual behavior. The first is the individual's attitude toward the behavior, which reflects their overall evaluation of the behavior. It is based on their expectations of the outcomes resulting from the behavior and whether these outcomes are desirable (Ajzen, 1985, 1991). The second is the subjective norm, which assesses the extent to which the individual perceives social pressure to perform the behavior. It is influenced by the individual's perception of the expectations of important reference groups and their motivation to conform to these groups. The final is perceived behavioral control, which is the individual's perception of the ease or difficulty of performing the behavior. It is determined by their belief in their self-efficacy to perform the behavior and their sense of control over it. By applying the TPB, psychologists can gain insights into the factors that understand how attitudes, subjective norms, and perceived behavioral control influence individuals' intentions and actions.

2.4. Hypothesis development

The Theory of Planned Behavior (TPB) has received significant support across various fields. It has been extensively utilized to investigate behaviors in diverse areas, such as health (Conner & Sparks, 1996), drinking and driving (Marcil, Bergeron, & Audet, 2001), and mode of transportation selection (Bamberg & Schmidt, 2003). Within domestic contexts, the TPB has been employed to explore environmental behaviors and has demonstrated superior predictive power compared to demographic variables (Oreg & Katz-Gerro, 2006; Trumbo & O'Keefe, 2001). For instance, Trumbo and O'Keefe (2001), and Clark and Finley (2007) conducted studies on water conservation intentions among communities in California, China, and Bulgaria, respectively, and all found the TPB constructs to be significant predictors of behavioral intention, explaining between 10% and 66% of the variance across various intentions. Furthermore, the theory of planned behavior has been employed in other contexts to elucidate a range of pro-environmental behaviors, including the utilization of public transport (Bamberg & Schmidt, 2003; Heath & Gifford, 2002), the adoption of park-and-ride schemes (De Groot & Steg, 2007), and engagement in environmental activism (Fielding, McDonald, & Louis, 2008).

The theory of planned behavior encompasses the examination of the antecedents for the three fundamental constructs of attitude, subjective norms, and perceived behavioral control, aiming to both explain and predict behavioral intentions (Greaves et al, 2013). We, therefore suggest that:

H1: Attitude (AT) is significantly and positively related to environmental behavior intention

H2: Subjective norm (SN) is significantly and positively related to environmental behavior intention

H3: Perceived behavioral control (PBC) is significantly and positively related to environmental behavior intention

To elucidate the aforementioned relationships concerning the three employee's environmental attitudes, Okumus (2019) proposes the following explanations: Firstly, employees' ecological behavior is likely to improve when they possess a high level of understanding and knowledge regarding green practices, combined with the company's willingness to implement such practices in the work environment (Chan and Hawkins, 2010). Secondly, employees' ecological behavior is expected to enhance when they value the environment and the organization's intention to implement green practices (Chan and Hawkins, 2010). Thirdly, if hotel employees are aware of the significance of environmental protection, and this awareness aligns with their intentions to implement green practices within the work environment, they are more likely to exhibit higher levels of environmental behavior (Chan and Hawkins, 2010). This may involve their proactive use of energy-saving elements and efforts to protect the environment. Consequently, an employee's intention to promote a green work environment will interact with their environmental attitudes, ultimately positively influencing employees' ecological behavior. We propose that accordingly:

H4: Environmental knowledge (EK) is significantly and positively related to environmental behavior intention

H5: Environmental awareness (EA) is significantly and positively related to environmental behavior intention

H6: Environmental concern (EC) is significantly and positively related to environmental behavior intention.

H7: Environmental behavior intention (EBI) is significantly and positively related to ecological behavior (EB)

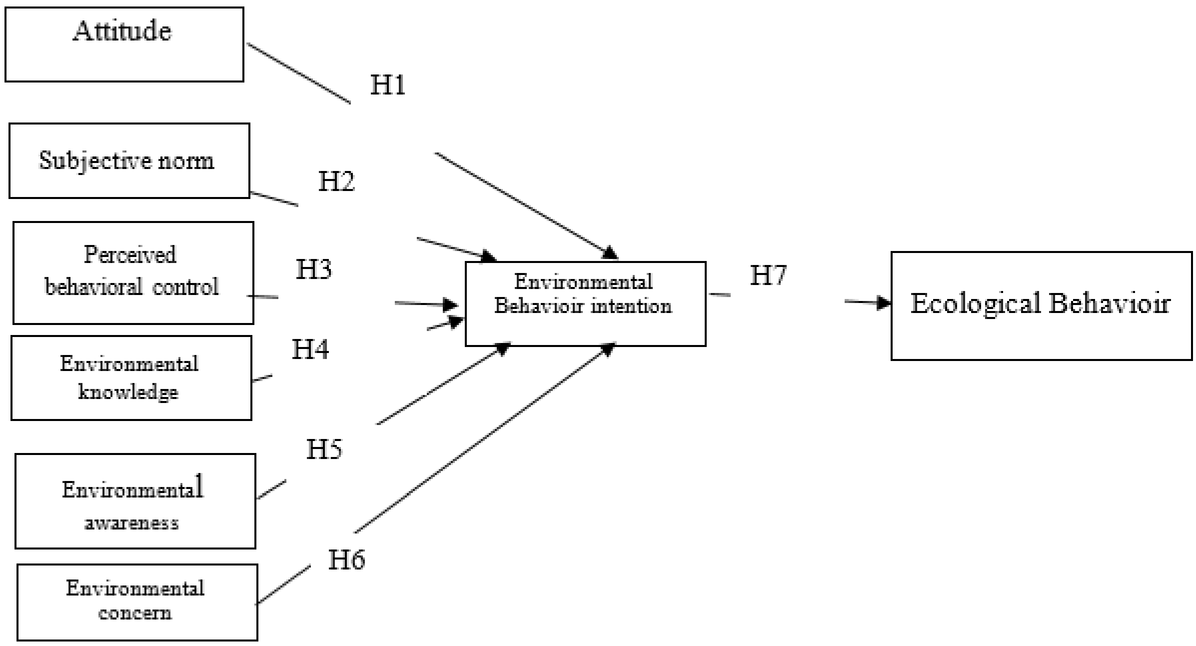

Figure 1: Research Model

3. Research method

The sample for this study was selected using a convenience, non-probability sampling method, specifically sampling based on the convenience and accessibility of the subjects. This method was chosen due to its time efficiency, low cost, and easy access to respondents. The primary data collection for this study utilized a quantitative approach with the administration of a self-administered questionnaire to 200 respondents in urban areas of Vietnam. The purposive sampling method was employed for selecting the participants. This sample size of 200 is recommended by

Guilford (1954) and considered to be adequate by Comrey and Lee (1992). In conclusion, based on Guilford's research, a minimum sample size of 200 was determined to be appropriate for conducting the quantitative research in this study. The author distributed a survey to employees working in hotels across Vietnam, and this process was conducted smoothly. Specifically, the author sent the survey to alumni of the Faculty of Hospitality and Tourism at the University of Commerce. These alumni have successfully graduated with a specialization in Hotel Management and are currently employed at various hotels throughout Vietnam. Notably, the author maintains regular communication with these alumni, as they actively share practical knowledge to contribute to the author's research. This ongoing connection with the alumni ensures that the author stays updated with practical knowledge, which in turn supports their teaching and scientific research endeavors.

The purpose of this study is to investigate the factors influencing hotel employees' ecological behaviors using the theory of planned behavior. The author utilized the EFA method to uncover the underlying structure or factors that elucidate the patterns of correlations among a set of observed variables, as well as to cluster similar variables together based on their relationships with these underlying factors. This approach can facilitate the development of more effective measurement instruments and the identification of redundant variables. Moreover, regression allows the author to identify which independent variables have a significant impact on the dependent variable and to quantify the strength and direction of these relationships. This helps in building meaningful and parsimonious models to explain the data. The theoretical model encompasses multiple variables within the research themes. The variables were measured using a 5-point Likert scale ranging from 1 (highly different) to 5 (strongly accepted), referring to previous studies for each scale. The scales used in this study are as follows: Attitude (4 scales), Subjective norm (3 scales), Perceived behavioral control (3 scales), Environmental knowledge (5 scales), Environmental awareness (7 scales), Environmental concern (7 scales), Environmental behavior intention (3 scales), and Ecological behavior (7 scales). Among these variables, Environmental knowledge, Environmental awareness, Environmental concern, and Ecological behavior are adapted from Okumus' study (2019), Attitude, Subjective norm, and Perceived behavioral control are derived from Greaves' research (2013), and Environmental behavior intention is based on the scale developed by Liu (2020). To test the hypotheses, sets of questions were designed for each of the eight components. The respondents were diverse in terms of demographic characteristics. After collecting the completed questionnaires, a preliminary screening was conducted to ensure the reliability and consistency of the responses. The theoretical model comprises eight concepts, which are measured using 39 observed variables. Reflective measurement models were employed for all the concepts. The scale underwent preliminary assessment through Exploratory Factor Analysis (EFA) and Cronbach's reliability coefficient (Alpha) for each component. Subsequently, correlation analysis between factors and regression analysis were conducted using the SPSS software.

Table 1. Measurement model

Variable	Item	Measurement	Author
Attitude (AT)	AT1	Turning electrical equipment (not in use) off whenever I leave my workplace is worthwhile	Greaves, M., et al (2013)
	AT2	Using video-conferencing more often instead of traveling to, meetings is beneficial for the environment	Greaves, M., et al (2013)
	AT3	At work, recycling as much as possible is worthwhile	Greaves, M., et al (2013)
	AT4	Think about natural resources.	Greaves, M., et al (2013)
Subjective norm (SN)	SN1	I feel under social pressure to turn electrical equipment (not in use) off whenever I leave my workplace	Greaves, M., et al (2013)
	SN2	I am expected to make more use of video-conferencing	Greaves, M., et al (2013)
	SN3	At work, it is expected of me that I will recycle as much as possible	Greaves, M., et al (2013)
Perceived behavioral control (PBC)	PBC1	Whether or not I turn electrical equipment (not in use) off when I leave my workplace is purely my decision	Greaves, M., et al (2013)
	PBC2	The decision regarding whether or not I use video-conferencing more often is beyond my control	Greaves, M., et al (2013)
	PBC3	At work, I have no choice over whether I recycle.	Greaves, M., et al (2013)
Environmental knowledge (EK)	EK1	Melting of the polar ice caps may result in flooding	Okumus, F.,et al (2019)
	EK2	Fossil fuels (e.g. gas, oil) produce carbon dioxide in the atmosphere when burned	Okumus, F.,et al (2019)
	EK3	A change in climate caused by increased levels of carbon dioxide in the atmosphere is called the greenhouse effect	Okumus, F.,et al (2019)
	EK4	A reduced number of species may interrupt the food chain, affecting some subsequent species in the chain	Okumus, F.,et al (2019)

	EK5	Poisonous metals remain in the human body	Okumus, F.,et al (2019)
Environmental awareness (EA)	EA1	The usage of natural gas should increase,	Okumus, F.,et al (2019)
	EA2	Products made of recyclable materials should be preferred even though they are more expensive	Okumus, F.,et al (2019)
	EA3	Energy-saving light bulbs should be used even though they are expensive	Okumus, F.,et al (2019)
	EA4	Drinks in plastic bottles should not be preferred since they are difficult to recycle	Okumus, F.,et al (2019)
	EA5	Listening to music loudly at home causes noise pollution	Okumus, F.,et al (2019)
	EA6	Individuals should gain awareness about the environment at all levels of education starting from kindergarten	Okumus, F.,et al (2019)
	EA7	Individuals should be informed about the environment through media (TV, newspapers, magazines, and others)	Okumus, F.,et al (2019)
Environmental concern (EC)	EC1	I think we are not doing enough to save scarce natural resources from being used up,	Okumus, F.,et al (2019)
	EC2	I feel sorry that the government does not do more to control environmental pollution,	Okumus, F.,et al (2019)
	EC3	I feel disturbed when I think about the harm being done to plant and animal life by pollution	Okumus, F.,et al (2019)
	EC4	Hotel guests should pay higher prices for products, which pollute the environment,	Okumus, F.,et al (2019)
	EC5	Public schools should require all students to take a course concerning environmental Conservation	Okumus, F.,et al (2019)
	EC6	Public schools should require all students to take a course concerning environmental Conservation	Okumus, F.,et al (2019)
	EC7	Hoteliers should be required to use recycled materials in their operations whenever possible	Okumus, F.,et al (2019)

Environmental behavior intention (EBI)	EBI1	I would give part of my income if I were certain that the money would be used to prevent environmental pollution	Liu, P. et al, (2020)
	EBI2	I would agree to an increase in taxes if the extra money were used to prevent environmental pollution	Liu, P. et al, (2020)
	EBI3	The Government should reduce environmental pollution, but it should not cost me any money	Liu, P. et al, (2020)
Ecological behavior (EB)	EB1	I have consulted my superiors about an environmental management issue,	Okumus, F.,et al (2019)
	EB2	As the last person to leave the room, I switch off the flight,	Okumus, F.,et al (2019)
	EB3	For short distances (within 10 min), I walk	Okumus, F.,et al (2019)
	EB4	I reuse my shopping bags,	Okumus, F.,et al (2019)
	EB5	I buy products in refillable packages	Okumus, F.,et al (2019)
	EB6	I separate waste	Okumus, F.,et al (2019)
	EB7	I collect and recycle used paper	Okumus, F.,et al (2019)

Collection author

4. Results and Discussion

4.1. Results

4.1.1. Survey sample

Collect data from 200 respondents with special points presented in print table 2

Table 2. Survey sample characteristics (N = 200)

		Frequency	percentage (%)
Gender	Male	80	60
	Female	120	40
Education	Junior school	15	7.5
	High school	80	40
	Some College	30	15
	Degree	70	35
	Master or above	05	2.5
Many years of experience	< 2 years	30	15

	2 – 5 years	50	25
	> 5 years	120	60
Total		200	100

SPSS Calculation

Table 2 provides an overview of the participating organizations in the primary survey conducted to achieve the objectives of the study. According to Table 1, a total of 200 respondents participated in the survey and shared their opinions. The results indicate that out of the total respondents, 120 individuals, accounting for 60 percent, were female, while 80 individuals, accounting for 40 percent, were male. In terms of education level, 15 individuals (7.5 percent) had completed Junior school, 80 individuals (40 percent) had completed High school, 30 individuals (15 percent) had attended Some college, 70 individuals (35 percent) had obtained a Degree, and 5 individuals (2.5 percent) held a Master's degree or above. Regarding work experience, 30 individuals (15 percent) had worked for less than 2 years, 50 individuals (25 percent) had work experience ranging from 2 to 5 years, and 120 individuals (60 percent) had more than 5 years of work experience.

4.1.2. Preliminary verification of the scale with EFA

The research concepts were evaluated and underwent a preliminary screening using the EFA method and Cronbach's coefficient Alpha for each component. The selection criteria for the variables included having item-total correlation coefficients greater than .35, Cronbach's Alpha values above .60, and factor loading weights exceeding .40. Additionally, a satisfactory scale requirement was met when the total variance extracted reached 50% (O'Hair et al., 1998). The analysis of Cronbach's Alpha revealed that all observed variables had satisfactory coefficients. The variable-total correlation exceeded the threshold of .35. *In Table 3*, Cronbach's Alpha values for the components of the instrument ranged from .812 to .913.

Table 3. Cronbach alpha analysis results

	Cronbach's Alpha	**N of Items**
AT	.885	4
SN	.865	3
PBC	.910	3
EK	.865	5
EA	.903	7
EC	.898	7
EBI	.942	3
EB	.946	7

SPSS Calculation

4.1.3. Descriptive Statistics

Table 4. Descriptive Statistics Result

	N of Items	Mean	Standard Deviation
AT	4	5.35	1.099
SN	3	4.93	1.191
PBC	3	5.13	1.139
EK	5	4.94	.965
EA	7	5.01	.964
EC	7	5.11	1.009
EBI	3	6.18	1.163
EB	7	6.35	1.154

SPSS Calculation

In Table 4, the results indicate the following: the average score for AT is 5.35 with a Standard Deviation of 1.099; the average score for SN is 4.93 with a Standard Deviation of 1.191; the average score for PBC is 5.13 with a Standard Deviation of 1.139; the average score for EK is 4.94 with a Standard Deviation of 0.965; the average score for EA is 5.01 with a Standard Deviation of 0.964; the average score for EC is 5.11 with a Standard Deviation of 1.009; the average score for EBI is 6.18 with a Standard Deviation of 1.163; and the average score for EB is 6.35 with a Standard Deviation of 1.154.

4.1.4. EFA analysis results

Following the analysis of Cronbach's Alpha reliability coefficient, the scales were subjected to further assessment using the EFA method. The Principal Axis Factoring method with Promax rotation was employed for the EFA analysis. The results of the EFA indicated that all factors exhibited satisfactory convergence and discriminant validity about other factors. This provided the foundation for the author to proceed with multivariate regression analysis. The preliminary scale testing results obtained through EFA are summarized as follows:

Table 5: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.948
Bartlett's Test of Sphericity	Approx. Chi-Square	4052.521
df		210
Sig		.000

Table 6: Rotated Component Matrix

Rotated Component Matrix						
Component						
	1	2	3	4	5	6
AT1	.800					
AT2	.783					
AT3	.745					
AT4	.614					
EC4		.771				
EC1		.737				
EC2		.657				
EC3		.601				
EC5		.552				
EC7		.524				
EC6		.520				
SN3			.762			
SN1			.672			
SN2			.587			
PBC1				.756		
PBC3				.636		
PBC2				.593		
EA1					.754	
EA5					.657	
EA4					.601	
EA2					.552	
EA6					.524	
EA3					.520	
EA7					.504	
EK3						.753
EK4						.742
EK5						.730
EK1						.722
EK2						.582

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 10 iterations.

SPSS Calculation

Therefore, we performed Principal Component factor analysis with Varimax rotation on the initial six components. The analysis yielded the following results: The KMO value of 0.948, which is greater than 0.5, indicates the adequacy of the factor analysis. The sig. value of Bartlett's Test is 0.000, which is less than 0.05, suggesting that the observed variables are interrelated in the population. Each component has an Eigenvalue of 1.016, exceeding the threshold of 1, indicating their significance. The selected factor provides the best summary of information. The total variance explained by the extracted factors is 82.01 percent, surpassing the 50 percent criterion, indicating that the factors account for 82 percent of the variation in the data

The objective is to investigate the correlation between Attitude, Subjective norm, Perceived behavioral control, Environmental knowledge, Environmental awareness, Environmental concern, and Environmental behavior intention.

Table 7. Regression results

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.491	.280		1.752	.081
	EC	.102	.264	.109	2.587	.009
	EA	.125	.497	.103	3.251	.000
	EK	.397	.353	.329	2.923	.005
	AT	.159	.172	.150	2.925	.003
	SN	.299	.109	.306	2.744	.007
	PBC	.303	.080	.297	3.783	.000

Environmental behavior intention	
R = 0.793	R Square = 0.629
Durbin-Watson = 1.635	F = 54.432

SPSS Calculation

Table 7 presents the results of the regression analysis, indicating significant findings. Durbin Watson's Test has a value of 1.635, F-value is 54.432, and a significance value is less than 0.05, demonstrating that certain factors have a significant impact on Environmental behavior intention. The factors that contribute to Environmental behavior intention, ranked from strongest to weakest, are as follows: Environmental knowledge (beta = .329), Subjective norm (beta = .306), Perceived behavioral control (beta = .297), Attitude (beta = .150), Environmental concern (beta = .109), and Environmental awareness (beta = .103). All of these factors exert a positive influence on Environmental behavior intention. The R square value of 0.793 indicates that the independent factors explain 79 percent of the variation in Environmental behavior intention.

Table 8 presents the final results of the regression analysis, indicating significant findings. Durbin Watson's Test has a value of 1.456, F-value is 330.161, and a significance value is less than 0.05, demonstrating a significant impact of Environmental behavior intention on Ecological Behavior. The R square value of 0.791 indicates that Environmental behavior intention explains 79 percent of the variation in Ecological Behavior.

Table 8. Regression results

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	Collinearity Statistics VIF
1	(Constant)	1.285	.230		5.597	.000		
	EBI	.785	.043	.791	18.170	.000	1.000	1.000
Ecological behavior								
R = 0.791			R Square = 0.625			Adjusted R Square = 0.623		
Durbin-Watson = 1,456			F = 330.161			Sig. = 0,000		

SPSS Calculation

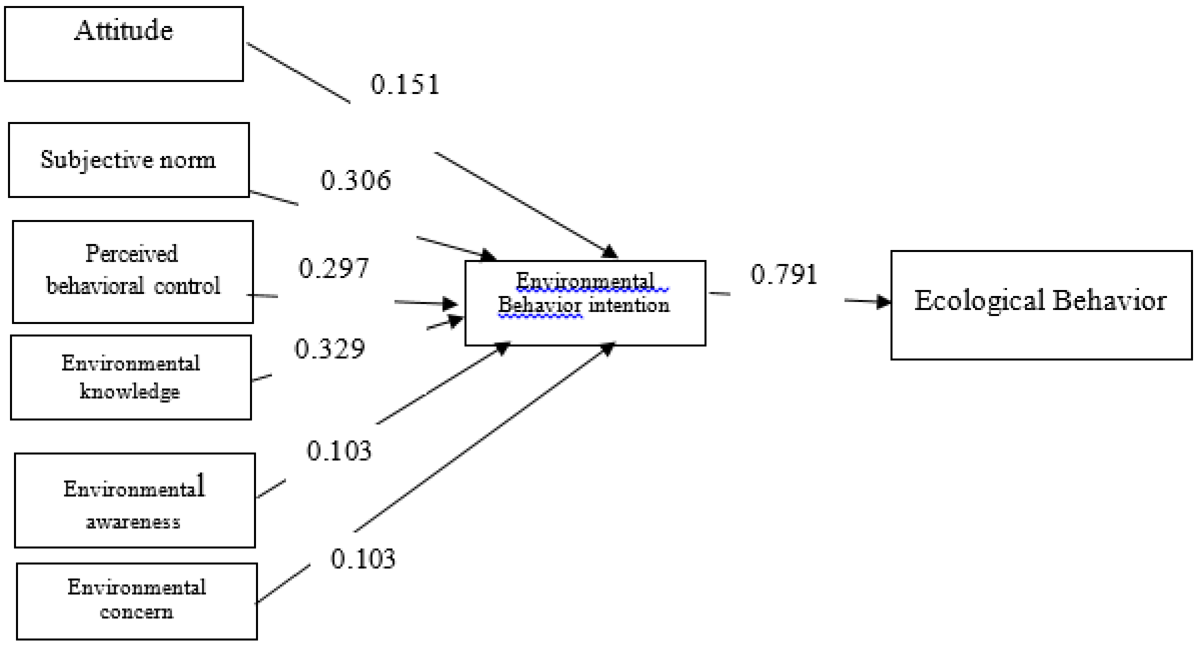

Figure 2. Result model

Hypothesis test	Result
H1: Attitude will be positively related to Environmental behavior intention.	Supported
H2: Subjective norm will be positively related to Environmental behavior intention.	Supported
H3: Perceived behavioral control will be positively related to Environmental behavior intention.	Supported
H4: Environmental knowledge will be positively related to Environmental behavior intention.	Supported
H5: Environmental awareness will be positively related to Environmental behavior intention.	Supported
H6: Environmental concern will be positively related to Environmental behavior intention.	Supported
H7: Environmental behavior intention will be positively related to organizational resilience.	Supported

SPSS Calculation

Hence, there have been no prior studies conducted in Vietnam examining the relationship between factors in the Theory of Planned Behavior (TPB) and employee-related factors with Environmental behavior intention, nor assessing the influence of Environmental behavior intention on Ecological Behavior. Previous research conducted in countries other than Vietnam has focused on investigating the effects of TPB and behavior in various domains, as well as exploring the relationship between employee-related factors and ecological behavior individually. The objective of this study is to comprehensively examine the combined impact of both TPB and employee-related factors on intention and ecological behavior. Our findings indicate that hotel employees' ecological behavior is influenced by Environmental behavior intention. Furthermore, the study reveals significant associations between Attitude, Subjective norm, Perceived behavioral control, Environmental knowledge, Environmental awareness, and Environmental concern with Environmental behavior intention.

4.2. Discussion and implication

The primary focus of this study was to examine factors that affect hotel employees' ecological behaviors using the theory of planned behavior**.** The data used in the study was collected by distributing questionnaires to hotel employees in Vietnam, while previous research was conducted in other countries worldwide such as Hong Kong, Turkey, and others. While previous studies have focused solely on investigating the individual impacts of TPB on intention and ecological behavior or examining the individual effects of environmental attitudes on ecological behavior, this study fills the research gap by conducting a comprehensive investigation into the combined influence of TPB and environmental attitudes on ecological behavior. Therefore, the study confirms that employees' ecological behavior is influenced by both their environmental attitudes and TPB. As one of the pioneering studies in this field, the research findings have significant theoretical and managerial implications. The article encompasses both theoretical and practical implications as follows:

Theoretical implications: Firstly, the study's findings indicate significant relationships between TPB, combined with the three factors of attitude towards environmental behavior, and the ecological behavior of hotel employees. This study is consistent with prior research conducted by Chan (2014) and Okumus (2019) in Hong Kong and Turkey, respectively. Second, this model demonstrated that employees' environmental behavior intention plays a moderating role in influencing their ecological behavior. In conclusion, this study examined the influences of various controlled variables on employee ecological behavior. Initial analyses explored the relationships between gender, education, years of experience in the hotel industry, and ecological behavior and/or factors of attitude toward ecological behavior. However, the effects of the remaining variables were ultimately found to be non-significant.

In addition to theoretical implications, the study findings also offer several practical implications: There have been numerous previous studies that have utilized the theory of planned behavior to investigate environmental behavioral intentions and actions. However, there are very few previous studies using TPB and environmental attitudes to assess the influence of hotel staff behavior on ecological behavior at hotels in Vietnam. This research has important implications for hotel managers in understanding the ecological behaviors of their employees. From this research, it can be observed that hotel managers need to pay attention to environmental courses to have positive impacts on environmental attitudes. In addition to organizing specialized training courses, hotel managers need to arrange panel discussions and regular sharing sessions to provide information on global climate change situations, such as melting glaciers, greenhouse effects, resource scarcity, and the extinction of species worldwide. Furthermore, hotel managers also need to understand that raising environmental awareness among employees in the workplace is essentially a result of their education starting from early childhood education. Information about environmental protection needs to be widely shared through mass media channels. Therefore, actions such as reducing the use of single-use items, regularly using energy-efficient light bulbs, and actively recycling products that can be reused should be highly appreciated. Moreover, hotel managers also need to have a clear understanding of the concerns that their employees have regarding improving environmental consciousness, addressing issues such as the use of recycled materials in their operations whenever possible. Employees may believe that hotel managers should be required to use recycled materials in their operations whenever possible, or that hotel guests should pay a higher price for environmentally polluting products. They may also feel disappointed when the government does not take more action to control environmental pollution. From there, hotel managers need to adopt attitudes and actions based on these concerns to engage relevant stakeholders in their business operations and effectively implement ecological behavior within the hotel. In conclusion, this study offers recommendations to hotel managers. The employees' intention to adopt environmentally friendly practices based on their work environment is a crucial indicator that green management is not just an environmental policy but also relevant to each member of the organization.

5. Conclusions

The objective of this study was to use TPB and environmental attitudes to assess the influence of hotel staff behavior on ecological behavior at hotels in Vietnam. Based on the comprehensive research conducted, the results demonstrate a strong correlation between the environmental performance of hotel employees and green management factors, which have received limited attention in the existing literature. This suggests that selecting individuals with sound environmental knowledge and offering ongoing environmental training to hotel staff can enhance both the environmental performance and image of a hotel. It further confirms the significance of providing environmental training within hotels, enabling employees to stay updated on TPB with employees' environmental attitudes on ecological behavior. Despite the additional resources required, this effort is deemed worthwhile. However, the present research possesses several constraints. Initially, the study's outcomes were solely derived from Viet Nam, a developing nation with limited investigations conducted in this context. Subsequent studies should endeavor to gather data from hospitality establishments to validate the findings within other developing regions, such as Africa, as well as emerging and developed countries. Additionally, the data collection in this study was limited to hotel employees. Subsequent investigations could expand the scope by gathering data from employees in diverse sectors such as restaurants, airports, and event businesses (Shin et al., 2017). Lastly, the components comprising the attitude toward ecological behavior were restricted in this study. To enhance understanding in this area, future studies could adopt a more comprehensive approach by examining these components in greater depth or incorporating additional components for analysis.

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Supply Chain Collaboration: A Study of The Coconut Supply Chain in The Southwest Region of Vietnam

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ABSTRACT

This study aimed to measure the level of collaboration between key partners and investigate factors affecting the supply chain collaboration of the coconut industry in the Southwest region. This study synthesized theories from past research to derive a conceptual model for clarifying this phenomenon. This work applied structural equation modeling (SEM-PLS) and a multi-group analysis to test hypotheses, with data from 72 participants (who have weak collaboration with supply chain partners) in the coconut industry in the Southwest region. The authors used a qualitative method to measure the level of supply chain collaboration between key members of the coconut industry in the Southwest region. From there, identify the components of the supply chain and conduct surveys with them. The results of the quantitative analysis also show that trust, information sharing, and collaborative planning have a direct impact on the collaboration between members of this supply chain.

Keywords: ASC, collaboration, supply chain collaboration, coconut supply chain.

1. Introduction

Reforms 1986 (Doi Moi) combined with globalization have rapidly helped Vietnam become a developing nation with many remarkable achievements after many years of poverty and wars (National Institute for Finance, 2021), whereas the people's material and spiritual life has been significantly improved. In particular, the agricultural sector has made a significant contribution to all mentioned achievements of Vietnam's economy, with a growth rate of 2.5% to 3.5% per year for the past 30 years.

In addition to rice, pepper, and coffee, coconut is also a commodity that is gradually proving its importance to domestic agriculture. According to (Kaur et al., 2019), coconut is a very significant tree in tropical regions as it offers millions of people food, work, and economic prospects. In 2021,

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Impacts of Cashless Payment on Sustainable Development in Vietnam, Situation and Solutions

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ABSTRACT

Because cash payment is less secure and less convenient, constraining the future economy, this study is conducted to determine the impacts of cashless payment as an alternative solution to sustainable development in Vietnam. Over 13.2 million cards are in use, and 18.8 million bank accounts and cards have been opened using electronic identity verification (eKYC). Both buyers and sellers can now make payments quickly and easily. The advantages of cashless transactions have aided socioeconomic growth and encouraged the usage of non-cash payment methods, including contactless cards, QR code transactions, and 24/7 instantaneous money transfers. The absence of a full understanding of the problem and the cashless payment solution, however, has an influence on Vietnam's sustainable growth. The purpose of publishing this report is to recommend that the government create legal guidelines and oversight systems for cashless transactions. This study uses secondary data to examine how cashless transactions have affected Vietnam's economic development and promptly provide solutions to continue implementing the development project. This ensures fair access to information and services for entities with similar functions while protecting customers and ensuring an effective dispute resolution mechanism. Monetary policy should be coordinated with policies that promote the growth of financial technology and service management. Strengthening the requirements for public disclosure and transparency in financial institution operations, clearly defining the rights and obligations of entities in payment, managing legal risks, and adhering to international standards to provide financial service quality assurance. Electronic payment mechanisms must be better understood through propaganda and education.

Keywords: cashless payment; sustainable economy; digital transformation.

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1. Introduction

Sustainable development is a concept that was first introduced in 1980 by the IUCN publication, World Conservation Strategy. The main content of this concept is that human development should not only focus on economic development but also attach importance to the essential needs of society and its impact on the ecological environment. The concept was then popularized in 1987 through the Brundtland Report (also known as Our Common Future Report) published by the WCED (now the Brundtland Commission) [1]. According to the report, sustainable development means "development that meets the needs of the present without compromising the ability of future generations to meet their own needs...". In other words, in order to achieve sustainable development, it is necessary to integrate an efficient economy, society, and the protection and maintenance of the environment, and to realize sustainable development, all socioeconomic sectors, managers, and social organizations need to work together to achieve a balance between three main areas: economic, social, and environment.

Non-cash payment is a form of payment by means other than cash, such as property certificates of equivalent value. Consumers can use cashless payment services without changing their cash equivalent. Accordingly, consumers can use valuable paper (certificates of deposit, securities, etc.), tangible assets (except gold and silver), or use payment instruments through credit institutions instead of buyers and sellers exchanging cash directly as the traditional method.

The relationship between non-cash payment and sustainable development can be described as non-cash payments through electronic payment forms such as bank transfers, e-wallets, credit cards, and electronic payment mobile phones, helping to reduce dependence on cash and save on paper, metal, and energy resources needed to produce and process cash. Using cashless payments reduces the risk of cash losses and theft. Electronic transactions can be encrypted and secured, thus enhancing the safety and security of users' personal information and assets. Cashless payments provide convenience and flexibility to users. By using electronic payment forms, users can make transactions anytime, anywhere, without carrying cash. This saves time and convenience for users while reducing traffic congestion and fuel consumption while moving to traditional transaction points. Using non-cash payments creates favorable conditions for the development of the digital economy. Electronic payment forms, e-wallets, and mobile applications combined with other online services such as online shopping, stock trading, bill payments, charity donations, sponsoring social projects, and facilitating the development and expansion of technology industries and digital services. Currently, people also understand the benefits of non-cash payments. In the past, you always had to carry cash when eating out, or shopping, now with just a card or mobile phone, and the payment process would be completed. Shops, cafes, restaurants, etc, have prepared the necessary equipment so that consumers can pay using different methods. This saves time and costs for both the seller and the buyer. For these reasons, I chose the topic "Impacts of non-cash payments on sustainable development in Vietnam, current situation, and solutions" as my research topic.

2. Theoretical basis

2.1. The concept of sustainable development

In 1987, the World Commission on Environment and Development published its "Our Common Future" report, also known as the Brundtland Report. This report introduced the term "sustainable development" and a new definition of how to plan a long-term development strategy. Development that is sustainable is defined as one which satisfies existing demands without compromising the capacity of future generations to satisfy their own needs [1].

In 1989, the importance of Our Common Future was discussed at the United Nations General Assembly, which led to the release of Resolution 44/228, the premise for the organization of the United Nations Conference on Environment and Development [2].

In 1992, the United Nations Conference on Environment and Development (UNCED) took place in Rio de Janeiro, Brazil. At this conference, the delegates agreed on basic principles and approved Agenda 21 (Agenda 21) - an action plan for sustainable development. More than 200 countries and many NGOs participated in the conference and adopted the Rio Declaration on Environment and Development along with other agreements such as biodiversity, climate change, and forest management.

In 2002, the World Conference on Sustainable Development was held in Johannesburg, South Africa. This is an opportunity to review the achievements made in the past 10 years under the Rio Declaration and Agenda 21. The conference continued to identify priority goals, such as eliminating poverty, developing recycled or environmentally friendly products to replace polluting products, and protecting and managing natural resources. Global topics related to health and development were also covered at this meeting. Countries committed to developing strategies for sustainable development by 2005 [3].

In summary, the late 1980s to the mid-1990s were an important period in developing and promoting a global consciousness of sustainable development. Conferences and documents, such as Our Common Future, the Rio Declaration, and Agenda 21, have played an important role in setting principles and standards for sustainable development.

2.2. Cashless payment concept

According to author Dang Cong Hoan (2015): "Cashless payment is a payment service operation performed by using payment tools or methods to transfer money from the payer's account/money limit to beneficiary's account or offset against each other by the service provider" [4].

From the above definitions, we understand that cashless payments are a form of monetary movement. Cashless payment acts as an intermediary to fulfill and meet customers' needs through payment methods such as collection, payment, and money transfer by deducting books, recording, and transferring money from one person to another or from one place to another without using cash. Regarding the responsibilities of the management agencies, complying with Decree No. 101/2012/ND-CP, dated November 22, 2012, of the Government on E-commerce and Decree No. 80/2016/ND-CP dated July 1, 2016, of the Government on amending and supplementing a number of articles of Decree 101 /2012/ND-CP and Circular No. 46/2014/NHNN dated December 31, 2014, of the State Bank of Vietnam providing for the services of cashless payment: "Cashless payment services are payment services through a bank account and some other services that make payments not through a bank account" (5, Article 4). Thus, it can be understood that the cashless payment service is used by commercial banks for customers to pay for goods and services through the customer's account opened at the bank without using cash.

3. Research methodology

This study uses secondary data that is a monthly time series from January 2017 until December 2022. Data was obtained through the Central Bank of Vietnam Statistics and Government Decrees in Vietnam. Moreover, the necessary Data for this study is the type of secondary data obtained from other related parties, which includes internet sources, articles in newspapers, etc. Data is used to see the impact of cashless payments on economic growth in Vietnam and promptly provide solutions to continue implementing the development project.

4. Research status

4.1. Research results on the current situation of using cashless payments in Vietnam

In the year 2021-2025, the project to develop cashless payment has been implemented according to Decision No. 1813/QD-TTg dated October 28, 2021 of the Prime Minister. On December 17, 2021, the Governor of the State Bank of Vietnam issued Decision No. 2006/QD-NHNN on the Implementation Plan of this Project. The project's main objective was to create a deep and wide change in cashless payments in the economy, promoting the use of facilities and services related to cashless payments. After a year of implementation, the project has brought many positive results in 2022. The inter-bank electronic payment system and the financial switching and electronic clearing system operate stably, smoothly, and with high growth in terms of transaction volume and value. In the first 11 months of 2022, the e-commerce market achieved a high growth rate through payment systems compared to the same period in 2021: (i) The number of payment transactions through the electronic payment system reached over 141.82 million transactions with a value of over VND 177.23 million billion, corresponding growth of 0.56% in volume and 31.39% in transaction value; (ii) Financial switching and electronic clearing system reached more than 3,770.15 million transactions with a transaction value of over VND 38,101 trillion, an increase of 99.79% in quantity and 106.09% in value.

Regarding the network of equipment for payment transactions, by the end of November 2022, there were 20,889 ATMs in the system, an increase of 3.6% over the same period in 2021. There are 404,726 POS, an increase of 28.09%, over the same period in 2021.

As a result of the first 11 months of 2022, the whole economy's e-commerce market reached more than 6.6 billion transactions with a value of more than 192.38 million billion VND (up 85 billion VND); 6% in quantity and 31.39% in value); on the Internet channel reached more than 1,192.67 million transactions with a value of more than 45.43 million billion VND (up 89.36% in quantity and 40.55% in value); on the mobile channel reached more than 3,941 million transactions with a value of nearly 39.4 million billion VND (up 116.1% in quantity and 92.3% in value); on the QR Code channel reached more than 59.6 million transactions with a value of more than 58.4 trillion VND (up 182.5% in quantity and 210.6% in value); the POS channel reached more than 564.54 million transactions, corresponding to a value of nearly 932.93 trillion VND (up 53.57% and 48.78% respectively compared to 2021) [5].

Table 1-Use of facilities in Vietnam in the first 11 months of 2022

Facilities	The number of payment transactions	The value of all transactions	Quantity increase	Value increase
The electronic payment system	141.82 million	VND 177.23 quadrillion	0.56%	31.39%
Financial switching and electronic clearing system	3,770.15 million	VND 38,101 trillion	99.79%	106.09%
The whole economy's e-commerce market	6.6 billion	VND 192.38 quadrillion	6%	31.39%
The Internet channel	1,192.67 million	VND 45.43 quadrillion	89.36%	40.55%
The mobile channel	3,941 million	VND 39.4 quadrillion	116.1%	92.3%
The QR code channel	59.6 million	VND 58.4 trillion	182.5%	210.6%
The POS channel	564.54 million	VND 932.93 trillion	53.57%	48.78%

Up to now, approximately 18.8 million accounts and cards have been opened with the eKYC, and 20 banks have reported the official implementation of opening bank cards by electronic methods, as prescribed in Circular No. 17/2021 /TT-NHNN4 with more than 13.2 million cards in circulation [6]. In 2022, credit institutions and payment intermediaries will focus on developing a digital ecosystem with new products, services, and payment methods that are safe, convenient, beneficial, and practical. For people and businesses, many new services and payment methods, such as opening an account/opening a card with eKYC, paying/withdrawing money at an ATM by QR Code, contactless chip card payment, biometric payment authentication, and encryption of card information (tokenization), have been integrated into products and services by banks and payment intermediaries to improve convenience, safety, and security, thereby contributing to the popularization of cashless payments to consumers. people. In November 2022, the SBV and Central Bank of Thailand held a ceremony to announce bilateral retail payment connections using QR codes between Vietnam and Thailand. On the Vietnamese side, a number of commercial banks participated, such as the Tien Phong Joint Stock Commercial Bank, Vietnam Investment and Development Joint Stock Commercial Bank, and Saigon Thuong Tin Joint Stock Commercial Bank. The effective cooperation between management agencies, businesses, and the commercial banking system of the two countries contribute to promoting trade and tourism, especially by encouraging the use of each country's local currency [7].

In addition to efforts to develop infrastructure and payment services and to develop a network of customers using payment services, the banking system also pays great attention to and attaches great importance to ensuring security and safety., ensuring the legitimate rights and interests of customers, thereby ensuring the stable development of the payment system and contributing to building customer trust and cohesion. The State Bank periodically and continuously checks and reviews each payment system and payment intermediary service provider to warn and promptly recommend abnormal signs to the payment system while continuously updating, analyzing, and building periodic reports to evaluate the operating status of each payment system and monitor the activities of providing intermediary payment services. The last piece in the development picture of cashless payment is the information, propaganda, and financial education of the State Bank and each credit institution. The State Bank of Vietnam has coordinated with stakeholders along with the press to organize many important seminars and talks: Coordinated with Lao Dong Newspaper to organize the Workshop "Promoting the development of domestic debit cards in Vietnam" and the Vietnam Association of Southeast Asian Nations (SBV). Workshop "Promoting Mobile-Money Development in Vietnam"; cooperated with the Tien Phong Newspaper to organize a series of activities "Vietnam Credit Card Week 2022"; cooperate with the Tuoi Tre Newspaper to organize a series of activities "Cashless Week–June 16" every year; cooperated with Vietnam Television to organize Talkshow "Skillful people, good money." The above activities confirm that the guidelines and policies to promote cashless payments have had a positive influence on socio-economic development in 2022 and promote cashless payments with various forms such as contactless cards and payments by QR Code instant money transfer 24/7 becomes familiar and useful to people and communities [8].

4.2. Actual situation of the impact of non-cash payment on sustainable development in Vietnam

Currently, people clearly feel the benefits of cashless payments. If before, you often had to carry cash when eating or shopping, now with just a credit card or phone, you could complete the payment. Supermarkets, coffee shops, and convenience stores have a full range of essential items to help users easily pay in many different ways. This will reduce the time and money for both the seller and the buyer.

Impact of cashless payment on socio-economic

Contributing to stabilizing money circulation and reducing the cost of social circulation

Cashless payments are accompanied by cash-flow plans. Effective implementation of non-cash payments means gradually increasing the proportion of non-cash payments in cash circulation, which will reduce the amount of cash in circulation and reduce the essential costs of payment. cash circulation, directly affecting money circulation and controlling prices towards monetary stability. The expansion of cashless payments will provide an opportunity to reduce cash circulation costs and save social labor; the expansion of cashless payments will increase the volume of cash recorded and reduce the volume of cash in circulation, thereby significantly reducing the labor force for the whole society in general and the banking system in particular by reducing the costs of printing cash, inventory, circulation, and storage of cash [9].

Reduce the Shadow Economy's Size

The shadow economy, also known as the informal sector, is important in economies all over the world, particularly in developing nations like Vietnam. Vietnam's economy has grown in recent years, including a significant contribution from informal economic activity. As a result, the General Department of Statistics has suggested a project to collect data on unregulated economic sectors in order to influence future government policy. Measuring the shadow economy is difficult owing to its secrecy, but understanding its scope and evolution through time is critical given its effect on politics and the wider economy [10]. A thorough understanding of both formal and informal economic activity is required for developing effective strategies to handle economic variations. Furthermore, authorities rely on estimates of the extent of the shadow sector to assess tax evasion and apply control measures.

According to World Economic Forum, there are 1.4 billion individuals on the planet who live on less than $1.25 each day. At the same time, over $1.26 trillion is essentially stolen from poor nations as a result of corruption, bribery, theft, and tax evasion. If those nations could retrieve that money, they could bring 1.4 billion people out of poverty and maintain them there for at least six years [11]. While cash payments alone are not a valid measure of the extent of the shadow economy, limiting cash usage might raise the cost of unlawful transactions, thereby shrinking the shadow economy by 10% to 20% [12].

Serves to direct the implementation of national monetary policy

Expansion of non-cash payments contributes to the effective implementation of the State Bank's monetary policy: the expansion of the non-cash payment method will significantly reduce the volume of cash in circulation thereby allowing Central Banks to actively and effectively use monetary policy tools.

Therefore, non-cash payments play an important role. From the perspective of the banking industry, it represents a relatively honest representation of the bank's management and technical skills, as well as the trust level of its customers. Within a Bank, non-cash payments affect not only payment operations but also other operational aspects, such as credit operations. If doing well, the non-cash payment will certainly stimulate the development of the credit business, and vice versa. Along with the development of science, technology, and information technology, modern banking services are also redirected by expanding alternative activities in addition to the difference between deposit and lending interest [13].

Impact of cashless payments on commercial banks

The development and expansion of non-cash payments show that the capital the bank collects through the balance of each payment deposit of each business unit increases, contributing to an increase in the credit capital of the bank. At the same time, non-cash payment helps the bank to fully and promptly grasp information about the capital shortage of each payment participant, ensuring the granting or disbursing of loans to the beneficiaries. and the guaranteed materials and goods.

Enterprises operating in the market economy are interested in payment issues that are safe, convenient, and have a quick capital turnover. With the diverse requirements of socio-economic relations, the bank has long been involved; the bank has become the center of money, credit, and payment in the economy, and cashless payment has significantly contributed to the success of the bank.

Cashless payment facilitates the bank's capital mobilization: it not only reduces the cost of printing, storing, and transporting cash but also adds capital to the bank through its operations of opening payment accounts for organizations and individuals. Customers deposit money into this account with the expectation that the bank will respond promptly and accurately to their payment requests [14].

Non-cash payments promote lending: Thanks to the demand for deposits, banks have the opportunity to increase their profits by providing credit to the economy. As banks can attract a low-cost capital source, they will lower loan interest rates and encourage businesses and individuals to borrow capital from banks to invest in profitable production and business.

Non-cash payment helps commercial banks perform the function of creating money. In fact, if payment is made in cash, after receiving cash out of the bank, that amount is no longer under the control of the bank again. However, if it is done in the form of a cashless payment and the bank makes a deduction from the account of the payer to the account of the beneficiary or clears between the deposit accounts of the commercial banks, the bank will have temporarily idle capital that can be used for lending. Therefore, when the cashless payment increases, the ability to generate money is greater, thus creating significant profits for the bank [15].

Non-cash payment contributes to the expansion of payment objects and increases payment revenue; cashless payment facilitates payment for goods and services in a safe, effective, accurate, reliable, and economical way over time, thereby creating public confidence in the banking system’s operations. Since then, every citizen and business have participated in the bank payment system. Thus, cashless payment helps the bank expand the payment audience, increase payment revenue, and expand the payment range at home and abroad, thereby increasing the bank's profit and helping the bank win in competition.

Non-cash payment promotes other services; to improve the efficiency of its production and business, the bank is constantly improving and offering different products and services because these products and services ensure that banks maximize profits. For these services to be developed, they need the support of the cashless payment system to be implemented effectively because a well-organized cashless payment system will create conditions for the bank to perform payment services in large volumes accurately and quickly [16].

Impact of cashless payments on central banks

Cashless payment is made through capital transfer on account at the bank, so it limits the volume of cash in circulation and saves costs in printing, preservation, storage, transporting, counting cash, etc. At the same time, planning and regulating money circulation helps the central bank better control the volume of cash in circulation.

Non-cash payments are made through customers depositing money into accounts at banks, increasing the ability to generate money, creating capital in payment for loans for socio-economic development, and expanding the commercial center to create conditions for the central bank to manage and control in general the production and circulation of goods in the economy [17].

In Vietnam, The State Bank of Vietnam (SBV) has issued Document No. 3956/NHNN-TT, which requests that banks, foreign bank branches, and payment intermediary service providers execute a number of provisions in order to promote cashless payments [18]. Furthermore, Nguyen Thi Hong, Governor of the State Bank of Vietnam, stated that the central bank will complete the regulatory framework for cashless payments as well as the fintech sandbox to encourage cashless payments [19].

Impact of cashless payments on financial institutions

On the basis of deposit accounts and payment accounts made through banks, it has helped businesses and management agencies such as line ministries and tax authorities to have conditions to check and track revenue, expenses, and accurate business results. Therefore, limiting "hidden economic" activities, controlling economic transactions, minimizing negative impacts of "underground economic" activities, and enhancing the state's economic dominance. The regulation of the economy and the administration of national economic and financial policies contribute to a healthy economy and society [20].

Impact of cashless payments on individual users

Quick and easy: Consumers do not have to personally bring money to merchants as before. Instead, with only a few basic steps on digital means, customers can easily complete large volume transactions and geographical distances with great ease. As a result, privacy is also protected. Non-cash payments help minimize the possibility of losing or dropping cash.

Savings: Besides contributing to reducing travel costs and shopping time, non-cash payment also gives consumers attractive incentive programs. The aim is to stimulate consumption and contribute to the development of a cashless payment system on a broader scale.

High accuracy: If you choose a non-cash payment method, consumers do not need to worry about whether they have counted accurately and fully in cash. Payment apps support users to calculate the exact total amount per coin.

As a result, cashless payment is currently used by an increasing number of individual users in Vietnam. In particular, a Visa survey indicated that mobile wallets and payment applications have been increasingly popular in the nation recently, with over 85% of customers owning at least one of them and over 42% making mobile contactless payments. Additionally, e-wallets or payment applications are used at least once a week by 71% of users. As a result, the expanding digital economy is expected to drive a 400% growth in mobile transactions in Vietnam by 2025, according to Backbase's Fintech and Digital Banking 2025 - Asia Pacific research. Additionally, the Department of Telecommunications forecasts that by the end of 2020, Vietnam has 132.5 million active mobile subscriber accounts (with a population under 100 million). In light of this, it is anticipated that the mobile money service would swiftly bring cashless payment to all sections of the nation, even rural, distant, and isolated ones [21].

4.3. Limitations and causes in the development of non-cash payment activities in Vietnam

As a major policy of the State and widely implemented with the goals of "benefiting the country - benefiting the people", non-cash payment in our country has not achieved as much effect as desired. The sad thing is that not only people in general but also the business community are "afraid" of electronic payment methods. The reason is due to:

First, crime and fraud in online payments with more complex methods and tricks have recently tended to increase as online services and payments become popular.

Some problems arise about payment activities are still very complicated, for example, some organizations and individuals use POS machines or payment devices originating in foreign countries to make payments in Vietnam which is not in accordance with the law; a number of payment services provided by foreign organizations and enterprises Vietnam is still difficult and complicated to handle.

Second, the information technology infrastructure and equipment that support payment activities are inefficient. Compared with other countries in Southeast Asia, the ratio of ATMs to people in Vietnam is also very low; the average number of ATMs per 100,000 adults in ASEAN in 2017 was 42.34, while Vietnam was 24.44 [22].

Moreover, non-cash payment services are mainly concentrated in big cities, industrial clusters, and export processing zones. In fact, the current system of automatic teller machines or POS machines is still small because they are located mostly in urban areas and are scattered in markets, shopping areas, shops, and supermarkets. However, in rural and mountainous areas is very limited, so it is inconvenient for cardholders to use it every day, leading to a huge demand for cashless payments in the current market economy.

Third, card issuance costs are high. The average cost of issuing one card is about 5 USD/card, while the cost of issuing cards globally is about 1 USD/card [23]. Card deposit interest rates are high along with card service fees, including withdrawal fees, statement printing fees, payment transaction fees, ATM withdrawal fees, foreign currency exchange fees, and withdrawal fees money make people feel hesitant.

Fourth, promotional activities for non-cash payment services are less invested and valued. Major policies, guidelines, and decisions on promoting payment activities are not fully and accurately recognized by society. Therefore, not only individuals but also businesses are very rare or vague about payment services and non-cash payment methods.

5. Solutions for developing non-cash payment activities

5.1. Macro solution

Determining that the promotion of smart shopping malls is an inevitable development trend in the context of the Industrial Revolution 4.0, causing multi-dimensional influences to contribute to the benefits of the people, and at the same time promoting the momentum of socio-economic development, contributes to the realization of the overall financial strategy through the universalization of financial and banking services. Therefore, in order to promote the development of cashless payment, the State first needs to create a legal framework and monitoring tools for cashless payment. The issues that need to be improved are not only the system of legal documents related to the common payment activities in the market economy, including non-cash payment activities and cashless payment, but also the need to create an equal competition mechanism to ensure the right of access to information and services of those with similar functions [24].

For the monetary policy group, it is necessary to synchronize with policies to encourage the development of financial technology and to manage and supervise the quality of modern financial services. Accordingly, in addition to encouraging the development of financial technology, it is necessary to strengthen the requirements for publicity and transparency of operations for financial institutions, and clearly define the rights and obligations of each subject in payment activities so that legal risks can be effectively managed and comply with international standards and practices set by international organizations [25]. World finance and currency are recommended and popularly implemented in many countries around the world.

Continue to strengthen synchronous and effective propaganda activities through the universalization of education to improve people's understanding of changing consumption habits and methods, thereby improving accessibility. banking products and services for the people, encouraging the use of forms of cashless payment.

The system of banks and credit institutions needs to connect the card systems with the payment cards that people are using today to simplify card issuance registration and this card can be used in any system.

In addition, in the banking system, it is necessary to continue research and apply solutions to ensure the security and reliability of payment systems and payment products and services; on the other hand, strengthen the supervision of the management system and the cooperation of the bank with stakeholders in terms of quality assurance and safety [26]. Moreover, it is necessary to accelerate innovation in technology and payment systems. Modernizing the bank's electronic payment system will help it have the latest infrastructure to provide the latest products and services to better satisfy customers' requirements and reduce operating costs to enhance management and business efficiency.

Banks also need to strengthen marketing activities to support customers in registering for cards and making payment transactions by electronic methods, especially customers in difficult areas such as remote areas.

Banks also consider applying the appropriate charge to customers with a large number of transactions at one time and even small transactions. For organizations providing products and services: It is necessary to strengthen the connection with suppliers and banks about implementing transactions through e-wallets so buyers of goods can buy through e-wallets. Through the connection and cooperation with organizations providing e-wallet services to deploy advertising, products, and usage instructions to consumers [27].

5.2. Card payment development solution

The first solution is to invest in developing the POS network. Card payments through POS will significantly contribute to making customer attraction more convenient for card payment services [28]. Therefore, during the process of investing in the card payment system, each bank should focus on investing in and developing the network of POS stations. Banks need to engage in advertising and marketing communication activities to introduce the benefits of using the bank's card payment points. Banks can promise to promote card swipe points when deploying card payments to customers [29]. Expenses for advertising on mass media channels such as television and radio are currently relatively high. Being able to advertise their products in banks will be the primary concern of many business units [30]. Developing a POS network requires selecting locations where many customers can pay by card, such as shopping malls, tourist attractions, and services like restaurants or spas in big cities. Subsequently, there should be a detailed long-term plan for establishing card payment points across the country and in different provinces at an appropriate rate to ensure that customers will feel convenient and secure when making card payments [31].

The second solution involves diversifying card services. The types of cards in Vietnam are still relatively unfamiliar to the majority of the population. Moreover, non-card payments have not been widely popularized, resulting in limited access and utilization of the card's benefits [32].

Additionally, some banks still impose high fees, creating a sense of apprehension when customers open accounts. In such a context, the current application of such fees may not be appropriate. Although the aforementioned fees may be suitable for the benefits provided by the card, customers do not understand these utilities [33].

Simultaneously, it is necessary to enhance the card service experience by creating new utilities and payment features on cards to better meet customer requirements. To develop card services, each bank needs to continually deploy a variety of services that bring customers more value and convenience. By providing convenient and effective banking payment services, each bank should further develop the benefits of card services by collaborating with consultants at transaction offices and public banking technology offices [34]. In addition to the usual features like payments, transfers, and savings for helping relatives, each bank should also offer features that bring numerous benefits to customers and align with the characteristics of each linked card product. For example, the student link card is a highly applicable product that combines the student card of the university or college with the bank's smart card. The student link card integrates all the features of a bank card while also applying smart card technology to manage students, including controlling access to classrooms and computer rooms, paying hospital fees, granting scholarships to students through cards, and providing a range of other utilities compatible with today's most advanced smart card technology [35].

5.3. E-wallet payment development solution

Firstly, it is necessary to establish a complete legal framework for payment activities via e-wallets. The development trend and benefits of e-wallets require a specific and transparent legal framework to achieve the goals set by the Government [36]. In order to promote these services effectively and closely monitor service providers, a strong regulatory framework is needed to prevent unfair competition and mitigate the risks associated with this new form of activity, especially concerning foreign currency flows. When developing the relevant legal framework for online payments in general and e-wallets in particular, policy managers can rely on the basic legal principles established by the World Mobile Communications Association (GSMA), specifically related to the following issues: customer identification and segmentation, the development of a secure payment service system, information technology development, and infrastructure construction [37].

The second solution is to develop and issue regulations on payment management. The State Bank of Vietnam will lead the review and overall assessment of regulations related to payments to ensure the compatibility of the legal framework with the complexity of each payment activity, including the differentiation of payment methods among companies providing services. This will ensure effective management of the entire payment supply chain [38]. Additionally, efforts should be made to improve the efficiency of information exchange between banks and individual payment companies and to reduce banking stratification through strict regulations similar to those in some countries around the world [39].

Thirdly, there is a need to build and heavily invest in the network of information technology infrastructure and software to support payments via e-wallets. Companies providing e-wallets must make significant technological investments and establish robust security layers to prevent unauthorized access by hackers. An e-wallet should have at least two security layers, including a wallet key layer and a One-time Password (OTP) security layer when customers make payments or transfer money [40]. In my opinion, ensuring the security and privacy of the new e-wallets is key to promoting customer usage and encouraging non-cash payments. This is a concern that many long-time wallet users find confusing. When banks promote investments in information security, linking e-wallets with payment accounts can be considered the second line of defense after the e-wallet itself.

6. Conclusion

Cashless payment is an inevitable trend when technology is developing and people's requirements for using modern services are increasing. Paying for public services such as health care, electricity, water, education, and social security through banks offers "double" benefits: it enhances transparency in spending and transactions, and it satisfies the convenience and efficiency needs of organizations and individuals. In the Industrial Revolution 4.0 era, new forms of transactions and money payments emerge. E-commerce transactions are one of them, and they are expected to grow and sustain themselves over traditional payment methods. This is a payment form that uses science and technology to enable people to pay money easily via the Internet or phone network without requiring an online payment device connected to the bank. Therefore, cashless payment forms will have various impacts on Vietnam’s socio-economic life: they will facilitate faster, easier, and more convenient payment; they will help people in remote and disadvantaged areas access information on the internet about health, education, banking, jobs, and social security; they will create more businesses in the digital economy; and they will stimulate economic development. The development of cashless payment forms in Vietnam in the Industrial Revolution 4.0 era is a big challenge that requires deeper and more detailed analysis. The research will lay the foundation for further analysis that will concentrate on new payment service forms.

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Resurrecting Ancestral Style: Vietnamese Consumers' Perception of Vintage Fashion for Sustainable Traditional Values

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ABSTRACT

The increasing popularity of vintage fashion as a sustainable alternative to fast fashion has captured the attention of the global youth, but its adoption in Vietnam, a country with a strong cultural identity, appears to be relatively subdued compared to Western nations. This study investigates the tendency of Vietnamese consumers to conflate the definitions of vintage fashion and vintage-style fashion, while also exploring their perceptions and attitudes towards this fashion trend. Utilizing a qualitative approach, the study combines secondary data analysis from fashion forums, social networks, professional reports, and search engines, with primary data obtained through in-depth interviews with 25 individuals aged 19-30, ensuring a diverse range of viewpoints. The findings reveal that Vietnamese consumers tend to encompass retro and antique items from secondhand stores under the umbrella of vintage fashion, blurring the distinction between genuine vintage pieces and vintage-style imitations. They view vintage fashion as a sustainable choice, emphasizing its timeless value and gradual development, which aligns with their cultural appreciation for tradition. However, respondents differentiate vintage fashion from traditional Vietnamese costumes, recognizing the unique characteristics and cultural significance of each. This study contributes both theoretically and practically to the understanding of Vietnamese consumers' perception of vintage fashion. The results shed light on the factors influencing the adoption and interpretation of vintage fashion in the Vietnamese market, highlighting the need for targeted strategies to promote its authentic appreciation and sustainable aspects.

Keywords: vintage fashion; vintage-style fashion; ancient costumes; sustainability; Vietnam.

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1. Introduction

Fashion plays a significant role in global economic development. However, it also has adverse environmental effects, with the fashion industry now ranking as the second most polluting industry worldwide, contributing to 10% of global carbon emissions [1]. The environmental impact is further evidenced by the substantial amounts of textile waste ending up in landfills and emitting greenhouse gases [2]. To address these challenges, transitioning to sustainable fashion has been proposed as a viable solution [3]. Additionally, the COVID-19 pandemic has brought about notable shifts in consumer behavior, including declining demand, a growing focus on sustainability, and increased online apparel purchases [4].

In recent years, vintage fashion has emerged as a prominent trend, both in Western cultures and developing countries [5]. Notably, even in countries like China, where second-hand clothing traditionally faced reluctance, vintage fashion has gained traction through the establishment of antique stores such as Mega Vintage in Beijing [6]. This trend has influenced luxury brands as well, prompting them to incorporate vintage pieces into their collections, evident in phenomena like Celine's vintage wedding dress craze [7]. Vintage fashion is characterized by drawing inspiration from fashion styles of past eras, with designs often reminiscent of the 1920s and 1960s [8]. The popularity of vintage products has continued to soar globally, driven by customers seeking a sense of security and nostalgia amidst uncertainty (Bobby Kim, founder of "The Hundreds").

While vintage fashion and related concepts have been studied in various cultural and national contexts [9, 10], understanding of these phenomena within the Vietnamese context remains limited. In Vietnam, there exists a lack of consensus in consumers' understanding of vintage fashion, as the term "vintage style" is commonly encountered in forums, real-life situations, and fashion stores. In the Vietnamese context, vintage fashion is often equated with antiquity, referring to original Vietnamese traditional or antique costumes found primarily in museums [5, 6, 10]. However, recent trends have seen a resurgence of interest in researching and revitalizing old fashion, with a particular focus on traditional Vietnamese costumes, known as "Viet dress" or Vietnamese antique dress, encompassing garments such as Giao Linh, Nhat Binh, and Ngu Than [11, 12]. Traditional Vietnamese costumes encompass a range of ancient garments that have endured over time, such as Nhat Binh or Ao Tac.

In contrast, the European market appears to have more readily available vintage clothing. Renowned celebrities like Kylie Jenner, Kendall Jenner, and Zendaya frequently don outfits from the 1920s to the 1990s, while renowned brand Valentino has established the "Valentino Vintage" program, focused on collecting and reselling their timeless designs [13]. This raises a paradox: despite Vietnam's strong cultural appreciation and preservation of traditional beauty, why does the country struggle to preserve antique fashion products like the West? One explanation lies in the historical disruptions and gaps in costume records. Descriptions of ancient clothing are scarce and have often been lost or destroyed over time. Consequently, the current Vietnamese antique costumes primarily consist of restored garments, or in other words, vintage-style fashion. This situation is also observed in other Asian countries.

Recent years have witnessed a surge in interest in Vietnamese ancient costumes within the realm of art. Historical film projects such as "Quynh Hoa Nhat Da," television series like "Phuong

Khau," and music videos such as "Honey, Stay" by Chi Pu and "Can't Be Together Forever" by Hoa Minzy have showcased these costumes, captivating domestic and international audiences. This increased attention has led to the active involvement and investment of numerous young individuals and groups, including the Dai Viet Co Phong Facebook group (with 167.6 thousand members as of April 2023), brands like V'style and Y Van Hien, non-profit organizations dedicated to heritage preservation like Viet Village Communal House, S.River, Nguyen Phong Doan Linh, and various antique-related activities. These collective efforts have revitalized Vietnamese ancient costumes, bringing them out of "lifeless documents" and museums and into the hearts of young people, particularly since 2021.

Given that restored Vietnamese antiques essentially constitute vintage-style fashion, this study also aims to explore the associated concepts within the Vietnamese context. Notably, there is a dearth of research providing a clear definition and classification of vintage fashion in Vietnam. This study seeks to address this gap and shed light on Vietnamese consumers' understanding of vintage fashion, clarifying the concept and classification of vintage products in the local context. To bridge this knowledge gap and shed light on the perception of vintage fashion among Vietnamese consumers, this study aims to explore the preservation of traditional values through their engagement with vintage fashion. By examining the role of vintage fashion in Vietnam, we can better understand its cultural significance and its potential implications for the fashion industry and society at large.

2. Literature review

2.1. Vintage fashion

Vintage, or classic is a term that is no longer strange to global consumers in general and in Vietnam in particular. Originally, "vintage" was used by winemakers to denote the year's wine harvest. In addition, at that time it was also used to denote oil, a later time, people raised it to refer to old cars with a life of at least 50 years, often called "Vintage Cars" ” [6]. Until later, second-hand clothing merchants used the word "vintage" to refer to old clothes belonging to a previous era, often beautifully designed, meticulous and elaborate. “Vintage” is currently defaulted as a word meaning “ancient-old”, applied in many fields such as fashion, interior, photography, graphics…

Past studies have shown that there is a lack of consensus in the literature on a clear definition of the term “vintage”. In some cases, it is used as "vintage" and in other cases, it is identified as "antique". The development and change of the term “vintage” has led to many additional concepts such as “antique”, “retro” and “second-hand”, making consumers or even people working in the field fashion is difficult to distinguish [5]. Especially "retro" - a concept that often appears in conjunction with "vintage". To make this clear, the two terms have been clearly distinguished. Generally speaking, “retro” is a nostalgic movement. Here, their followers will be re-wearing trendy designs from previous decades, specifically from the 40s to the 80s, including vintage and non-vintage (new or made) inspired by vintage silhouettes.

The term vintage has been accepted by the fashion world with the correct definition as “a rare and authentic piece that represents the style of a particular tailor or era” [14]. However, this definition has since been superseded by a more widely accepted notion that defines vintage fashion as items that appeared between the 1920s and 1980s [6]. During this period it is very clearly pointed out that fashion products dating from before the 1920s are classified as vintage, similarly when manufactured from the 1980s onwards are not yet called vintage. From the 1920s to the 1930s, fashion products were often highly valued because of their rarity and age-old value [5]. On the other hand, according to Sinha, Muthu [15], vintage fashion includes everything that was present about 20 years ago compared to the current fashion trend, the media in this period continuously promoted. Promoting vintage fashion considered the mean of conveying style and individuality.

According to Cassidy and Bennett [16], vintage has ability to change consumers' attitudes positively towards secondhand entities that are value-focused and eco-sustainably. Besides, Veenstra and Kuipers [17] figured out that vintage can be the prism to explore the 21st century consumption practices because of its relation to subculture and mainstream consumer culture. In vintage supply chain, intermediaries have multiple functions, not only support sourcing products as traditional clothing networks but also educating product knowledge [18].

2.2. Vintage fashion consumers

The trend of vintage fashion consumption is attached to the sustainable choice [19] and continues to thrive and has not shown any signs of diminishing. Silverman [20] noted the growing market for vintage fashion among the middle class and young people, who purchase antique items for fun, social purposes, and display. The consumer base for vintage fashion can be segmented into young professionals seeking high-quality clothing at affordable prices and young individuals interested in vintage culture. Today, young consumers see vintage fashion as a means of self-expression and a way to differentiate themselves from the mass fashion market, allowing them to follow their own unique style [21]. In fact, individuals whose image attached to vintage fashion are perceived to have have personal identities, be stylish, knowledgeable without necessity of adequate professional understanding [22].

Furthermore, Woodward [23] observes a shifting perception in the market, where new collection clothing is combined with second-hand and vintage clothing. The classic consumer is described as someone who seeks to appear different and "authentic," not through wearing eccentric or novel styles, but by skillfully combining pieces together [21]. This type of consumer at the upper level even can be considered "vintage eccentric" from the lifestyle to mannerism [16]. Towards luxury vintage fashion, running various platforms are related to consumers' attachment that can lead to self-fulfillment and purchase behaviors [24].

The Covid-19 pandemic has significantly influenced consumer behavior. The annual report by fashion search company Lyst confirms that people have become more environmentally conscious and are boycotting fast fashion in favor of sustainable brands. Designers like Marine Serre have incorporated materials from previous collections, and brands like Coach have mixed designs from previous collections, sending a message of durability. Additionally, there is an increase in using recycled materials in fashion, such as bags made from vintage wallets combined with recycled plastic. This indicates that vintage fashion has made a strong comeback since 2020 and is embraced by not only young people but also older generations. Stylists, designers, and image-makers play an important role in shaping taste and using vintage fashion as a source of inspiration and reference [10, 25]. For consumers, owning or wearing vintage items has become a significant fashion statement, placing emphasis on the item's source and history rather than solely its appearance [23].

3. Methodology

This study employs qualitative methods, specifically unstructured techniques, to analyze Vietnamese consumers' understanding of vintage fashion. The research process involves collecting and analyzing data from both primary and secondary sources.

Secondary data

Secondary data collection in this study involves two specific steps. Firstly, extensive research is conducted on fashion forums, social networks, and reports related to vintage fashion, specifically focusing on platforms such as Vietcetera.com, Vietdesigner.net, and search engines via Google and Youtube. This step aims to determine the knowledge and factors influencing the purchase intention of Vietnamese consumers.

Secondly, social media platforms such as Instagram and TikTok are utilized as additional data sources. Hashtags and posts related to vintage fashion are explored, enabling a comprehensive analysis. By comparing the findings from these different sources, the study seeks to identify the key concepts and factors that genuinely influence the buying intention of Vietnamese consumers, while also examining their perceptions of Vietnamese antiques.

Primary data

The study utilized in-depth interviews as the primary data collection method due to their flexibility, interactive nature, and ability to generate new ideas (Berry, 1999). In-depth interviews were chosen alongside participant observations and data collection to capture language and behavior, as recommended by Maykut & Morehouse (1994). These methods are effective in collecting qualitative data, particularly through capturing detailed information, rich experiences, and diverse perspectives from the target audience. Given the research focus on vintage fashion and Vietnamese antiques, which relates to individuality and identity, in-depth interviews were deemed the optimal approach to comprehensively assess consumers' understanding and purchase intention towards vintage fashion.

In-depth interviews were conducted with a diverse group of 25 subjects, including ordinary consumers, Vietnamese individuals living abroad, international students, stylists, fashion store managers, vintage fashion business professionals, content creators, and fashion Key Opinion Leaders (KOLs). These subjects shared the common characteristic of having used vintage fashion and having knowledge or experience with Vietnamese antiques. The age range of the interviewees was 19 to 30 years old, providing a comprehensive range of perspectives from both buyers and sellers of vintage products, as well as insights from individuals with varying levels of expertise in the fashion industry. Additionally, the inclusion of subjects exposed to Western culture allowed for an examination of differences in their conceptual understanding.

The interview protocol was carefully designed, organized, and tailored to the research context and objectives. Prior to the interviews, the author provided basic information about the research topic to the selected subjects who had purchased or used vintage fashion. However, specific related concepts were not disclosed to obtain unbiased responses and to accurately gauge consumers' understanding of vintage fashion or vintage-style fashion.

The interview questions underwent review and approval by experts, researchers, and individuals from the fashion industry to ensure their appropriateness and effectiveness. Field notes and recorded interviews were collected as observational and interview data, which were later transcribed for analysis. The average duration of the in-depth interviews ranged from 30 minutes to 1 hour, with a set of 17 main questions supplemented by additional exploratory questions based on the respondents' insights. The final interview script consisted of six parts, covering various aspects such as participant selection, vintage fashion concepts and characteristics, consumer attitudes and behaviors, factors influencing consumer behavior, general perceptions and feelings, and the assessment of understanding regarding Vietnamese vintage and antique clothing. The collected data will be carefully processed, encrypted, and subjected to verification procedures to ensure its reliability and validity.

4. Results and discussions

Secondary data source

Table 1 shows the characteristics of Vintage Fashion Identified in Secondary Data.

Table 1. Vintage Fashion Characteristics

Characteristics	Description
Typical Vintage Products	Shirts, slightly faded sweaters Maxi skirts, midi skirts, A-line skirts, pleated skirts Flared pants, baggy pants, trench coats Slip dresses, taper pants, camisole Leather jacket, denim outfit, pantsuit Padded shoulder top, lace top, leggings
Patterns	Traditional patterns like stripes, polka dots, textures, stripes and flowers
Materials	Cotton, wool, leather, silk, knits, jeans, and linen
Colors	Deep colors, focusing on brown, beige, black, dark blue, or light pastel colors White, red, navy blue, pink, light yellow, brown red, earth orange
Styles	Flared skirt, Peter Pan collar shirt, wide jeans Leather jacket, flared skirt with belt, shirt collar
Accessories	Eyeglasses, cat's eyes Large handbags, leather handbags, scarves Chain necklaces, bow ties, fedora hats, berets Chandelier earrings, vintage watches High heels, shoe bows, socks, belt

	Badger gloves, earrings, turban Oxfords, kitten heels, flats, leather boots
Fashion Culture Inspiration	Inspired by the 1920s - 1980s, bringing nostalgia and uniqueness in each product
Vintage Shopping Channels	Buy in-store, through e-commerce platforms, websites, apps, second-hand stores
Factors Promoting Purchase	Comfort and convenience in all circumstances Trendiness, originality, uniqueness, and nostalgia in design

Source: Synthesized secondary data

Based on the assessment of statistics from Instagram and TikTok platforms in April 2023, the following are the popular hashtags related to vintage fashion among Vietnamese consumers:

Table 2. Hashtags related to vintage fashion in Vietnam on social platforms

Hashtag	Instagram	TikTok
#vintage	150 million posts	34.4 billion views
#vintagestyle	32.9 million posts	1.8 billion views
#vintagefashion	18.4 million posts	2.4 billion views
#vintageclothing	14.6 million posts	560.6 million views
#vintageshop	10.2 million posts	312.3 million views

Source: Synthesized secondary data

These hashtags were chosen based on their popularity and the number of posts or views associated with each hashtag. Instagram and TikTok were selected as the primary platforms for this analysis due to their large user bases and relevance to the topic of vintage fashion. Facebook statistics were not included due to the difficulty of collecting data through hashtags and the presence of noisy articles. The analysis of data from TikTok videos and articles on platforms such as Vietcetera.com and Vietdesigner.net reveals several insights about consumer interest in vintage fashion:

Diverse Consumer Base: Consumers of vintage fashion span across different age groups and countries worldwide. They share personal experiences, showcase their fashion taste, and explore various vintage styles. Additionally, posts related to vintage cars and interior decoration in vintage style are also popular.

Regional Differences: On Instagram, most vintage fashion posts predominantly come from individuals in Western cultures. In contrast, TikTok shows a more balanced distribution of videos from users throughout Asia, including Vietnam.

Positive Reception: Comments and discussions surrounding vintage fashion receive positive engagement on both Instagram and TikTok. The level of consumer interest in vintage fashion appears to be quite high, as indicated by the content and responses on articles and videos.

Primary data source

Primary data for the study was collected through in-depth interviews conducted with 25 respondents between March and April 2023. The participants were carefully selected based on their gender, age, occupation, and level of engagement with vintage fashion products. The sample group consisted of individuals aged 19 to 30, representing various professions and residing in different regions of Vietnam. To initiate the interviews, the researchers reached out to the participants via text messages on Instagram and Facebook. They explained the research purpose and scheduled interview appointments. All interviews were conducted through Messenger video calls, ensuring convenient and efficient communication.

Table 3. Interviewees' information

Group	Code	Age	Sex	Occupation	Field
General consumer	A	21	Female	Student	Economics
	B	21	Male	KOLs assistant	Fashion
	C	21	Female	Students	Economics
	D	23	Female	Freelancer	Beauty
	E	25	Female	Teacher	Education
	F	22	Female	Student	Kinh tế
	G	22	Male	Office staff	Event, Marketing, PR
	H	21	Female	Designer	Marketing
	I	21	Female	Student	Fine arts, graphics
Oversea student/ Vietnamese living abroad	J	23	Male	Oversea student in Austria	Economics
	K	23	Male	Line Producer	Korean 3D Graphics
	L	22	Female	Oversea student in USA	Marketing
	M	25	Male	Language TA	Education

KOLs	N	23	Female	KOL	Fashion
	O	23	Female	KOL	Fashion
	P	19	Female	KOL	Fashion
	Q	25	Female	KOL	Fashion
	R	19	Female	KOL	Fashion
Fashion business	S	28	Female	Shop owner "Conmeoden"	Fashion
	T	21	Female	Staff “12.december”	Fashion
	U	25	Female	Kinh doanh	Fashion
	V	30	Female	Shop owner “Nabi.Larobe”	Fashion
	W	27	Female	Content Creator Shop owner "tiemdogacmai"	Fashion
Fashion-related job	X	24	Female	Stylist	Fashion
	Y	27	Female	Stylist	Fashion

Source: Compiled by the authors based on the primary data

Among the participants, 5 individuals were male (20% of the sample). This gender distribution aligns with previous research findings, suggesting that women generally exhibit greater interest in fashion, while men often show particular interest in areas such as automotive. This pattern holds true in Vietnam as well.

The age distribution of the participants was as follows: 5 individuals aged between 27 and 30, 2 young adults aged 19, and the remaining 19 participants aged between 21 and 25. Some participants expressed a deep passion for vintage fashion, having followed and embraced this style for several years. The sample also included individuals with expertise in vintage fashion, international students residing abroad, and regular fashion consumers.

Through in-depth interviews with 25 subjects, it was found that everyone has the same view of vintage fashion. However, these are all inaccurate views about the true definition of this fashion aspect, only one respondent has ever studied in Austria - Mr. J is correct even about the source. The origin of the word “vintage”. When asked, the reason he gave was because he was popular when interacting with the Western community, as well as having the opportunity to own a vintage standard product. This shows that when imported to Vietnam, vintage fashion has had many changes, or in other words, it has been Vietnamized. Specifically, the remaining 96% of participants when asked could not give a clear definition of "vintage fashion" and "vintage style", they judged a product as vintage or not based on the material, colors, distinctive designs or phrases such as antique, classic, or anything in the fashion category.

Most of the participants refer to vintage as an item in a secondhand shop, notwithstanding those who are in the vintage fashion business. The explanation for this can be attributed to two reasons from the side of the seller and the consumer. Firstly, secondhand and vintage fashion business people in Vietnam currently do not really understand the concept for products, they choose items based on consumer tastes, and with the dense appearance of the present. Now, the confusion is increasing. Secondly, the standards that Vietnamese people impose on a vintage product are too deep, most of the answers given show that they perceive the products in the secondhand store as more "vintage" than in the old ones in a true vintage shop. This leads to the emergence of additional concepts such as “retro”, “antique” or “vintage style”.

When asked about "vintage fashion" and "vintage style", 76% distinguish the two concepts, the remaining 24% feel they are almost similar. Accordingly, vintage style includes a person's lifestyle, style, personality, and other accompanying factors. Vintage style can include vintage fashion, expressed in harmony and can be perceived by others not only through the clothes that person wears.

Typical vintage products and their characteristics are also quite carefully exploited. Most Vietnamese consumers are still conflicted in how to define a product of vintage fashion, most of which are based solely on pre-existing feelings influenced by the community. It's not necessarily that these judgments are wrong, just incomplete because fashion is a cycle, there will be repetition and there will be development, the Vietnamese perspective on vintage fashion is a new development of the fashion industry, especially when vintage items are really hard to find and own in today's market. Most of them are of great value or very hard to find, only in antique collections, auctions or in galleries.

Is vintage fashion good? Questions when asked get 100% feedback as well. Currently, the wave of boycotting fast fashion is becoming more and more popular, not only in the world but also in Vietnam. The main reason given is its harmful effects to the environment, especially after the Covid-19 epidemic has just passed, global consumers are especially concerned about the health and the problem of global warming. With vintage fashion, a fashion that has appeared for a long time, is well received and maintained until now, it shows the most sustainable value, especially in reducing large amounts of waste. Vintage products do not follow the mass trend, 100% of participants also think that vintage will not be outdated because of its values. The older a vintage product is, the longer it will be appreciated. Interviewed with Mr. K - an international student in Korea, made the point that: "New fashion in the market is showing signs of slowing down, that's why vintage fashion, fashion with nostalgic values comes back, and more receptive than ever. Vintage fashion cannot be lost, it can only cool down or develop more than before.” Vintage fashion is mentioned as a way of preserving old values, as well as a way of cultural interference when in the present era, in any field we need to learn a lot more. Besides, for reasons suitable for many ages, all genders and convenience in different use situations, vintage fashion is also appreciated in the minds of consumers, making them feel worthy, worth using them.

According to the in-depth interviews, the factors that drive consumer purchase intention in vintage fashion are primarily the fit with personal style and the characteristics of the product. Participants emphasized the importance of factors such as material, durability, texture, color, nostalgia, originality, and timeliness of the product. Consumers in Vietnam start their buying decision based on their personal fashion taste and then evaluate the convenience and quality of the vintage fashion items. Some participants also mentioned being influenced by key opinion leaders (KOLs) or influencers in their decision to purchase vintage fashion.

Participants expressed a strong attraction towards vintage fashion due to elements like nostalgia, uniqueness, trendiness, and rarity. The excitement and satisfaction of discovering and experiencing vintage products firsthand were also mentioned. When asked about their preferred places to buy vintage items, 68% of participants mentioned choosing secondhand stores. They appreciate the uniqueness of secondhand items, as each product is often one-of-a-kind, allowing consumers to create a unique style that cannot be easily replicated. Participants also perceived secondhand stores as having a more vintage vibe compared to dedicated vintage stores selling new items. The timing and nostalgia associated with secondhand items were particularly valued by consumers. However, it was evident that participants had contradictory opinions regarding whether vintage equates to secondhand. They recognized that not all secondhand items are vintage, and vintage can encompass new items designed to recreate the style, color, and direction of specific time periods.

The significance of the time factor in defining vintage received mixed opinions. While 20% of participants considered time as the main factor in determining whether a product is vintage, the majority (80%) did not agree. Participants felt that a vintage product should encompass several other factors beyond just the age of the item, such as color, material, and design. While older products tend to be more valuable, the element of time alone does not make a product vintage but rather leans towards being called "antique." In the case of new vintage items, the concept of time is understood differently, where designers can recreate those vintage characteristics to evoke nostalgia or capture a specific era.

The development of vintage fashion in Vietnam has led to the emergence of thriving communities, such as Facebook groups with a significant number of participants, including "Love vintage - vintage - retro - 90s" with 39.2 thousand members and "Vietnam Vintage Community" with 52.5 thousand members. This shows the successful introduction and enthusiastic reception of vintage fashion among Vietnamese people. The majority of participants (88%) believe that vintage fashion is a rising and enduring trend due to its combination of classic and modern features. Vintage fashion is considered to be timeless and not easily outdated, unlike other fashion trends. It develops more slowly but steadily, providing a sense of nostalgia that remains unique and captivating.

Furthermore, the interviews highlighted the emergence of a new fashion style known as Korean idol fashion. Globally famous idols like Blackpink and BTS have a significant influence on young people, and the outfits they wear often become hot topics and receive a large reception. While it remains uncertain whether Korean idol fashion will eventually replace vintage fashion, it has not yet reversed the lasting influence and popularity of vintage fashion.

Vintage and Vietnamese antiques were also mentioned in the interviews. Vietnamese ancient costumes are not strange to Vietnamese people, when asked, 100% of the participants said they had heard or known about them. A shop owner of a fashion store in Hue said that: "I know about Vietnamese antiques through KOLs. They come back to Hue to take pictures a lot, the trend of taking pictures with antique clothes is also booming." Recently, ancient costumes have been "promoted" a lot through celebrity MVs or emerging as a trend of taking photos of antique clothes. Videos about Vietnamese antiques also recorded more than 25.4 million views on the Tik Tok platform, including by both Vietnamese and international friends. The image of Vietnam's traditional costume comes closer to the younger generation through mass media, newspapers, social networks or even in comic books, books and life. Statistics show that 20% of participants share that they have had the opportunity to interact with antique clothes, the remaining 80% want to try it in the future because it is a very good thing. However, only Ao Dai and Nhat Binh Dress are mentioned, these are also considered the two most popular styles of ancient clothing in Vietnam, in addition, the blouse, the ao dai or the commissary shirt hardly receive attentions from everyone. Only 8% said they know of a brand specializing in antiques, with two names mentioned as V'Style and Y Van Hien. Meanwhile, in fact, in Vietnam, there are many other outstanding brands as well as groups that restore and organize events related to traditional costumes. This shows that, although ancient costumes have existed for a long time, but have not been really widely spread to Vietnamese people, all of them are just stopping at the level of awareness, not deepening nor understanding or application.

When placing Vietnamese antiques and vintage fashion on the scale, the results obtained were that despite many similarities in culture, nostalgia and time value, 92% of participants still disagreed with the concept. The point of antique clothing should be considered as Vietnamese vintage fashion, the remaining 8% did not make any comments. Interview with Ms. C, who has been pursuing vintage style for 6 years: “Vietnamese antique clothes are traditional, not vintage fashion. It is not a fashion trend, but only a traditional feature, as a unique feature of each country. In the future, it can't become a trend, but only a culture." This view was also shared by other participants.

Vietnamese antique clothing is a traditional item, it carries the characteristics of the nation and should be restored and preserved while still retaining its own value. Nowadays, ancient costumes have been greatly innovated, many Vietnamese local brands also take this as inspiration to create modern yet traditional costumes, or famous designers also choose antique costumes. Theme for your collection. Therefore, when asked, most people feel that antique clothing is and will be closer to Vietnamese people in many ways of natural development of society. Around it, there are still many conflicting opinions such as difficult to apply in life, difficult to wear to go out, can only be worn to take pictures or experience.

5. Implications

5.1. Theoretical implications

The findings from the interviews have important implications for understanding the dynamics of vintage fashion and consumer behavior in Vietnam. Firstly, the distinction between Vietnamese antiques and vintage fashion emerged as a significant finding. Most participants did not consider antiques as part of the vintage fashion category. This highlights the need for further research to explore the cultural and historical significance of antique clothing in Vietnam, as well as its potential integration into the fashion industry and its perception among consumers.

Secondly, the identified factors of fashion attachment, nostalgia, the need for uniqueness, and the desire to hunt for unique items provide valuable insights into consumers' purchase intentions for vintage goods. These factors were unanimously mentioned by all participants, indicating their universal influence. To gain a deeper understanding of these factors, future research can employ quantitative methods to examine their relative importance and explore their impact on consumer behavior in a broader context.

Furthermore, the prominence of fashion attachment and the need for uniqueness as the most influential factors suggests that vintage fashion appeals to consumers on an emotional level. This finding underscores the role of personal style and self-expression in driving the demand for vintage items. Fashion businesses can leverage these insights to better understand their target market and tailor their marketing strategies accordingly.

Overall, the results highlight the significance of fashion attachment, nostalgia, the need for uniqueness, and the desire to hunt for unique items in shaping consumers' intentions to purchase vintage fashion. The findings provide a foundation for future research to delve deeper into these factors and their impact on consumer behavior in the context of Vietnam.

5.2. Practical implications

The implications drawn from this analysis provide valuable insights into the understanding of vintage fashion and Vietnamese antiques, as well as their impact on consumer behavior and cultural aspects. Firstly, there is a need for improved education and awareness regarding vintage fashion. The findings reveal a deficient understanding of vintage fashion among participants, indicating the importance of educating consumers about the true essence of vintage fashion beyond superficial characteristics. This can help foster a more accurate and comprehensive understanding of vintage fashion as a distinct style and cultural phenomenon.

Secondly, personal style and product characteristics play a significant role in consumers' purchase intentions. Factors such as material quality, durability, texture, color, nostalgia, originality, and timeliness influence consumers' decision-making process. Businesses in the fashion industry can leverage these insights to better align their product offerings with consumers' preferences and create a unique value proposition.

The influence of key opinion leaders (KOLs) and influencers emerges as a noteworthy finding. Participants acknowledged the impact of these individuals in shaping their preference for vintage fashion, highlighting the importance of digital platforms and social media in driving consumer behavior and promoting specific trends. Businesses can strategically collaborate with influential figures to amplify the visibility and desirability of vintage fashion.

Furthermore, the preference for purchasing vintage fashion from secondhand stores indicates the appeal of authenticity and uniqueness. Secondhand stores are perceived as more reliable sources for genuine vintage items, enabling consumers to create a distinctive and individual style. Recognizing this preference, businesses can explore partnerships or establish their own secondhand stores to cater to this specific market segment.

The sustainability and enduring appeal of vintage fashion resonate strongly with participants, reflecting the growing global movement against fast fashion. Vintage fashion is perceived as a sustainable alternative to the disposable nature of contemporary fashion, aligning with consumers' environmental consciousness. Businesses can capitalize on this trend by promoting the timeless and eco-friendly aspects of vintage fashion.

While Vietnamese antiques were acknowledged as cultural treasures, participants did not consider them part of vintage fashion. This presents an opportunity for further research to explore the integration of Vietnamese antiques into the fashion industry and examine consumer perceptions. Additionally, the preservation and innovation of Vietnamese antiques and traditional costumes can help create a distinct fashion style for Vietnam, similar to the successful revitalization of Hanbok in Korea.

6. Conclusions

In conclusion, this research has made significant contributions to our understanding of vintage fashion and Vietnamese antiques, drawing from a comprehensive analysis of primary and secondary data. By examining in-depth interviews, social media platforms, and the characteristics of vintage fashion, valuable insights have been gained, providing a holistic view of the subject matter.

The primary data analysis, conducted through in-depth interviews with 25 participants, uncovered key findings related to the understanding of vintage fashion and perceptions of Vietnamese antiques. It was evident that there was a deficiency in the participants' understanding of vintage fashion, necessitating the need for enhanced education and awareness to establish a more accurate and comprehensive understanding among consumers. Additionally, participants recognized Vietnamese antiques as cultural treasures rather than a part of vintage fashion, indicating the potential for further exploration and integration of these items into the fashion industry.

Furthermore, the analysis of social media platforms revealed the significant presence and popularity of vintage fashion. The resurgence and widespread acceptance of vintage fashion among consumers can be attributed, in part, to its prominent visibility on these platforms. The influence of social media, coupled with the rise of key opinion leaders (KOLs) and influencers, highlights the role of digital platforms in shaping consumer behavior and promoting specific trends. Businesses in the fashion industry can leverage this insight by strategically collaborating with KOLs and influencers to amplify the visibility and desirability of vintage fashion.

Moreover, the characteristics of vintage fashion emerged as a crucial factor influencing consumers' purchase intentions. Participants emphasized the alignment of personal style with product characteristics such as material quality, durability, texture, color, nostalgia, originality, and timeliness. Convenience and product quality were also significant considerations for consumers. This understanding of consumer preferences provides valuable insights for businesses to tailor their offerings and create a compelling value proposition in the vintage fashion market.

The research also highlighted the preference for purchasing vintage fashion from secondhand stores, which were perceived to offer more authentic vintage products compared to specialized vintage shops that predominantly sell new items. The unique and one-of-a-kind nature of products found in secondhand stores appealed to consumers, allowing them to create a distinctive and individual style. This finding presents opportunities for businesses to explore partnerships or establish their own secondhand stores, capitalizing on the demand for authentic vintage products.

Additionally, the sustainability aspect of vintage fashion was underscored, aligning with the global movement against fast fashion and its environmental impact. Vintage items, with their inherent value and timeless nature, offer a sustainable alternative to the disposable nature of contemporary fashion. This finding highlights the potential for businesses to promote the eco-friendly aspects of vintage fashion, appealing to consumers' growing environmental consciousness.

In conclusion, this research contributes valuable insights into the understanding of vintage fashion, consumer behavior, and cultural aspects in the context of Vietnam. The analysis of primary data sources, including in-depth interviews and social media platforms, provides a comprehensive understanding of consumer perceptions and preferences. These insights inform strategic implications for businesses in the fashion industry, encompassing the need for education and awareness, the influence of social media and influencers, the characteristics of vintage fashion, and the appeal of sustainability. Future studies can build upon these findings and further explore the historical, cultural, and social significance of antique clothing in Vietnam, advancing our understanding of this intriguing subject matter.

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The Relationship between Corporate Social Responsibility and Consumer Purchase Intention in Vietnam

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ABSTRACT

The way business is conducted today differs from how it was done in the past. In addition to evaluating pricing, quality, etc. when making a purchase, consumers now have more power and tend to show an increased interest in the sustainability of the globe. The idea of Corporate Social Responsibility (CSR) was created as a result, and it has since been refined to maximize shared values for stakeholders and society as a whole. Noticing research gaps in CSR and consumer behavioral intentions, this thesis aims to study the relationship between Corporate Social Responsibility and Consumer Purchase Intention (CPI), while also explaining the mediating effects of Corporate Reputation and Consumer Satisfaction in the mentioned relationship. The quantitative research received 308 responses from UNIQLO's Vietnamese customers living in Ho Chi Minh city. The data was processed in two main software: SPSS 23.0 and AMOS 24.0, and analyzed in CB-SEM. The results confirm all 5 proposed hypotheses, in which there are associations between CSR, CPI, CR, and CS. Specifically, CSR has a positive effect on CPI, in which CSR initiatives can attract consumers and motivate them to consider the company's products. Furthermore, CSR also affects CR and CS, which eventually develops indirect effects on purchase intention. These conclusions then acknowledge the application of two theories: Social Exchange and Planned Behavior in the connection of CSR and CPI.

Keywords: Corporate Social Responsibility; Consumer Purchase Intention; Corporate Reputation; Consumer Satisfaction

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1. Introduction

Doing business in today's world is different from how it was done yesterday. Millions of new businesses are being born each year only in the United States (U.S Census Bureau), and there were estimatedly 333.34 million entities worldwide in 2021 (D.Clark, 2022). Consumers, hence, are put in a more powerful position, since they are given more options to purchase from (MG Luchs, 2011). This has significantly affected consumer purchase intention. Consumer purchase intention is now not only under the increasing influence of fundamental factors, but also of socially ethical practices (Akroush et al., 2019).

For that reason, the concept of Corporate Social Responsibility (CSR) was born and has been developed to maximize shared values for stakeholders and society at large (European Commission Communicate, 2011). While it is defined by the United Nations Industrial Development Organization as "A management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders.", the concept can also be perceived as how a corporate venture manages its industry and takes on its share of responsibility for its social impact (Asif Khan, 2021) in the form of projects, movements, or empowerment.

To business entities, Corporate Social Responsibility is a significant concern to the point that it has direct influences on an organization's overall strategy and should not be left off the organization's attention (Galbreath, 2006). To consumers, Corporate Social Responsibility has been proven to have an influential relationship with consumers' assessment and eventually, consumer purchase intention . Research on consumer preferences when purchasing products conducted in Georgia suggests that CSR ranks in the fifth after quality, price, company reputation, company origin respectively (Iza Gigauri, 2012). Grimmer & Bingham (2013) also emphasized the significance of CSR to consumers, implying that more and more consumers come to their purchase decisions by keeping an eye on sustainable and ethical practices of companies.

Previous studies have proved that Corporate Social Responsibility does have a beneficial connection to both Corporate Reputation and Consumer Satisfaction under different environments. For instance, Fombrun & Shanley (1990) concluded in their research on Reputation Building that the greater a company's contributions to social sustainability, the better its reputation will be. Years later, Fombrun continued his studies and explored that building a good and responsible reputation is an external incentive for companies to commit to their social responsibilities, hence, an adequate corporate image is regarded as an outcome of CSR (Garberg & Fombrun, 2006). Falck & Heblich (2007) also agreed with this finding, claiming a positive reputation can enhance brand value and a company's goodwill, which can be achieved by actively participating in society's basic order. Perez & Del Bosque (2015) added that corporations can determine their organizational objectives for strengthening corporate reputation and financial gains by acknowledging the need and weight of CSR practices. Actively promoting these practices in public helps corporations to draw in more interest from consumers than those who do not engage in CSR (Tian et al., 2011). Also, businesses now tend to position themselves as responsible and supportive, as in crisis times their built image can reduce negative influences of social issues and reputation blemishes (Hillenbard & Money, 2009). Other than favorably benefiting corporate reputation, CSR also results in Consumer Satisfaction. Maignan et al., (2005) suggested that consumers are the foremost stakeholders who care both about a company's economic and ethical performance. Holding the same notion, Reza at al.,

(2020) emphasized that consumers are more satisfied with organizations engaging in ethical practices like CSR. Brown & Dacin (1997) concluded that CSR creates a favorable condition to positively raise consumers' assessments of and perspectives toward an organization.

That being said, there are still signigicant research gaps in this area which have not been addressed. Firstly, there are too little academic papers that directly study the relationship between CSR and Consumer Purchase Intention. There also exist contradictions regarding the impacts of Corporate Social Responsibility on Consumer Purchase Intention. While some researchers like Lee & Lee (2015) have claimed that CSR impacts consumer purchase intention, others like Mohr, Webb, & Harris (2001) have said that the relationship between these two variables is insignificant. Secondly, beyond having a correlation with Corporate Social Responsibility, Corporate Reputation and Consumer Satisfaction have been proven to be a bridge between CSR and Consumer Purchase Intention by a few scholars. However, there is not enough literature to clarify and assert the mediating connection. Kumar Ramesh et al., (2018) are one of a few who conducted research on the impact of CSR on purchase intention of consumers via the brand image. Their paper suggested that effective CSR activities together with efficiently communicating it to consumers can create a favorable corporate reputation and as a result, achieve positive consumers' responses. Another study is from Chih-Chuan Wang (2018) whose analysis proved that CSR could affect consumer purchase intention through both corporate image and consumer satisfaction. Except for these papers, there are hardly any other papers that strengthen the empirical literature on the relationship of mentioned variables and mediators. Finally, the academic collection on this topic, concentrating on the Vietnamese context, is not diverse enough to fulfill the need of researching and developing CSR within the domestic borders.

Being aware of that, this research article conducted quantitative research to investigate the impact of CSR on Corporate Reputation and Consumer Satisfaction in Vietnam. It also attempted to determine the relationship of CSR on Consumer Purchase Intention through the mediating roles of Corporate Reputation, Consumer Satisfaction in Vietnam.

2. Literature Review

2.1. Corporate Social Responsibility (CSR).

Corporate Social Responsibility (CSR) has a history dating back to 1953 when an American economist - Howard Bowen, published a book, called "Social Responsibilities of the Businessman", to support business ethics and reactions to societal stakeholders. Since its rise in the 50s, Corporate Social Responsibility has been defined by a significant number of scholars. Being regarded as the "father" of CSR, Howard Bowen (1953) pioneeringly gave it a definition as "the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action that are desirable in terms of the objectives and values of our society". Twenty years later, Keith Davis (1973) referred to CSR, in a more specific manner, as the firm's obligations to consider, respond to social matters beyond economic, technical, and legal requirements of the firm.

Among all the empirical theories on Corporate Social Responsibility, Archie B. Carroll's Pyramid (1991) is one of the most groundbreaking frameworks that captures the four important components organizations should take into account for their CSR practices. These four include: Economic, Legal, Ethical, and Philanthropic, which are displayed in figure 2.1.

Figure 1: Carroll's CSR Pyramid. Source: Carroll, A. B. (1991)

In terms of the Corporate Social Responsibility benefits, Galbreath (2010) confirmed that CSR is more beneficial to firms beyond direct financial implications. One of the benefits is a symbiotic relationship between attracting and keeping employees that are positively created by CSR which reduces employee turnover rate. His findings also backed up the hypothesis that businesses who proactively commit to their economic responsibility might be rewarded with a high degree of reputation and consumer satisfaction. Adding to the findings, Hodinkova and Sadovsky (2016) introduced advantages gained from CSR practices conducted by small and medium enterprises. These advantages are divided into the economic area (e.g: increase interest from investors, strengthen market position), the social area (e.g: receive trust from internal and external stakeholders, enhance a greater degree of transparency), and the environmental area (e.g: scale down natural pollution and resource consumption).

2.2. Purchase Intention

Intention is defined as a persistent goal which urges a person to take action by Cohen & Levesque (1986, 1990), or as motivational factors indicating how hard a person is willing to perform a behavior by Ajzen (1991). Consumer Purchase Intention (CPI), hence, can be understood as a conscious effort, a feeling or perceived likelihood, physiological actions, a tendency to undertake a purchasing behavior towards a product or service of a brand in certain conditions (Spears and Singh, 2004; Park, J., 2002; X. Wang & Yang, 2008; Morinez et al., 2007). Due to its nature, Ghosh (1990) believed that it is a potent means to predict buying behaviors of consumers, and the level of their loyalty (Danish et al., 2018). So did Fishbein & Ajzen (1975) in their research, as they stated that purchase intention can be seen as a predictor of consumer purchase behavior, regarding the possibilities of their real purchase behavior (Dodds et al., 1991).

Much research has been conducted to create a more comprehensive picture on how purchase intention is developed. As a matter of fact, there is not only one, but a wide array of components driving consumers to develop their purchase intention. For instance, product features, culture perception, and the influence from others' perception (Wang, C.L et al., 2012). It could also be the effects of Word-of-mouth, social media, advertisement and more (Wee, 2022; V Mirabi et al., 2015). Consumer purchase intention in this thesis is considered as a dependent variable, in which it is supposed to be driven and affected by CSR, Corporate Reputation, and Consumer Satisfaction.

2.3. Corporate Reputation

Corporate Reputation is defined as a collective term referring to both internal and external stakeholders' actual perceptions, feedback, and judgments towards a firm's identity, image, and credibility (Davies et al., 2001; Whetten and Mackey, 2002; Barnett et al., 2006; Brown et al., 2006). The concept is often confused with Organizational Identity and Organizational Image (Walker, 2010), but corporate reputation is differentiated by the fact that it is about what a corporate is seen to be, while the other two concepts are about what/who a corporate believes and want others to think they are (Whetten, 1997; Balmer & Greyser, 2006). According to Gibson (2006), corporate reputation is considered the most valuable asset of an organization. It is seen as an intangible asset that is considerably beneficial to a company (Branco and Rodrigues, 2006). An adequate reputation does not only lower firm costs and allow premium prices, but also attracts investors, consumers, and increases competitive barriers (Fombrun, 1996). In this thesis, corporate reputation is a moderator connecting CSR and consumer purchase intention.

2.4. Consumer Satisfaction

The idea of Consumer Satisfaction is widely recognized and developed in many sciences, such as economics (Van Raaij, 1981), consumer research (Yi, 1989), marketing (Kotler, 1991), etc. Consumer Satisfaction is referred to as "satisfaction is a person's feelings of pleasure or disappointment that result from comparing a product's perceived performance to expectations" by Kotler and Keller (2012), while Fornell (1992) proposed a much simpler definition as "an overall post purchase evaluation". In contrast, the concept is viewed in a different angle by Tu et al. (2013), as they mentioned it to be an influence on repurchase intentions and behaviors, which can increase an organization's revenue and profits in the future. Despite multiple different definitions of consumer satisfaction, it is generally an indication of consumers' evaluations to an experience of a good or service compared to their initial expectations, whether it is post-purchase, during consumption, or post consumption (Swan, Trawick & Carroll, 1980; Fornell, 1992; Mano & Oliver, 1993).

2.5. Applied Theories

2.5.1. Social Exchange Theory

Since the earliest publications by Blau (1964), Emerson (1972), and Homans (1961), social exchange theory has been one of the key theoretical approaches in the context of social psychology. Pragmatism and behaviorism were two components of the philosophical and psychological foundations upon which this theory was initially formed. The definition of social exchange is the sharing of both tangible and intangible benefits and expenses between at least two individuals or groups of organizations. Social Exchange theory aims to define social behaviors and describes how actions taken by A will result in or reinforce actions taken by B, and in the other way around. This theory has been used extensively in various business fields, for example, in marketing to explain consumer satisfaction (Margaret M.L. et al., 2012) and purchase intention (Priporas, C.-V et al., 2017), etc.

Based on the theory's guiding principles, this thesis supposes that CSR is becoming a major concern of consumers in general. CSR activities are directly advantageous to them and their society. Therefore, consumers do acknowledge this contribution made from organizations and tend to feel more compassionate towards the organizations which are involved in CSR. As a result, their purchase intentions are then inspired and positively influenced.

2.5.2. Theory of Planned Behavior

Theory of Planned Behavior (TPB), developed by Icek Ajzen, is one of the most common theories to understand consumer behavioral intentions and actions. It is also widely applied in research relating to CSR and consumer behavioral intentions, especially purchase intention. TPB is a modified version of the Theory of Reasoned Action, differing in the fact that it considers both actual and perceived control over the studied behavior. It was developed from the limitation in addressing actions that people only partially opt to engage in (Ajzen & Fishbein, 1980). It is now used to forecast behavioral patterns in people (Ajzen, 1991). TPB consists of three constructs: Attitudes, Subjective norm, and PBC. This research applies the attitude construct to later explain the Influence of CSR on consumer purchase Intention.

2.6. Hypothesis development

2.6.1. CSR and Consumer Purchase Intention (CPI)

As the world is constantly changing and businesses are also producing new ideas everyday, consumers have more alternatives to choose from for just one product. It also means their intention to purchase can be wavered by a number of different factors; therefore, researchers have been putting efforts to detect those factors (Mirabi et al., 2015). As claimed by Gogoi (2013), both internal and external motivations have effects on the purchasing process of consumers. Those could be demographic factors such as age, gender, profession, and education (Daneshvary and Schower, 2000). Product quality is also one of the strong key factors supporting consumers' intentions to purchase, as it affects consumer's needs. Therefore, quality of products should be constantly improved to better the chance of consumer purchase intention (Tariq et al., 2013).

C. L. Wang et al. (2012) suggested that specific features of products, perceptions of consumers, country of origin, and perceptions of it can also intervene consumers' intention of purchasing. Moreover, the results in both the surveys of Nawin Minakan (2016) and Jiao Xin (2021), recording 192 and 200 respondents respectively, showed that purchase intention can be positively affected by consumers' perceptions of CSR and that CSR practices can increase their intentions to purchase. These findings are not entirely new, because moving back to 1997, Murray and Vogel also pointed out that CSR movements could anticipate purchase intentions. In the same year, Creyer and Ross (1997) studied how the ethics record of a company could build up consumer purchase intention if it exceeded their expectations. Therefore, this thesis suggests the hypothesis:

H1: Corporate Social Responsibility has a positive influence on Consumer Purchase Intention.

2.6.2. CSR and Corporate Reputation

Researchers, like Lin et al., 2012, have found a positive correlation between CSR engagement and the reputation of a company. Specifically, corporate citizenship actions are a successful behavior that can enhance corporate reputation (Melo & Garrido-Morgado, 2012). Being aware of this effect of CSR on reputation, more and more companies have started to launch socially responsible campaigns to better their image and reputation levels to community (R. Jones, 2005; Porter & Kramer, 2006).

The degree of corporate reputation can be measured by multiple metrics, one of which being the most commonly used is *Fortune's Most Admired Companies* (FMAC) in present organizational strategy studies (Basdeo et al., 2006 ; Fryxell and Wang, 1994). Another method is Reputation Quotient invented by Haris Interactive. Its scale includes 6 dimensions which are Emotional Appeal, Products and Services, Vision and Leadership, Workplace Environment, Financial Performance, and especially, Social Responsibility (Fombrun & Foss, 2001). Despite not being the only measurement of corporate reputation, CSR has been argued by researchers to be a key determinant to the perceptions toward corporate reputation. As stated by Carroll & Shabana (2010), firms can escalate their reputation by participating in CSR actions, like aligning stakeholders' interests, improving product images, issuing corporate social reports. Moreover, CSR is said to be a significant driver to better public opinion towards a company even whose reputation is not good at first (Mitra, 2011).

Connecting to the factors in Carroll's Pyramid, citizens expect business entities to meet the ethical requirements in terms of law and legal norms (Lin et al., 2012). Meaning that they are supposed to commit to activities that are not harmful or disadvantageous to individuals in the community, rights, and fairness (N. C. Smith & Quelch, 1993). Furthermore, companies are also expected to engage in actions regarding the philanthropic factor of CSR. For instance, voluntary activities or social duties are beneficial to both business entities and the community in general. In return, companies will receive positive responses and support from consumers for their fulfillment in social responsibilities (Creyer & Ross, 1997). Hence, a positive reputation will be built and strengthened by CSR programs. Acknowledging that there is a linkage between CSR and corporate reputation proven by previous studies, this thesis proposes the hypothesis:

H2*:* Corporate Social Responsibility positively influences Corporate Reputation.

2.6.3. CSR and Consumer Satisfaction

There are several factors leading to consumer satisfaction, a few of them being product quality (e.g: long lasting products), service quality (e.g: polite and respectful service), price (e.g: fair price compared to the value or quality of the product), cost (e.g: no additional costs), emotional factors (e.g: self-esteem value) (Irawan, 2004). Consumers are satisfied when their needs and expectations are met and even exceeded regarding these mentioned factors. Moreover, corporate social responsibility, which seems irrelevant and insignificant, but in fact, has been proven to drive a high level of consumer satisfaction (Andreassen & Lindestad, 1998; Sen and Bhattacharya, 2001). According to Brown and Dacin (1997), positive corporate social responsibility initiatives increase positive perceptions for the firm and hold positive effects on consumer satisfaction. Luo and Bhattacharya (2006) also agree with this trend mentioning that products and services from socially responsible firms can satisfy consumers more easily. Therefore, this thesis proposes:

H4: Corporate Social Responsibility positively influences Consumer Satisfaction.

2.6.4. The mediating role of Corporate Reputation

Researchers, such as Brown (1997) and Spreng & Page Jr. (2001), have found that positive reputation can significantly enhance CPI, consumer satisfaction, and brand loyalty. Gaines-Ross (1997) believed that the outcomes of positive corporate reputation have an upside influence on brand awareness, which significantly affects consumer purchase intention. (Washburn & Plank, 2002). Given its significance, more and more companies value corporate reputation as a strategic management tool to stand out in a competitive market. To achieve a good reputation, as mentioned above, a wide array of companies in different industries have engaged in citizenship campaigns. In return, companies will indirectly gain optimistic consumers' attitude and increasing levels of consumer purchase intention (Fishbein & Ajzen, 1975). Acknowledging that there is a proven mediating role of Corporate Reputation in the relationship of CSR and CPI in previous studies, the related hypothesis is proposed:

H3: Corporate Social Responsibility has a positive influence on Consumer Purchase Intention via Corporate Reputation.

2.6.5. The mediating role of Consumer Satisfaction

Consumer satisfaction is extremely significant to any business due to the fact that it is the desired outcome of their efforts and their revenue source (Deng et al., 2009). Cowles et al. (1990) observed that consumers are satisfied if the actuality exceeds their expectations, and vice versa, dissatisfied if it does not. Therefore, the concept works as the voice of consumers to help businesses improve the quality of products or services by receiving evaluations. These evaluations are highly valuable because it drives competition according to business advantages and weaknesses. Furthermore, many authors have proven the tight linkage between consumer satisfaction, purchase intentions and decisions, which is likely to lead to consumer loyalty (Nowak & Newton, 2006; Kotler & Armstrong, 2012). This is the foundation to build a strong, profitable relationship with consumers in the long run (Eshghi, Haughton and Topi, 2007). Meanwhile, there are at least two theories from previous research pointing out that there's a linkage between CSR practices and consumer satisfaction, as follows: institutional theory (Scott, 1987) and stakeholder theory (Maignan, Ferrell, and Ferrell, 2005).

H5: Corporate Social Responsibility has a positive influence on Consumer Purchase Intention via Consumer Satisfaction.

2.7. Research Model

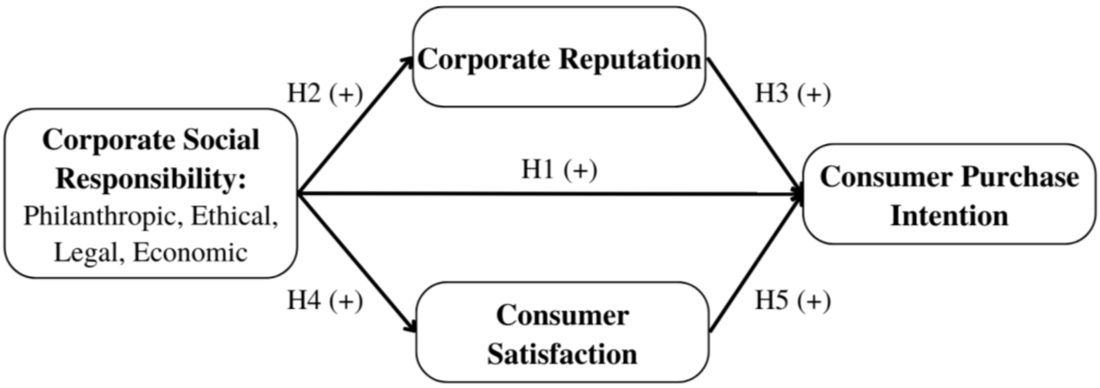

Figure 2: Research Model. Source: Own authors

3. Methodology

3.1. Research Method

The research conducted in the quantitative method. Quantitative research method is an empirical analysis used to explain and understand observable phenomena by gathering insights from a large number of individuals through surveys or experiments (Cooper & Schindler, 2011). The method produces objective and unbiased results which relies on solid figures and is suitable for only a few dependent variables. The level of accuracy and credibility is considerably high and possible to pave ways for future studies as well. It also helps the research approach much more respondents and increase the diversity of its sample than qualitative methods. This study used convenient sampling technique. Data collected from the proposed survey are statistically assessed and examined to conclude the relationship of mentioned variables. Conclusions are then drawn based on numerical results. Therefore, deductive research methods are also the main method to develop the conclusions for this research.

3.2. Descriptive Analysis

The total number of received responses is 335. After going through the data screening process, the valid responses, which are appropriate for further analysis and conclusion, are accounted for 308. Therefore, the data from these 308 responses is used to generate the results. According to Hair et al. (2019), this sample size is appropriate with this study. All of these respondents are customers of UNIQLO, who have made a purchase there at least once. Among 308 valid responses collected from November to December 2022, there are 88 male respondents (28.6%) and 220 female repondents (71.4%). Most respondents are at the age of 18 to 29 (79.5%). On the other hand, the percentages of respondents, who are under 18 together with those who are 30 and above, are 9.1% and 11.4%. Regarding the educational level, 73.4% of respondents are undergraduate students. The rest are in high school or having a master's degree. 56.5% of them make below 6 million VND. The rest of respondents earn more than 6 million VND, and the figures even exceed 10 million VND.

Table 1. Characterisitcs of Respondents. Source: Own authors

		Frequency	**Percent**
Gender	Male	88	28.6
	Female	220	71.4
Age	Under 18 years old	28	9.1
	18-29 yeards old	245	79.5
	30 and above	35	11.4
Education level	Highschool	46	14.9
	College/ University	226	73.4
	Master's Degree	35	11.4
	Other	1	0.3
Income	Under 3 million VND	120	39
	3-6 million VND	54	17.5
	6-10 million VND	51	16.6
	Above 10 million	83	26.9

4. Results And Discussion

4.1. Confirmatory Factor Analysis (CFA)

In this phase, the relationship between measurement items and theoretical constructs is interpreted using CFA to validate the above results. The evaluation criteria for this analysis include: (1) Composite reliability, (2) Variance extracted, (3) Unidimensionality, (4) Convergent validity, (5) Discriminant validity.

The model fit is verified through a number of widely used indices, including CMIN/df, the Comparative Fit Index, the Goodness of Fit Index, the Adjusted Goodness of Fit Index, the Tuker Lewis Index, the Root Mean Square Approximation Error. Also, on the basis of Chi-square and p-value, model fit is ascertained. This appears to fit if the p-value is larger than 0.05. For this thesis, the following requirements are applied to assess the results of the mentioned indices.

Table 2. CFA criteria

Index	Criteria value
CMIN/df	≤ 3
Comparative Fit Index (CFI)	≥ 0.9
Goodness of Fit Index (GFI)	≥ 0.9
Adjusted Goodness of Fit Index (AGFI)	≥ 0.8
Tuker Lewis Index (TLI)	≥ 0.9
Root Mean Square Approximation Error (RMSEA)	≤ 0.08

(Source: Author's synthesis)

4.1.1. Model fit

The 17 measurement items from 4 constructs will be analyzed in the AMOS 24.0 software. According to the CFA experimental results, the fundamental model has 113 degrees of freedom. The chi-square test value is 287.278 with the P-value of 0.000. The chi-square/df value is 2.542, meeting the requirement of being smaller than 3. The resulting indices and the market data are in sync. Specifically, all three indices CFI, GFI, and TLI have the results satisfying the above criteria. The detailed outcomes are CFI = 0.936, GFI = 0.893, TLI = 0.923. All three indices are greater than 0.9. Hair et al. (2011) acknowledged that a GFI index of greater than 0.8 is still appropriate. On the other hand, RMSEA came out to be 0.071, which is smaller than 0.08. Therefore, the requirements for CFA are met. As a result, one could assert that the model ensures the agreed level of compatibility. The detailed results are displayed in Table 4.16 below.

Table 3. Model fit indices. Source: Own Authors

Model fit indices	Cmin/df	CFI	GFI	AGFI	TLI	RMSEA
Recommended value	< 2.0 or < 3.0	> 0.9	> 0.9 or > 0.8	> 0.8 or > 0.85	> 0.9	< 0.08
Obtained	2.542	0.936	0.893	0.855	0.923	0.071

According to the findings of this research, there is no correlation between the errors of the observed variables and the model's general fit. Hence, the scales in the model are unidirectional. According to Hair et al. (2010), modification indices and standardized residual covariance measurements are used to take the model into account. Eliminate each and every item with an extreme standardized residual covariance value greater than 2.5 and a standardized regression value less than 0. However, looking at Figure 4.1, there are no items whose mentioned values are greater than 2.5 and less than 0. Therefore, all items remained the same in the scale. The final results of Standardized Measurement Modeling are displayed as follows.

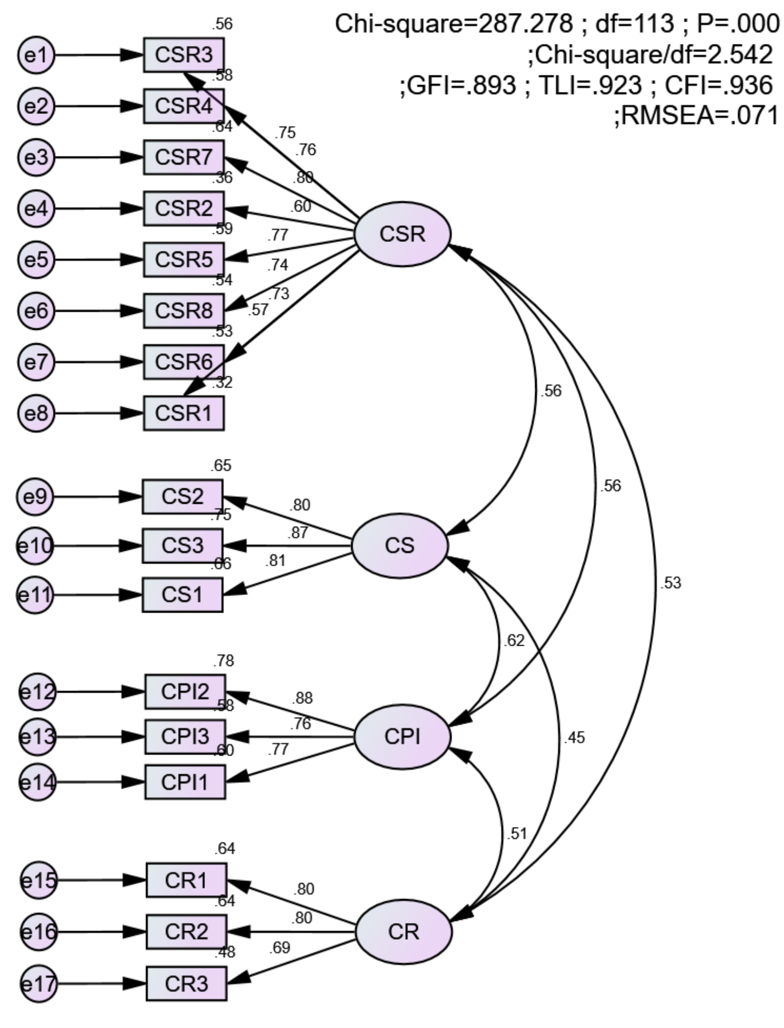

Figure 3: Standardized Measurement Modeling.

Source: Own authors.

4.1.2. Composite Reliability and Average Variance Extracted

In this part, both Cronbach's Alpha and Composite reliability are used to estimate the level of reliability. Even though some researchers tend to favor Composite reliability more than Cronbach's Alpha and it is not uncommon for Cronbach's Alpha to be replaced by Composite reliability (Hair et al., 2012), both of them are put into consideration in this research to guarantee credibility. As mentioned in the previous sections, Cronbach's Alpha value should turn out to be at least 0.7 to ensure the acceptable floor. So should the value of composite reliability (Bagozzi & Yi, 1988). The composite reliability must be 0.7 or larger to verify the authenticity of factors.

According to the findings of the composite reliability evaluation and Cronbach Alpha for all factors, the scale of the variables has a composite reliability value that spans from 0.809 to 0.893. All scales have values which are greater than 50% for the extracted total variance. As a result, it can be said that the study model's scales are all valid and reliable. Table 4.17 is a detailed presentation of the findings.

Table 4.3. Cronbach's Alpha, Composite Reliability and Average Variance Extracted Values

Construct		Cronbach	CR	AVE
CPI	Consumer Purchase Intention	0.839	0.848	0.652
CSR	Corporate Social Responsibility	0.889	0.893	0.514
CS	Consumer Satisfaction	0.868	0.868	0.687
CR	Corporate Reputation	0.804	0.809	0.587

The values of composite reliability and average variance extracted are calculated using the following formulas:

$$\rho c = \frac{(\sum_{i=1}^{p} \lambda i)2}{(\sum_{i=1}^{p} \lambda i)2+\sum_{i=1}^{p}(1-\lambda i)2} \quad ; \rho vc = \frac{\sum_{i=1}^{p} \lambda i^2}{\sum_{i=1}^{p} \lambda i^2+\sum_{i=1}^{p}(1-\lambda i^2)}$$

In which, λi is the normalized weight of the ith observed variable, (1 - 〖λi〗 ^2) is the variance of the i-th observed measurement error, and p is the number of observed variables of the scale.

4.1.3. Construct Validity

Construct validity is recognized when a set of measured items accurately captures the theoretical latent framework which those items are intended to quantify (Messick, 1998). Construct reliability, convergent validity, and discriminant validity are all measured by construct validity to determine how closely related theoretical constructs and observable variables are. The criteria for evaluating the convergence value are that the standardized factor weight is greater than 0.5 and has statistical significance (Hair et al., 2012).

Meanwhile, discriminant validity is "the degree to which a construct is fully distinct from other constructs" (Hair et al., 2012). In other words, its value indicates the uniqueness or distinctiveness of a structure when compared with other structures in the model. According to Fornell & Larcker (1981), Fornell and Larcker (1981) recommend that discriminability is detected when the square root of the AVE for each latent variable is higher than the other correlation values among other constructs.

Table 4. Discriminant validity assessment

	CR	AVE	CPI	CSR	CS	CR
CPI	0.848	0.652	0.808			
CSR	0.893	0.514	0.561	0.717		
CS	0.868	0.687	0.619	0.564	0.829	
CR	0.809	0.587	0.511	0.534	0.452	0.766

The values lying on the diagonal are the square root of the factor's AVE. The values below the diagonal are the correlations between the corresponding constructs in the model. The discriminant value for all structures is obtained when the diagonal value is higher than the values in its row and column. Based on Table 4.19, it can be concluded that discriminant validity for all 4 structures in the research model has been achieved.

4.2. Model and Hypothesis Testing

4.2.1. Research Model Testing

The tested research model includes 4 factors (concepts) in the model including: Corporate Social Responsibility (CSR), Corporate Reputation (CR), Consumer Satisfaction (CS), Consumer Purchase Intention (CPI). The results of linear structure analysis with ML estimation method show that the model has 114 degrees of freedom. Although the Chi-square value has p = .000 (Chi-square = 295,727), the Chi-square adjusted for degrees of freedom CMIN/df has a value of 2,594 (ensure the requirement is less than 3.00). In addition, all other indicators meet the requirements GFI = 0.891; CFI = 0.934; TLI = 0.921; and RMSEA = 0.072 (satisfactory < 0.080). According to Hair et al. (2011), GFI index > 0.8 is still acceptable. Thus, we can conclude that this model fits the data collected from the market. All the hypothesized relationships in the research model are proved by the SEM model test. The estimated (normalized) results of the main parameters are presented in Table 4.20.

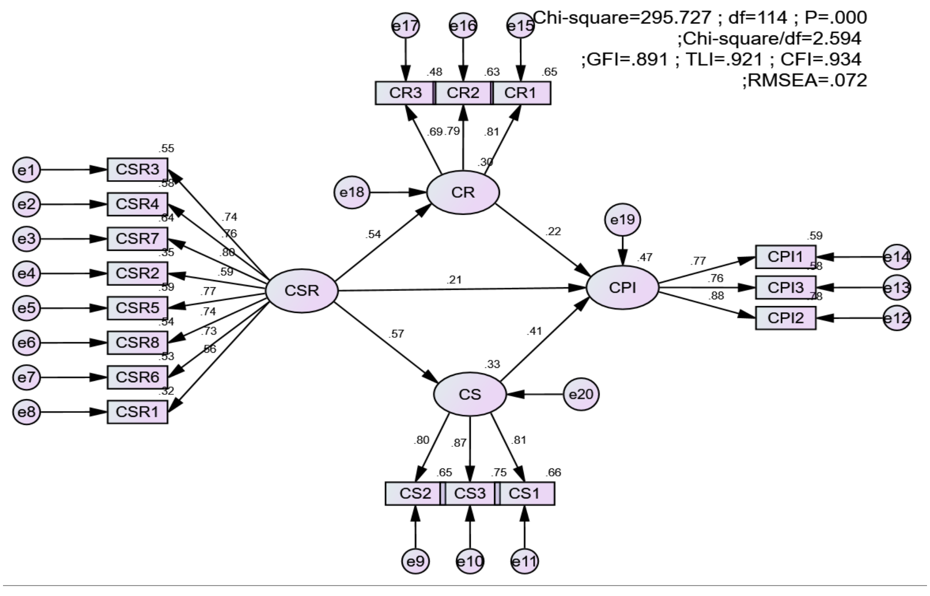

Figure 4: Structural Equation Modeling

Table 5. Hypothesis Testing Result

Hypothesis	Unstandardized Regression Weights	P Value (P < 0.05)	Standardized Regression Weights	Results
H1: Corporate Social Responsibility has a positive influence on Consumer Purchase Intention	0.237	0.006	0.215	Supported
H2: Corporate Social Responsibility positively influences Corporate Reputation.	0.501	0.000	0.544	Supported
H4: Corporate Social Responsibility positively influences Consumer Satisfaction	0.58	0.000	0.573	Supported

4.2.2. Moderator Testing

To examine whether the Corporate Reputation and Consumer Satisfaction variables play as moderating variables in the relationship between Corporate Social Responsibility and Consumer Purchase Intention, the study uses SEM analysis with Bootstrap method to test direct and indirect effects of Corporate Social Responsibility and Consumer Purchase Intention through Corporate Reputation and Consumer Satisfaction.

This technique is commonly employed to calculate indirect, direct, and total effect between concepts and P-values of relationships. The use of boostraping in AMOS, however, only illustrates the total indirect impacts of the two concepts, not the particular indirect effects in the connection that has numerous moderators. (Perera, 2013). In this study, the indirect connection between Corporate Social Responsibility and Consumer Purchase Intention must be through two intermediate variables, Corporate Reputation and Consumer Satisfaction. Therefore, it is essential to evaluate each intermediate variable's contribution to this indirect relatio nship. The thesis employs the user-defined estimands tool in the AMOS 24.0 software and does a bootstrap analysis with N = 1000 trials and a 95% confidence level to determine the impact of each intermediate variable.

Table 6. Results of specific indirect effects

Indirect Path	**Unstandardized Estimate**	**Lower**	**Upper**	**P-Value**	**Standardized Estimate**
CSR --> CR --> CPI	0.134	0.064	0.233	0.001	0.121***
CSR --> CS --> CPI	0.258	0.156	0.391	0.001	0.234***

Table 4.22 illustrates the indirect effects in the relationship between the Corporate Social Responsibility and Consumer Purchase Intention through the Corporate Reputation and Consumer Satisfaction variables, which is statistically significant at the 5% level ($p < 0.05$). Hence, two variables Corporate Reputation and Consumer Satisfaction do play the role of moderators in the relationship between Corporate Social Responsibility and Consumer Purchase Intention. As a result, hypothesis H3 and H5 are confirmed.

5. Discussion

Hypothesis 1 is supported by the above results, meaning that there is indeed positive influence of CSR on consumer purchase intention. From Table 4.20, the multiple correlation coefficient'spositive value of 0.215 indicated a positive relationship between CSR and consumer purchase intention, and the P value of 0.006 (< 0.05) showed that the relationship was statistically significant. Hence, it confirms the findings of Creyer (1997), in which ethical corporate actions are proven to positively affect consumers' willingness to purchase from them. The fact that Hypothesis 1 is supported also highlight the Social Exchange theory. Specifically, CSR activities are undertaken by corporates (party A), which positively influence the society and eventually, consumer (party B) purchase intention.

According to Table 4.20, Hypothesis 2 has the multiple correlation coefficient's value of 0.544, which is positive, and the P value of 0.000 (< 0.05). The data results confirm that Hypothesis 2 is supported, meaning that there is indeed positive influence from CSR on Corporate Reputation. This confirmation backs up the findings of Enrique Bianca (2019), in which perceived CSR has an effective and significant effect on Corporate Reputation. In their research, it was concluded that both consumers' perception towards and corporate engagement in CSR activities enhance corporate reputation. This support of Hypothesis 2 also helps validate the role of CSR in corporate reputation in Emel Esen's research (2013). A few of these researched roles include bettering public relations and brand's identity, which as a result, bring a positive effect to corporate reputation.

Looking at Table 4.22, the indirect effect in the relationship between CSR and consumer purchase intention through corporate reputation possesses the P value of 0.001, which is statistically significant. Therefore, Hypothesis 3, suggesting the moderating effects of Corporate Reputation on CSR and CPI, is also confirmed through the Bootstrap test. These solid results agree with Minakan's conclusion in their paper on CSR motives and purchase intention (2016). They claimed that purchase intention of consumers is positively affected by CSR, specifically by altruistic motives, through firm and brand's perception. It also backs up the theory of Planned Behavior, in which consumers' willingness to purchase can be enhanced by socially responsible actions through their attitude towards corporate reputation.

Hypothesis 4 is supported by the fact that the β of this relationship is positively at 0. 573 and its P value is significant at 0.000. Hence, CSR does have a positive influential relationship with consumer satisfaction. This relationship was also mentioned in Brown and Dacin research (1997), as they found that CSR initiatives have effects on consumer satisfaction, hence, competitive advantage. This finding also matches with Social Exchange theory. Specifically, once ethical actions are made from companies as party A, consumers as party B tend to develop their purchase intention.

According to Table 4.22, Hypothesis 5 is accepted through the significant P value 0.001 which is less than 0.05. So, it can be concluded that CSR also positively affects consumer purchase intention through consumer satisfaction. This empirically supports the argument of C-C Wang (2018) about the indirect effect of CSR on buying intention via the level of consumer satisfaction. Mentioned in their research, consumer behavioral intentions, especially purchase intention, are enhanced by CSR through its influence on consumer satisfaction.

6. Conclusions And Limitations

6.1. Conclusions

According to the data results and findings, it can be concluded that all the 5 hypotheses are accepted. The association between variables is confirmed, meaning that Corporate Social Responsibility does positively affect Consumer Purchase Intention in a direct way and indirect way through Corporate Reputation and Consumer Satisfaction. These findings partly contribute to the empirical research source of the CSR field and its influence on consumer behavioral intentions, especially in Vietnam. It also helps drawing a comprehensive picture for business entities to better their competitive advantage through CSR applications.

6.2. Limitations

Although this study offers a wealth of useful information, there are some potential drawbacks. The following are the limitations and implications which have not yet been addressed in this research: This research adopted the convenient sampling methods to collect responses. Therefore, the results and findings could not be able to tell the whole picture including the insight of other consumer groups of other companies in other fields. The research was conducted in the demographic scope of UNIQLO's Vietnamese consumers in Ho Chi Minh city. Thereby, the confirmed hypotheses on the relationships of these constructs could not be 100% accurate for other demographic groups. This paper particularly made research on the moderating effects of Corporate Reputation and Consumer Satisfaction. However, there are other moderators affecting the relationship between CSR and Consumer Purchase Intention which are also necessary to study.

It is a fact that consumer preferences and behaviors change over time. The research can only confirm the results from 308 respondents who shared their perspective during November and December 2022. Therefore, the actual connections between variables can be different over time. That being said, future authors are recommended to design their research to address these limitations. This can be achieved by following a few recommendations. First, future study can apply other sampling methods in future research to diversify the demographic scale of respondents. Also, the next study should explore and examine mediating effects of other factors in the relationship between CSR and CPI, such as consumer loyalty, social media, brand prestige, etc. Constantly update the research to match with consumer perspectives and other influence factors over time. Additionally, futher research can employ the qualitative method to extend research findings on the relationship of CSR and CPI in a more practical view.

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PART 4.
BUSINESS MANAGEMENT & INNOVATION

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Managerial Coaching and Its Implication for Enterprises in Vietnam

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ABSTRACT

Nowadays, managerial coaching has been proven to be a method for enhancing job performance. Despite the fact that managerial coaching has gained a lot of popularity among foreign academics and businesses due to its numerous advantages, there is still a lack of extensive research on the subject in the Vietnamese business community. In doing so, the authors present an outline of coaching and managerial coaching and demonstrate the effectiveness of this approach in enhancing employees professionally and personally. Therefore, having a general understanding of managerial coaching to gradually apply to firms is a vital answer in the circumstances in Vietnam. Through the method of analysis and synthesis, this article emphasizes the significance of this intervention by highlighting cases where managerial coaching has been successful at businesses in other nations, thereby recommends its application to Vietnamese enterprises.

Keywords: coaching; managerial coaching; hierarchical coaching; team coaching; peer coaching

1. Introduction

In today's dynamic and competitive business environment, organizations face the continuous challenge of nurturing and maximizing the potential of their human resources. The quality of an enterprise's human capital directly impacts its ability to innovate, develop, and achieve sustainable growth. To address this critical need, many organizations are applying managerial coaching programs to employees as a strategic approach to develop and empower their employees. Some researchers pointed to managerial coaching as having a direct influence on employee job satisfaction

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as well as an indirect influence on job performance, career commitment, organization commitment, and contentment with work [1]. However, in Vietnam, there are few academic studies about this issue. Towards the purpose of clarifying the concept of managerial coaching and considering its application experience in improving the quality of enterprise human resources, the authors wish to bring an overview of managerial coaching. The application of managerial coaching will also contribute to encouraging the improvement of the capacity and operational efficiency of enterprise human resources, including Vietnamese enterprises. The information about managerial coaching presented in the article is selected and synthesized from literature resources such as books, academic articals and jounals, published by reputable organizations.

2. The historical development of managerial coaching

The concept of coaching aimed at enhancing leadership, intellectual, and life skills can be traced back to the psychological theories of Maslow (1943), which emphasized the unrealized potential of individuals [2]. Since the 1950s, coaching has been explored in the literature from a managerial perspective, providing a substantial body of knowledge on the topic [3] [4]. Extensive discussions on coaching behaviors and skills have also been documented in the literature. The transition of coaching from sports to organizational settings marked the early stages of its development. In the 1950s, coaching primarily existed in the form of apprenticeship-style relationships, gradually evolving into a more conventional approach within organizations to address performance issues [5]. This transition coincided with the establishment of professional coaching organizations like the International Coaching Federation (ICF) in the 1990s. In the corporate sector, there has been a significant increase in the utilization of coaching, encompassing life coaching, job performance coaching, and leadership coaching, over the past decade. This rise in popularity has been accompanied by extensive research, particularly focusing on managerial coaching, which often involves coaching between managers and subordinates [6].

3. The definition of coaching and managerial coaching

3.1. The definition of coaching

Since coaching gained popularity in the 1990s, there has been debate over the definitions of coaching throughout the previous three decades. Although there has been a lot of agreement throughout the years, multiple definitions have been provided by various authors who have highlighted distinct aspects of coaching. Even though Gorby (1937)[7] is regarded as the first to describe coaching in the workplace, the author omits to establish the official concept of coaching. Coaching, according to Whitmore's book from 1992, is about "unlocking a person's potential to maximize their own performance. It is helping them to learn rather than teaching them - a facilitation approach" (p. 3). Then, additional definitions of coaching have been provided by different academics. Bennett (2006)[8] defined coaching as a process that aids individuals in setting and achieving goals. To differentiate coaching from mentoring, advising, and other interventions, Passmore and Fillery-Travis (2019)[9] proposed that coaching is "a Socratic-based dialogue between a facilitator (coach) and a participant (client) where the majority of interventions used by the facilitator are open questions which are aimed at stimulating the self-awareness and personal responsibility of the participant". Additionally, the International Coaching Federation (ICF) defines coaching as a collaborative practice that involves clients and encourages them to reach their full potential both personally and professionally. In addition to coaching's evolution, it is divided into categories based on settings and goals, including professional coaching, life coaching, sports coaching, and managerial coaching, etc.

In general, coaching is a method which help coachees reach their full potential by enhancing self-awareness and self-learning. It has established the framework for using this approach in business and commercial context, giving rise to the phrase "managerial coaching". The next sections will give a greater understanding of managerial coaching, including its definition, classification, impacts, and enterprises that have successfully used it in other parts of the world.

3.2. The definition of managerial coaching

Nowadays, the concept of the "manager as coach" has emerged and has gained considerable popularity, therefore, the definition of coaching, managerial coaching in particular, is necessary in the coaching literature for effective implementation and developmental research of this method. According to Ellinger et al. (1999) [10], and Talarico (2002) [11], managerial coaching can be described as the supervisor or manager acting as a coach or facilitator for development by engaging in certain behaviors that help the employee (coachee) learn and grow. From the business perspective, Hagen (2012) [12] provides a concise definition of managerial coaching as an effective leadership practice that supports employees' learning processes so they can perform better and be more effective. As a result, the employee, along with the manager and the organization, benefits most from the managerial coaching process. In addition, Pousa and Mathieu (2010) [13] conceptualizes managerial coaching as a one-on-one exchange between the manager and the frontline staff member which can encourage the growth of interpersonal skills in the latter, such as customer orientation, and raise performance levels. In general, facilitating employee and team motivation and development through the development of horizontal and cooperative linkages is the aim of managerial coaching [14, 15, 16]. Therefore, nowadays, managerial coaching is regarded to give organizations an edge over their competitors, particularly by empowering and motivating workers for performance, as well as by increasing employee satisfaction and commitment [17, 18]. As a result, it is crucial that managerial coaching is a managerial competency, and businesses are increasingly choosing to engage in learning initiatives that will help them develop this set of abilities [5].

3.2.1. The difference between managerial coaching and mentoring

Mentoring typically refers to a longer-term process that is developmental, career-focused, and addresses all aspects of life [19, 20, 21]. Traditionally, mentoring has been described as a connection that develops between a mentor and a protégé with varying levels of knowledge and abilities [22, 23]. Although mentoring can be casual or formal, its main purposes are often career support, psychosocial support, and role modeling [24, 25]. A successful mentor offers the mentee chances to learn new skills and difficult project tasks while also cultivating psychological safety and support for the protégé through friendship [26]. Additionally, the mentee may attempt to emulate the mentor's outlook, attitudes, and behaviors when he or she identifies with the latter.

With an attempt to differentiate managerial coaching and mentoring, Vansickel-Peterson (2010) [27] describes the mentor as the one who has many more years of experience than the mentee. Similar to role-modeling, mentoring occurs when the client notices traits, skills, or abilities in the mentor that they want to acquire or aspire to. Whereas coaching is a partnership of two equals that focuses on the distinctive and innate talents that already exist in the client but may not be acknowledged or valued [27].

While mentoring has an impact on an employee's career development and personal growth [28], coaching is well known for improving workers' work-related performance that focuses more on a specific goal [6, 12]. Coaching and mentoring are well-known methods for assisting and supporting talented employees as well as achieving the strategic objectives of the business. The benefits that the employee obtains from the acting supervisory coach and the non-supervisory mentor vary generally [16]. As a result, the staff may experience complicated difficulties in successfully upholding both the coach-coachee and mentor-mentee relationships.

4. The classification of managerial coaching

4.1. Hierarchical coaching

Managerial coaching in a hierarchical structure, where line managers coach their subordinates, is widely recognized as the most extensively researched and well-known form of coaching [29].

In a study of 120 top teams, Wageman et al. (2008) [30] concluded that the effectiveness of line managers as coaches is typically less significant compared to using an external coach who is not directly involved in the team's tasks.

However, the CIPD (2011) [31] conducted a survey across 601 organizations and found that coaching by line managers is considered the second most effective form of learning. Over the past two years, there has been a gradual increase in its application. Line manager coaching was particularly associated with performance management (43%) and leadership development (33%). Additionally, when combined with mentoring, it proved beneficial in nurturing "international managers" (43%). Looking ahead, nearly half of the surveyed organizations expected hierarchical and other managerial coaching approaches to be integrated more extensively with organizational development and performance management to drive organizational change.

As regards the challenges, Ferrar (2006) [32] identifies several barriers that hinder effective line manager coaching, which are equally applicable to both individual and collective coaching. These barriers include difficulties in fostering complete openness, the pressure on line managers to prioritize short-term agendas, the presence of groupthink, and the tendency of managers to display parent-child behaviors towards their direct reports.

In conclusion, hierarchical coaching remains a debated form of coaching. To apply it effectively, organizations should prioritize fostering openness and trust, striking a balance between short-term and long-term goals, encouraging diverse perspectives, adopting a coaching mindset, continuously evaluating and adapting their approach, and integrating hierarchical coaching with organizational development efforts. While more research is needed to determine its true level of effectiveness, implementing these strategies can enhance the potential benefits of hierarchical coaching and overcome common challenges.

4.2. Team coaching

According to Clutterbuck (2010) [33], team coaching is a learning intervention aimed at enhancing the collective capabilities and performance of a group or team. It involves applying coaching principles such as assisted reflection, analysis, and motivation for change to facilitate their development. The objectives of team coaching vary based on the stage of team development and the unique characteristics of each team, which can be distinguished by the theory of Hackman (1990) [62] and Thompson (2000) [34]:

- shared goals and purposes
- structured communications
- allocated responsibilities and accountabilities
- a level of interdependence
- willingness of members to place the collective goal above their own priorities
- clear boundaries (who is and is not included)
- operation within a social systems context (i.e. it is part of a larger organization, to whose goals it contributes).

Team coaching poses significant challenges for line managers, as they are responsible for developing and agreeing upon goals or targets, strategically assigning team members to roles that best suit their abilities and complement one another, providing consistent feedback, and effectively managing the dynamics among team members. These complexities make team coaching a particularly demanding aspect of managerial coaching [29].

To conclude, team coaching aims to enhance the capabilities and performance of groups or teams through coaching principles such as reflection and motivation for change. It involves addressing factors like shared goals, communication, responsibilities, and interdependence. While line managers face challenges in managing teams, team coaching offers valuable outcomes for organizations by improving team capabilities and performance.

4.3. Peer coaching

In the domain of managerial coaching, peer coaching is defined in various ways. According to Ackland (1991) [35], peer coaching involves groups of peer coaches regularly observing and aiding, support, cooperation, and feedback to one another. Meanwhile, Ladyshewsky and Varey (2005) [36] have developed an eight-step model for peer coaching, with each stage aiming to achieve specific and important outcomes. Detailed descriptions of the desired outcomes for each stage, as well as the potential negative effects if a stage is not completed, are also provided:

Table 1. A peer coaching framework.

Stage	Description	Objective	Effect if missing
1	Assessment	Peers assess one another for compatibility, stage of development and needs	Trust and understanding are not built and relationship fails
2	Planning	The timing and place for formal coaching sessions are agreed	If sessions canceled, or inappropriately timed, sessions seen as unproductive
3	Scoping	Learner's needs and scope of session determined based on balance of priority and time	If coach drives the process, actions will not be relevant to learner and motivation will lapse
4	Purpose	Coach explores with learner real purpose, asking them to re-define the central question or goal	Only symptomatic and surface-level solutions were discovered. Main goals not uncovered and achieved
5	Assumption	Coach asks the learner to separate assumptions from facts. May provide alternative objective and non-evaluative perspective	Concerns may be misconceived and easily resolved by third parties.
6	Possibilities	Conversations move from the problems to creative solutions Learner finds own path out of maze assisted by coach	If range of solutions not developed by learner and owned by them, process leaves learner feeling unempowered and dependent on coach
7	Actions	Conversation moves to verbal commitment and identified actions with clear outcomes	If unrealistic constraints are not explored, actions will be frustrated. Trust in process declines as does follow-up of accountability of learner
8	Support	Follow-up accountability structured to assist in motivation, recognition and trust building and assessment	Without support, follow up is presented as accountability only. Process stops with one cycle, trust declines and learner less confident

Source: Ladyshewsky and Very (2005)

Peer coaching has been shown to be effective in providing benefits such as increased protection from psychological distress, improved knowledge frameworks, and enhanced self-reflection and awareness. Through metacognitively rich conversations, peer coaching engages people in building self-awareness and enhancing critical thinking. The exposure to different perspectives fosters cognitive conflict, allowing for the development of ideas and personal growth. Peer coaching is seen as a suitable approach to promote constructivist learning by challenging outdated ideas and promoting the emergence of new problem-solving approaches.

However, there are contrasting opinions on the effectiveness of peer coaching. Researchers like SueChan and Latham (2004) [37] suggested that professional coaches may be more successful than peer coaches in fostering goal advancement and commitment.

In conclusion, peer coaching in managerial settings involves peer coaches providing support, cooperation, and feedback to one another. It fosters self-awareness, critical thinking, and personal growth through diverse perspectives. While opinions on its effectiveness vary, the value of peer coaching is undeniable. To maximize the benefits of peer coaching, establishing a supportive environment, setting clear objectives, encouraging open communication, fostering metacognition, and providing ongoing learning opportunities are what managers should pay attention to.

5. The benefits of managerial coaching

5.1. Job performance improvement

Managerial coaching may be viewed as a manager's favor for the success and growth of their employees, and in return, those individuals put up further effort to improve their performance [39]. And The primary goal of managerial coaching is to improve job performance [3, 17, 40, 41] and remove deficiencies in employees' task performance [42]. As a coach, a manager behaves differently from a regular manager by assisting employees in the company rather than using standard management techniques like ordering and directing them. Managerial coaching fosters regular communication between the management and employees [39, 43].

Additionally, managerial coaching emphasizes giving regular feedback and assisting the worker in strengthening their areas of weakness in order to perform better [44]. Employee work performance is the primary result of managerial coaching, claim Kim & Kuo (2015)[45]. The various supervisory skills include managerial coaching, which includes relationship building, effective listening skills, analytical questioning, accepting employee ideas, emphasizing a team approach, open communication with the employees, and giving preference to the individual needs of employees. These skills help employees develop, which in turn improves their job performance [61].

5.2. Increase in employee satisfaction

5.2.1. Role clarity

Role ambiguity (lack of role clarity) is a topic of discussion regarding employee position status frequently in businesses. The phrase "lack of necessary information regarding role expectations for a given organizational position" can be used to describe role ambiguity [46]. According to the role theory, employees' attitudes and behavioral reactions can be greatly influenced by role clarity. In a dynamic, complicated work environment, the absence of position definition raises employee stress [60]. Additionally, duties and relationships with managers in the organization may not be aligned if employees do not fully comprehend what is expected of them by their boss and the company [46]. It had also been found by several researchers that dissatisfaction with work could be caused by a high level of role ambiguity [47, 48].

Therefore, managerial coaching is needed, due to its positive effect on employee job clarity, proven by Kalkavan & Katrinli, 2014 [40]; Kim et al (2013) [44] had pointed out that Managerial coaching helps employees understand what is expected from them, what needs to be done, their responsibilities, objectives, and authority. And consequently, Managerial coaching has a significant impact on job clarity of the employees.

5.2.2. Career commitment

Another possible effect of managerial coaching is career commitment, which is one of the areas of work-related commitment that has received the least amount of research. The complete amount of experience a worker gains over his or her professional life is referred to as a career commitment [49]. The totality of an employee's views and behaviors toward his or her job may be summed up as career commitment [50]. The objectives a worker prepares in regard to his or her commitment is expressed in their career [51]. Career-minded workers outperform non-committed workers in terms of success rates [52]. According to London (1983) [53], there is probably a connection between professional dedication and job satisfaction.

It is suggested by Kim et al (2013) [44] that managerial coaching behavior indirectly influenced career commitment. Employees who got coaching from their managers and leaders improved their knowledge of their roles, felt happier at work, and performed better than those who did not receive coaching. In their study, it is clear that employees who are coached by their managers/leaders consider their current job to be their only profession and would not change to any other fields.

5.3. Increase in satisfaction with work and manager

Another outcome variable that will be looked at is organizational commitment. According to Meyer and Allen (1997) [54], organizational commitment refers to the psychological attachment a person has to a certain organization. Differentiating between emotional, normative, and continuance forms of organizational commitment is crucial, according to Meyer and Allen (1997) [54]. The most common and ideal form of employee commitment to an organization has been shown to be affective organization commitment, which is associated with emotional connection to, identification with, and participation in the company [55].

The studies carried out by Kalkavan & Katrinli (2014) [40] and Kim et al. (2013) [44] showed managerial coaching helps employees to feel the bond between them and the organization, they feel as “part of a family” or “emotionally attached” to where they are working. Therefore, this boosts their commitment with the organization, hence increasing their motivation to work.

The result of a study conducted in Vietnam by Vu (2019) [38] also agrees with the theory that managerial coaching benefically affects employee job saticfaction, organizational commitment and reduces the turnover intention among them. The research simultaneously indicates that employee job satisfaction has significant positive impact on employee organizational conmmitment and negatively influences turnover intention of employees.

In summary, managerial coaching is instrumental in improving job performance and enhancing employee satisfaction. It fosters effective communication, provides valuable feedback, and helps employees address their weaknesses, resulting in enhanced performance. Coaching also promotes role clarity, reduces stress, and indirectly influences career commitment. Overall, managerial coaching creates a positive work environment that supports continuous learning and personal growth, contributing to the overall success of individuals and organizations.

6. The application of managerial coaching

6.1. Applying managerial coaching in the world

By investing in coaching programs, numerous organizations can foster leadership excellence, drive employee engagement, and achieve sustainable success in today's competitive business landscape.

IBM has recognized the value of managerial coaching in building a strong leadership pipeline. One of IBM's outstanding experiences in adapting to growth is its coaching culture. For instance, The company has implemented a comprehensive coaching program called the "IBM K-12 Leadership Coaching and Mentoring" This initiative provides managers with access to certified coaches who assist them in developing essential leadership skills, improving communication, and driving team performance. For 4 -12 months, regular meetings between the coach and the leader would be held in person, over the phone, and through videoconference. Additionally, the coach would be accessible to participate in meetings with the leader and offer advice and expertise specifically related to the undertaking or their position. The success of the interaction may be evaluated by periodic updates to the leader's superior. This program has resulted in increased employee engagement, higher levels of productivity, and enhanced leadership effectiveness across the organization [56].

Google is renowned for its focus on employee development and innovation. The company has implemented coaching programs to enhance leadership capabilities at all levels. Through management relationships, Coaching on career development is provided. In one case study, Google introduced a program called " Career Guru coaching program," where internal coaching networks can be created. The corporation uses Career Guru to match its employees with one of the 350 internal coaches (Gurus) from all around the world. All Google workers, from fresh hires to seasoned leaders, have access to one-on-one coaching. The program resulted in improved leadership skills, increased employee engagement, and enhanced team performance. Google's coaching initiatives have been instrumental in maintaining its position as a leader in the tech industry. In fact, average employee satisfaction ratings for Career Guru are 4.8 out of 5, and this coaching program is generally acknowledged as one of the main factors that make Google one of the top employers in the world [57].

General Electric (GE), a global company, created and coordinated a number of coaching and development programs to propel GE's corporate transformation. In order to assist participants integrate important lessons into their daily lives, EZRA Coaching and GE partnered to offer one-on-one coaching as part of their leadership programs in 2022. By adding customized coaching sessions to the program, GE gave each participant a private, secure place to discuss the particular difficulties they were having applying what they had learned at work. Through this program, GE does better its coaching methodology and giving its front-line leadership the abilities they need to embrace and manage the future. With 4.8/5 average coach rating and 96% positive recommendation, GE's coaching efforts have played a crucial role in shaping the organization's leadership pipeline, fostering innovation, and driving business growth [58].

These case studies illustrate how managerial coaching has been successfully implemented in large corporations in the world. They provide the positive outcomes of coaching programs, including improved leadership competencies, enhanced employee engagement, and increased organizational performance.

6.2. Applying Managerial coaching in Viet Nam

In Viet Nam, the application of managerial coaching in Vietnam has been gaining traction in recent years as organizations recognize the value of developing effective leaders and optimizing employee performance. However, the application of managerial coaching in Vietnam faces various challenges; thus this method is not popular despite their numerous advantages.

One prominent Vietnamese business that offers a managerial coaching program is FPT Corporation. FPT Corporation is a leading technology company in Vietnam that provides a wide range of IT services and solutions. FPT brought the coaching program sponsored by Standard Chartered to their employees for a period of four months. Participants in the program had the chance to broaden their perspectives throughout the program. The program fosters a community-like atmosphere where people may realize their full potential and reach new performance heights. The coaches help them assess their personal issues and discover an immediate solution. This is significant since it allows for individual problem-solving strategies for each participant, thus improving their working effectiveness [59].

SGB is a French corporation with a history of more than 350 years specializing in the production and design of environmentally friendly building materials. Since 2018, SGB Viet Nam has implemented Managerial Coaching skills training activities, starting with the Board of Directors (BOD), senior managers, and department heads. By 2020, their training has spread to middle managers. The goal of the business is to develop the leadership capacity of the management team and build trust and connection in the organization. The results show that coaching sessions directly contribute to promoting growth thinking, creativity, positivity, and listening of leaders and managers, thereby creating a culture of open cooperation, dedication, and innovation in the organization [63].

While the number of businesses applying Managerial Coaching in Vietnam is still limited, the cases of FPT Corporation and SGB highlight the potential benefits of Managerial Coaching in Vietnamese organizations. These companies have successfully implemented coaching programs to develop leadership skills, enhance employee performance, and foster a positive and innovative work culture. While more evidence is needed to draw definitive conclusions, these examples demonstrate the potential contribution of Managerial Coaching to the growth and success of Vietnamese businesses. Further research and exploration of coaching methods in different industries and organizations will provide a more comprehensive understanding of its effectiveness in Vietnam.

6.3. Recommendations to apply efficiently Managerial coaching in Vietnamese enterprises

Managerial coaching offers several benefits to both employees and organizations. Firstly, it improves job performance by fostering regular communication, providing feedback, and assisting employees in strengthening their areas of weakness. This results in enhanced productivity and overall performance. Secondly, managerial coaching increases employee satisfaction by clarifying roles and expectations, reducing role ambiguity, and promoting career commitment. Employees who receive coaching feel more connected to their work, have a clearer understanding of their responsibilities, and exhibit higher levels of job satisfaction. Additionally, coaching fosters a sense of organizational commitment, leading to increased satisfaction with work and managers. Employees feel emotionally attached to the organization, which boosts their motivation and dedication. However, the application of managerial coaching in Vietnamese enterprises is still not really popular. The application of managerial coaching in Vietnam currently faces some challenges. The reason is that there are barriers from two sides: businesses and their employees.

In more detail, the first obstacle is that employees do not have enough faith to openly share their problems with their seniors. Another typical issue is difficulties in turning coaching into a corporate culture, which arises from the lack of long-term passion and regular practice of both managers and employees. Taking the case of Saint-Gobain Vietnam for instance, employees of this enterprise admited that they were afraid that their job would be negatively affected if they sincerely share their thoughts. Some even confessed that they joined the coaching program just to boost their managers' KPI [63]. Moreover, the application of coaching only caught attention in the first stage and rarely did people put it into practice afterwards, leading to the failure of long-lasting application of coaching in this enterprise. The insufficiency of professional knowledge, experience, and skills of managers in coaching is also a matter of concern. For example, Vietinbank has recorded some dissatifaction and discomfort from their employees during the process of coaching as a result of their managers' inappropriate act and attitude [64].

For the application of managerial coaching in Vietnam, there are several recommendations to tackle these challenges. Firstly, organizations should invest in coaching programs and provide training to managers to develop coaching skills. This will enable managers to effectively support and guide their employees, leading to improved performance and satisfaction. Secondly, organizations should prioritize open communication and regular feedback between managers and employees. This will create a supportive and collaborative work environment where employees feel comfortable discussing challenges and receiving guidance. Additionally, it is important to promote a culture that values coaching and recognizes its benefits. This can be done through awareness campaigns, workshops, and integrating coaching principles into performance management systems. Finally, organizations should adapt coaching programs to suit their specific needs and context. Customization and flexibility in coaching approaches will ensure maximum effectiveness and relevance.

In summary, by embracing managerial coaching and implementing it effectively, organizations in Vietnam can unlock the potential of their employees, improve job performance, enhance employee satisfaction, and foster a positive and productive work environment.

7. Conclusion

Overall, managerial coaching is an efficient leadership technique that supports workers' learning processes so they may perform better and be more productive; as a result, the employee, together with the manager and the business, gains most from the managerial coaching process.

The application experiences shared through various businesses have highlighted the positive outcomes of managerial coaching. Employees who have undergone coaching have exhibited increased self-awareness, improved decision-making abilities, enhanced communication skills, and a higher level of engagement. Furthermore, organizations that have integrated managerial coaching into their human resource strategies have reported improved employee satisfaction, increased productivity, and a positive impact on overall organizational performance.

While research studies contribute significant knowledge and insights, the absence of empirical experience can pose limitations. In the future, it is crucial to conduct experimental studies comparing the differences between two groups of employees, one receiving managerial coaching and the other not. This will be the next research direction for the authors.

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Investigating Factors Influence Firms' Engagement in Value-Destroying CSR Investment. A Multi-Theoretical Approach

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ABSTRACT

A company that practices and embraces corporate social responsibility (CSR) takes responsibility for its actions and aims to benefit itself, its stakeholders, and the public. Previous research has predominantly focused on the positive aspects of CSR and its impact on a company's performance. However, there is empirical evidence that compels us to also consider the negative side of CSR, which can diminish a company's value (as exemplified by the General Electronics case). This study examines the concept of value-destroying CSR, where CSR efforts, as measured by CSR indexes, have a detrimental effect on a company's Tobin's Q (a financial metric). Multiple theoretical perspectives, including agency theory, the BAT (behavior agency theory) framework, the RBV (resource-based view), and stakeholder theory, are employed to analyze this phenomenon. By investigating the influence of firm size on the pursuit of value-destroying CSR, we highlight the significant role that firm size plays in a company's strategic activities, an aspect that has been overlooked in existing research. Our findings reveal that larger firms are more likely to engage in value-destroying CSR. Furthermore, we examine the influence of specific contingent factors, namely CEO decision horizon, board size, and their configuration, to validate the awareness and behavior of decision-makers regarding value-destroying CSR. The results indicate that CEOs with longer decision horizons tend to mitigate the intensity of engagement in value-destroying CSR among larger firms, while board size has the opposite effect. These findings communicate important messages to stakeholders and the wider public regarding a company's motivations for engaging in value-destroying CSR.

Keywords: Value-destroying CSR, CEO decision horizon, Firm size, Board size, Agency theory, Behavior agency theory.

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Strategic Human Resource Management in Autonomous Universities in Vietnam

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ABSTRACT

Human resources are increasingly perceived as the most important asset, ensuring the success of any reform, and the accomplishment of an organisation's strategic goals. For service providers, the role of people in creating competitive advantages and promoting sustainable organisational development is no longer controversial. Therefore, all service providers in Vietnam need to be able to analyse, evaluate and formulate an effective human resource strategy towards the overall strategy of the organisation - based on secondary data rather primary data, since collection of the latter often proves difficult and unreliable.

In Vietnam, the outstanding performances of the autonomous universities under the pilot scheme renders the autonomy in higher education an effective public policy. Public universities that have been assigned autonomy can evaluate their operations and develop effective human resource strategies to create competitive advantages to effectively foster development to reach the regional and international level.

This study uses the McKinsey 7S model, theories of strategic human resource management, and secondary data to evaluate, analyse and propose a strategic human resource management direction to facilitate a successful operation of a fully autonomous university in Vietnam.

Keywords: Human resource management, Strategic human resource management, McKinsey 7S Framework, Strategic HR model, Autonomous universities.

1. The transition of Public Universities to Institutional Autonomy in Vietnam

The autonomy in higher education has been assigned to a number of public universities in Vietnam on a pilot basis since 2014 under a governmental resolution, coded 77/NQ-CP. In 2018, an

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amendment to the Law on Higher Education contained a provision defining autonomy as the right of higher education institutions to determine their own goals and how to acomplish them; to decide and assume accountability for their professional and academic activities, their organisation mechanism, personnel, finance, assets and other activities in accordance with the law and the capacity of their institutions. Around the globe, autonomy status has been considered the driving force for public institutions to innovate to improve their university governance, organisational and management systems, and ultimately the quality and efficiency of their operations. Autonomy is an irreversible trend which both the Vietnamese Government and autonomous institutions need to embrace to grow and develop.

In fact, the success of the autonomy in higher education as an effective public policy has manifested itself in the outstanding performances of the autonomous universities under the pilot scheme. These institutions have been reducing unnecessary bureaucracy and administrative burdens while promoting flexibility and taking a proactive approach across the whole spectrum, from training and scientific research to organisational structure, human resources, finance, operational and strategic management. Throughout their successful transition to autonomy, a vital and possibly most significant factor … is undoubtedly the human capital, i.e. the concensus and participation of all the relevant stakeholers – internally and externally.

Public schools that are assigned autonomy need to evaluate their operations and develop an effective human resource strategy to ensure that the school can develop excellently and sustainably and achieve its strategic goals. This study uses the 7S McKinsey model and theories of strategic human resource management to evaluate, analyze and propose a strategic human resource orientation for a fully autonomous public university.

2. Literature review

2.1. Strategic Human Resource Management

2.1.1. Human Resource Management (HRM) defined

While the concept of human resource management (HRM) originated in the 20th century as a philosophy on how people should be managed, and manifested in payroll and employee records, it has since been evolving significantly to adapt to changes in the social legislation, in cooperation and competition arising from globalisation, and to the greater awareness of social responsibility.

According to Mathis (2017), HRM is designing formal systems in an organisation to effectively and efficiently manage human capital – the collective value of all the capabilities, knowledge, skills, life experiences, and motivation of an organisation’s labour force - for accomplishing organisational goals. Lê (2011), a Vietnamese author, also advocates this view, and emphasises the importance of role of HRM in organising activities to attract, develop and maintain a pool of human talent.

Besides including systems that influence employees’ behaviour, attitude and performancem, HRM should also include an organisation’s policies and practices as well-managed human resources can lead to higher quality, profits and customer , hence maintaining a source of sustainable competitive advantage (Noe R.A., et al., 2020).

Even though the HRM philosophy has been critised as being managerialist and manipulative, HRM in practice can be viewed as an integrated and holistic approach for managing and and developing people in an organisation, including areas such as strategic human resource management, human capital management, knowledge management, corporate social responsibility, organisational development, human resource development (planning, recruitment, selection, talent management), training and development, performance and rewards management, industrial relations, benefits and employee services (Armstrong, 2013).

2.1.2. Strategic Human Resource Management defined

The strategic nature of human resource management is reflected in the clear and solid presentation of human resource policies at the strategic level and emphasises the characteristics of human resource management as an intrinsically coherent approach. Storey describes as 'treating employees as a valuable asset, a source of competitive advantage through dedication, adaptability, and high quality. (J.Storey, 1989)

Legge argues that a common feature of exemplary HRM definitions is that the HRM policy should be closely linked to the strategic business plan. Human resource management is a process emphasising 'the close integration of human resource policy with business strategy related to employees –wisely managed just like other resources to optimise profit'. The soft version of HRM sees employees as 'a valuable asset and as a source of competitive advantage from their dedication, adaptability and high skills' (Legge, 1998).

Guest seems to take a slightly different stance by commenting that: The effort to adopt HRM is based on the needs of the business situation to respond to increasing competitive external threats. It is a philosophy that calls for managers who are trying, striving to increase their competitive advantage and understand the important meaning that- to do this they need to invest in human resources as well as resources and new technology. He also believes that human resource management focuses on the benefits of managers integrated with business strategy, achieves added values from human resource development, achievement management, the need for a sustainable collaboration culture embodied in the vision and mission statement, which ares reinforced through communication, training, performance appraisal, and employee rewards (D.E.Guest, 1999).

2.2. Human Resource Management Models

HRM models are frameworks for articulating HR's role and positioning within the business. Among the most influential are the "Havard framework" and the matching model" which is also known as the "Michigan Model", and the 7-S Framework.

2.2.1. The Michigan Model

As illustrated in figure 1, this model demonstrates the central role human resource management plays in driving organizational success through the impact of performance management on rewards, training and development.

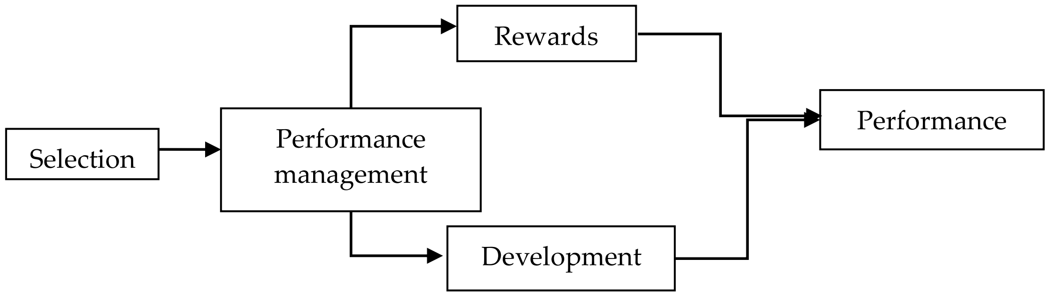

Figure 1. The Michigan Model

Source: (Fombrun C. J., 1984)

2.2.2. The Havard Framework

Harvard University's Human Resource Management Model, states that "Today, many pressures are demanding a global, more holistic and more strategic perspective on the organization's human resources". These pressures have created a need: "There is a need for a long-term perspective for human resource management and to view people as a potential asset of the organization rather than merely a variable cost." The Harvard model emphasizes that human resource management should be a general management concern rather than the usual human resource function. Human Resource Management of Harvard University, said that "Today, many pressures are demanding a broader, more holistic and more strategic perspective on the organization's human resources". These pressures have created a need: "There is a need for a long-term perspective for human resource management and to view people as a potential asset of the organization rather than merely a variable cost." The Harvard model emphasizes that human resource management should be a general management concern rather than the usual human resource function. (Beer M., et al, 1984).

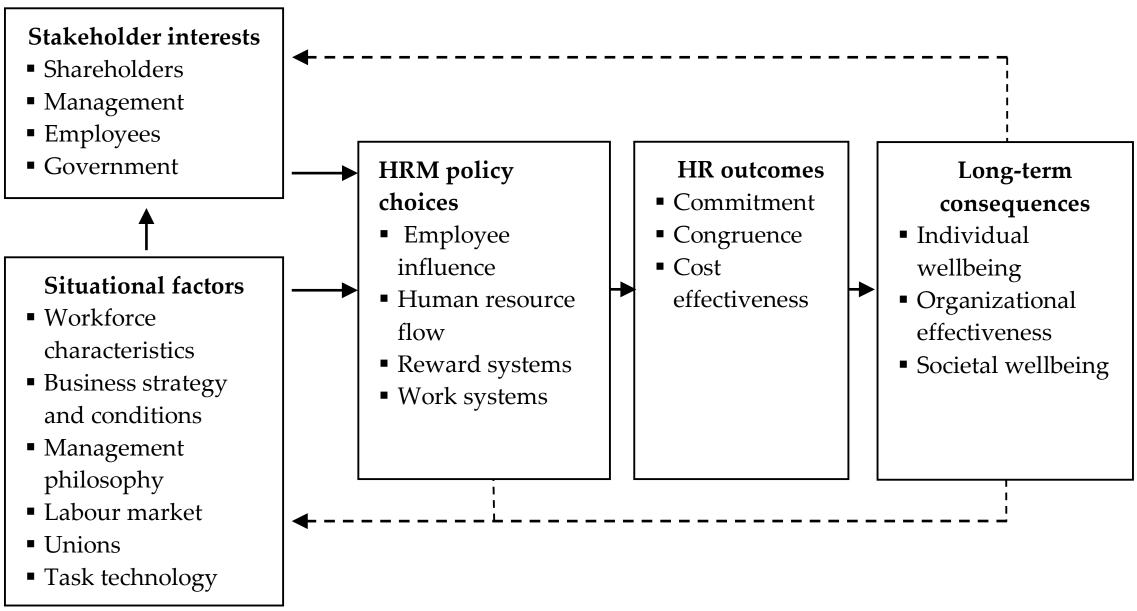

Figure 2. The Harvard HRM Framework

Source: (Beer M., et al, 1984)

The strategic human resource management model was introduced by Le et al (2011)

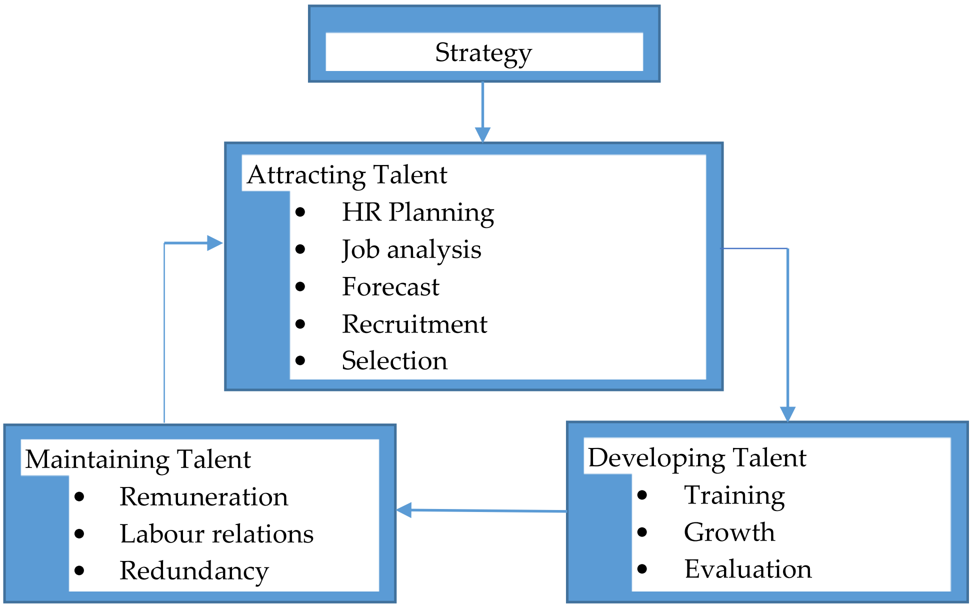

Figure 3: Strategic Human Resource Management

Source: (Lê Thế Giới và cộng sự, 2011), tr182)

According to the model, the strategic approach to human resource management has three main elements: (i) All managers must be human resource managers; (ii) Employees are seen as assets because employees rather than buildings or machines create competitive advantages for the company. The way a company manages its labour can be an important factor in maintaining success in competition (Pfeffer, 1995); 3) Human resource management is a process of linking and merging the human resource strategy and organisational goals with the appropriate method for managing their human resources. (James N.Baron and David M.Kreps, 1999).

The McKinsey 7S model, developed by Peter and Waterman in 1982, as illustrated in Figure 4, has seven variables that affect organisational success: strategy, structure, shared values, organisation-style, systems, staff and skills. While strategy and structure are the hardware of the organisation, the remaining 5 elements can be considered the software of the organisation. These components are interrelated to each other, hence if there is a change in one of the components, others will also be impacted. (Thomas J.Perter and Robert H.Waterman, 2004)

Strategy is the way the organisation chooses to grow in the future, a plan developed by the organisation to allocate resources to the targeted destination to achieve competitive excellence. Chandler (1962) defines strategy as the determination of the basic long-term goals and objectives of an enterprise and the adoption of a series of actions and the allocation of resources necessary to realise these goals. Johnson and Scholes (1999) provide a more detailed definition of strategy, which is the direction and scope of an organisation over the long term to gain a competitive advantage for the organisation through configuring its resources in a changing environment, to meet market needs and satisfy stakeholder expectations. (Lê Thế Giới và cộng sự, 2007)

According to Le The Gioi et al. (2011), organisational structure is a formal system of both independent and dependent relationships in an organisation, clearly showing who should be responsible for which task, and how one task relates to other tasks in the organisation, to create a smooth collaboration to meet the organisation's goals.

True success does not come from declaring values, but from consistently turning them into daily actions (K. Blanchard and M.O'Connor, 2005) and shared values are the determining factor for employee behavior.

Style talks about how leadership can be practiced in an organisation. Leadership involves influence and interrelationship. According to J. Kotter (1990), leadership is defined as artistic influence, or a process of influencing others so that they will voluntarily and enthusiastically strive to achieve goals. organization, leadership creates change. Leadership is defined as the artistic influence, or process, of influencing others so that they will voluntarily and enthusiastically strive to achieve organizational goals. Leadership is also about making a difference. (Lê Thế Giới và cộng sự, 2011).

Skill is the ability of the organisation to create unity. According to Peters and Waterman (1982: 71) skills are explained as the ability to manage the organisation as a whole, not individual competencies.

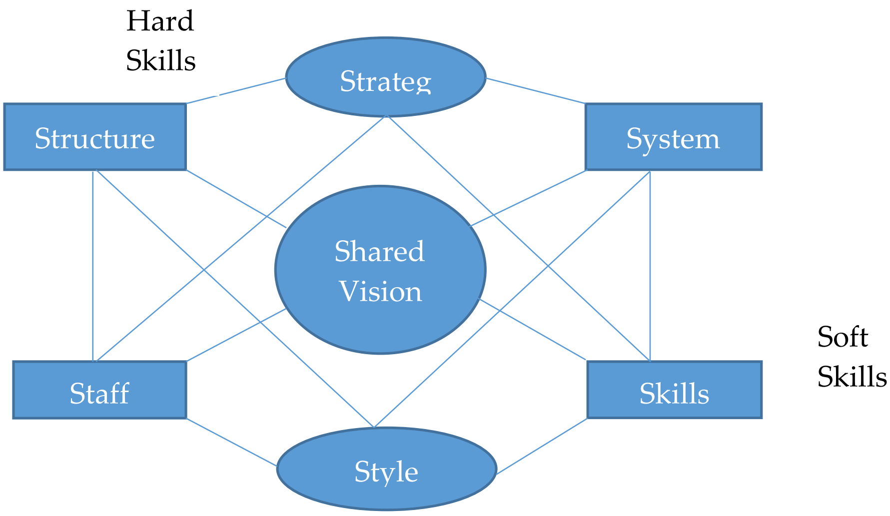

Figure 4. McKinsey 7S Model

Source: (Thomas J.Perter and Robert H.Waterman, 2004)

Based on the consideration and comparison of above models, McKinsey 7S and Le et al (2021) are chosen with the following justifications. Both of these models clearly demonstrate the interlation between different HRM functions and an organisation's overall strategy. The Michigan Model fails to do so, even though its HR cycle can effectively show the interrelation between its HRM functions. The Harvard HRM Framework has a strength in the identification of an ortganisation's core values and strategies in broader context, but it can be overwhelming due to its all-encompassing breadth of scope, hence hard to apply in Vietnam. Moreover, McKinsey's 7S model offers a more simplified method and has been used to advise businesses, especially post merger or restructuring to evaluate and monitor their performance for improvement; while Le at al (2021)'s model is a popular theoretical model widely used in organisational strategy-building studies in Vietnam.

3. Research method

For this paper, we decided to carry out qualitative research as it encompasses an "array of interpretive techniques which seek to describe, decode, translate, and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world" which can aid in-depth understanding of a situation by drawing data from a variety of sources, including the following: People (individuals or groups); Organisations or institutions; Texts (published, including virtual ones); Settings and environments (visual/sensory and virtual material); Objects, artifacts, media products (textual/visual/sensory and virtual material); Events and happenings (textual/visual/sensory and virtual material) (Cooper, 2014).

This paper uses the McKinsey 7S model and Le's model to evaluate the human resource strategy of Vietnam's autonomous public universities for economics due to two reasons. The McKinsey 7S can effectively help the university board to evaluate their institution's performance following restructuring, identify where they excel and areas that need improvement; while Le's model has been adapted for institutions in Vietnam.

To date, 23 public universities in Vietnam have been assigned autonomous, to operate as a public service provider, we are based on the training disciplines and the training portfolio of the economic sector, (Thông tư số 24/2017/TT-BGDĐT) to select schools with training in economics, business and management sectors accounting for 70% or more, under the same management. of the Ministry of Education and Training of Vietnam. This choice allows external factors to affect the schools almost the same.

In the first method, we analyze the data and the relevant theoretical facts and provide an academic explanation from the data obtained.

The second research method is desk research. Desk research is a case study conducted based on knowledge and imagination (LatifDarmawan, 2018) . In this form, we do some research based on resources already provided in the public medium such as newspapers, journals, research reports and journals, secondary data is obtained from Internal sources, internet, libraries, associations, government organizations, and published reports. Information about schools is taken from reports, published documents, and public information on the schools' websites.

4. Strategic Human Resource Management at an autonomous public university in Vietnam

4.1. Characteristics of autonomous universities for economics in Vietnam

Out of Vietnam's 23 autonomous universities, 7 have over 70% of their programmes in economics – 6 of which belong to the Ministry of Education and Training and 1 to the State Bank of Vietnam. This research focused on the former 6 univerisities, which were National Economics University, Foreign Trade University, University of Commerce, University of Economics Ho Chi Minh City, University of Finance - Marketing, and the Danang University of Economics because they all belong to the Ministry of Education and Training of Vietnam, hence similarly impacted by public policies, with a minor exception of Danang University of Economics, which also has to comply with the regulations of the University of Danang as it is an affiliate of the University of Danang - a regional university.

4.2. Assessment of the strategic human resource management of Vietnam's autonomous universities for economics

Upon a synthesise of findings from articles and the websites of these six institutions, a number of trends have become evident.

First of all, all of these autonomous universities have announced their development strategies for 2030 with clearly identified vision:

- Out of 6 universities, 3 aim to be research-oriented (National Economics University, Foreign Trade University, Danang University of Economics) and 1 application-oriented (University Finance – Marketing);

- All 6 universities commit to embrace a multi-disciplinary approach; National Economics University and Foreign Trade University also set a goal of multi-field development, while the Foreign Trade University aims to be multi-site including foreign countries;

- 4 have been identified as leading universities in Vietnam, 2 as being in the group of leading universities in the region, and the remaining universities as having prestige or influence in the region, meeting international accreditation standards.

Secondly, the three research-oriented universities all have clear educational philosophies and a shared orientation towards liberal, useful and practical education to bring value to the community, and to enable learners realising their potential.

Thirdly, these 6 universities have distinctive missions and the National Economics University is the only one identified as a pioneer in innovation, development and dissemination of knowledge on economics, management and business administration.

Fourthly, all have clearly identified their 5-8 core values and publicised them on their websites: all embrace creativity, 4 cooperation, and 3 the values of integrity, efficiency, responsibility and solidarity.

Regarding organisational culture, the University of Economics Ho Chi Minh City is the only one to publicise, propagate and implement. National Economics University has been shaping their culture since 2014 but has not fully publicise it. For the remaining univertsities, there are some mentions of organisational culture, quality culture, and annual cultural assessment, but not yet manifested in practice nor publicly documented.

With respect to organisational structure, all autonomous universities have a University Council consisting of many stakeholders, a Party Committee, a Board of Management, functional departments, faculties, institutes and centres. There are both similarities and differences in the way universities organise units to manage their main activities in training, science and technology, international relations, accreditation and quality assurance of higher education:

- All 6 univerisites have a financial planning and accounting department, an Information Technology department or centre.

- Apart from the University of Economics Ho Chi Minh City which has a Department of Scheduling - Testing, Department of Quality Assurance - Curriculum Development, Department of Undergraduate Training, Department of Continuing Education, Department of Student Affairs, all have a Department of Training, a Department of Testing and Quality Assurance, Department of Political and Student Affairs, for training activities, testing and quality assurance activities as well as student management and support. Foreign Trade University and Danang University of Economics also run Student Service Centres.

- For managing facilities, the Foreign Trade University has 2 separate departments, namely the Department of Facilities Management and the Department of Project Management, whereas the other 5 have only the Department of Facilities.

- Scientific/academic research, international cooperation and communication are managed by the Departments of Science and International Cooperation at both the University of Economics Ho Chi Minh City and the Danang University of Economics, by the Department of Research Administration and and the Department of External Relations and Communication at the University of Commerce, solely by the Department of Research Management at the remaining universities. Meanwhile, the the University of Finance and Marketing does not establish a separate unit for international cooperation. All but the University of Commerce have institutes/faculties/international training centres.

- For administrative activities and human resource management, 3 universities (National Economics, Commerce, and Economics Ho Chi Minh City) deploy separate departments suchs as the General Administration Department/ Office and the Department of Personnel/ Organisation/ Human Resources/ Human resource management; 3 universities (Foreign Trade, Finance - Marketing, Danang University of Economics) deploy a single department called Organisation-Administration.

- For inspection and legal activities: the University of Commerce and the University of Economics Ho Chi Minh City only have a Department of Inspectorate, while the other 4 manage their activities in their Inspectorate – Legal Affairs Department.

Human resources at universities are comprised of lecturers, experts and staff. Statistics of human resources in teaching positions of autonomous universities for economics are recently published on websites, albeit discrepancies in the time of the data collection, are shown in the table below.

Table 1.Human resources at Vietnam's self-governing public universities in the economic sector in 2021

University	Uni	Total	Title		Highest Qualification			Profesional rank		
			Professor	Associate professor	Doctorate	Master's	Bachelor's	III	II	I
National Economics University	Staff number	715	17	112	232	347	7	353	219	143
	Ratio: %		2.38%	15.66%	32.45%	48.53%	0.98%	49.37%	30.63%	20.00%
Foreign Trade University	Staff number	531	0	44	137	348	2	373	115	43
	Ratio: %		0.00%	8.29%	25.80%	65.54%	0.38%	70.24%	21.66%	8.10%
Thuongmai University	Staff number	434	2	45	93	290	0	218	162	48
	Ratio: %		0.46%	10.37%	21.43%	66.82%	0.00%	50.23%	37.33%	11.06%
University of Economics Ho Chi Minh City	Staff number	629	9	51	195	374		441	127	61
	Ratio: %		1.43%	8.11%	31.00%	59.46%	0.00%	70.11%	20.19%	9.70%
University of Finance - Marketing	Staff number	464	0	10	83	343	28	395	57	12
	Ratio: %		0.00%	2.16%	17.89%	73.92%	6.03%	85.13%	12.28%	2.59%
University of Economics - The University of Da Nang	Staff number	306	3	24	98	181	0	202	66	26
	Ratio: %		0.98%	7.84%	32.03%	59.15%	0.00%	66.01%	21.57%	8.50%

(Source: Compiled from public information on universities' websites)

In autonomous universities, the Communist Party Committee leads, directs, and makes decisions on the development direction of the University; the University Council is made up of many stakeholders including students, university leaders and business people who are responsible for approving decisions on personnel, finance, investment, science and training, and for supervise their university's activities. Leadership and administration activities under the new university governance model has effectively promoted democracy, openness, transparency, smooth coordination, and created consensus among various stakeholders. Competent univertsitites will gradually become financially self-sufficient, hence autonomous in the management of their apparatus, as well as proactively improve facilities, and promote activities in accordance with their strategic goals.

Standards of teaching staff and officials of universities must comply with the provisions of the Law on Public Employees, the regulations of the Ministry of Home Affairs and the Ministry of Education and Training, whereby lecturers are classified into 1st, 2nd and 3rd grades according to their qualifications and skills. The management staff of the universities are all trained from established universities in developed countries. Faculty and department heads, being well-trained, have successfully taken the lead, initiated and oriented the development of universities in line with the trend of global integration and innovation in training and research. science. Together with highly competent internationally-educated lecturers with proficient foreign language ability have brought the training programs closer to regional and international standards.

The leading universities for economics which are pursuing the model of "innovation university" associated with advanced university administration tend to have an online site dedicated to publish information about their (social) scientific research projects, seminars and conferences – national and international. All of them have ensured transparency in the procedures of recruitment, training, appointment and rotation of staff, and transparency in their learning outcomes, training programs, training regulations, examination and diplomas. All universities have developed their e-learning systems, management software systems for the managing administrative documents and information on training, finance, research. They all have organisational and operational regulations outlining the functions and tasks of each unit. In order to be assigned autonomous, they must meet the national accreditation requirements through the assessment and evaluation the university's operating system against the national assessment criteria and standards.

4.3. Discussion

Peter and Waterman assert that companies with a lot of initiative, invention and innovation not only produce commercially viable goods, but are also exceptionally flexible, constantly adapting to any changes in the environment in which we operate (Thomas J.Perter and Robert H.Waterman, 2004). Findings from universities show that those universities which have organised many scientific conferences, conducted many academic research projects, uphold the principle that each teacher is a role model in self-study, innovation, and proactive adaptation to changes in general and and during the Covid-19 pandemic in particular, have proven their competency. They were quick to deploy online teaching technology, to adgere to new regulations set by the Government and the Ministry of Education and Training, hence being able to conduct training and research activities without much interuption.

Autonomous universities need to employ strategic control to manage the 5 crucial tasks of their strategic plan (Lê Thế Giới và cộng sự, 2007) (Le Gioi et al., 2007): (i) To draw a strategic vision picturing the future image of the University, clearly stating their purpposes, objectives, and long-term direction; (ii) To translate their strategic vision into concrete performance outcomes that the University must achieve; (iii) To develop strategies to achieve desired goals; (iv) To effectively and efficiently execute the selected strategies; (v) To evaluate performance and make adjustments to their vision, long-term goals, strategy as new ideas, experiences and opportunities emerge, when there are changes in the external environment, etc.

Universities must select an organisational structure that suits their own characteristics and requirements (Lê Thế Giới và cộng sự, 2011), for example: (i) to go global, universities would need to specialise in terms of geographical location, to establish their presence in targeted region; (ii) to cater for potential customers with diversified need, universities should focus on specialisation of training courses; 3) to serve potential customers whose needs are stable, specialisation in terms of functional departments and customers would be an adequate choice of organisational structure. Jobs in the organisational structure need to be designed so as to maximise the diversity of employees' skills.

Autonomous universities are institutions that pursue humanism in their community mission. Peter and Waterman also proposed that humanism plays an important role in organisational development when applying the McKinsey 7S model (Thomas J.Perter and Robert H.Waterman, 2004). Humanism needs to be clearly reflected in the strategy and the values that the organisation pursues, as well as adopted by the entire team who would consider it as their cultural norms.

Leadership style in autonomous universities, according to Le, must be oriented towards human development according to McGregor's well-known "Theory Y". Therefore, it is necessary to adopt a leadership style reflected in the following behavior: (i) The leaders must be responsible for the arrangement of financial factors, teaching aids, and personel support; (ii) Lecturers, experts and staff need to actively accumulate experience, and avoid being passive or going against the requirements of the organisation; (iii) Staff need to have motivation and growth potential, ability to take responsibility, and show willingness to work in a way that is beneficial to the organization; but it is the responsibility of leaders and managers to identify and navigate people in the right direction; (iv) The essential task of the leader or manager is focus on the ultimate goals and to facilitate people in achieving such goals.

Management systems in universities can quickly be deployed with new technologies and management software thanks to specialised departments of information technology. The administrative information system in univerisites should be organised in both top-down and bottom-up approaches, with distintive access rights to different access groups to enable effective coordinaion between departments, to allow an ease of access without compromising confidentiality. Accurate recognition of achievements and contributions of employees due to automated management will enhance fairness, and motivate officials, lecturers and other staff to be more proactive.

To build unique and intrinsic strength, universities need to develop their human resources in accordance with their unique characteristics, by performing the following tasks:

- To undertake human resource planning and strategy-linked job analysis to identify core competencies and skills of the organisation. To assign employees to different teams according to their contribution to the organization and clear development potential for appropriate rotation and investment; Recruitment must ensure the employment of staffwho have core competencies and skills for the organisation, including pedagogical skills, synthesis skills, critical thinking and creative thinking for lecturers, empathy and leadership skills for management positions;

- Human resource development should focus on gaining new knowledge, enhancing scientific research capacity, and high calibre to build and deliver effective curricula, to utilise new technologies for more effective teaching and administration; and to facilitate the development of creativity, self-study and research abilities of lecturers and experts in the university;

- Remuneration needs to be appropriate to ensure competitiveness in the labor market to attract and retain the elite team to constantly innovate. Universities also need to direct resources to promote a creative, upright, democratic, open and transparent environment;

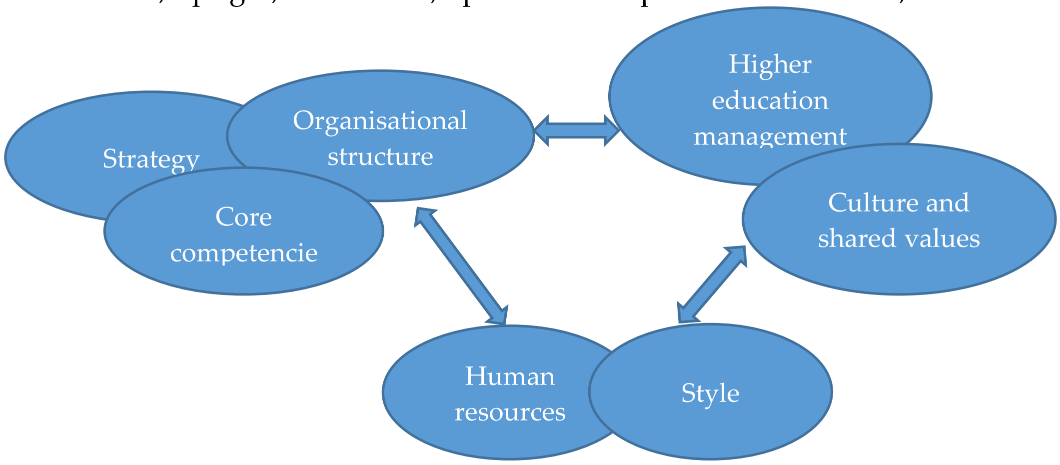

Figure 5. McKinsey 7S model applied to autonomous public universities in Vietnam

5. Conclusion

Based on the thorough analysis and evaluation of publicly available secondary data, it has become evident that Vietnam's autonomous universities can deploy the McKinsey 7S model to analyse, evaluate and formulate appropriate governance measures to ensure a synchronous coordination between strategies, organisational structure, core competencies, university governance system, university culture, human resources and leadership style to create competitive advantages to effectively foster development to reach the regional and international level.

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R&D Investment Decisions after Financial Shocks: The Roles of The Capital Allocation Efficiency and Diversification

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ABSTRACT

Our study shows that capital allocation efficiency has a positive influence on R&D investment. Specially, the positive relationship between capital allocation efficiency and R&D intensity is greater for diversified firms than for focused firms. We, further, find that diversified firms have a lower reduction in R&D spending than focused firms in the context of the credit shock. Interestingly, diversified firms having capital allocation efficiency positively foster R&D investment while their focused counterparts dramatically reduce R&D spending after the crisis. These findings exhibit a significant difference in R&D investment decisions between diversified firms and focused firms in the presence of capital allocation efficiency in an economic and financial shock. It indicates that the fit of capital allocation efficiency and diversification strategy enables diversified firms better cope with the shock as well as obtain a competitive advantage through fostering R&D activities in dynamic settings.

Keywords: R&D investment, capital allocation efficiency, diversification, the financial crisis, shocks.

1. Introduction

R&D investment is a vital tool to enhance a firm's sustainable growth and increase competitive advantage in innovation races with their competitors. Innovation enables firms may survive and gain above-average performance (Bowen et al., 2010). In the aftermath of the crisis in 2008, the role of R&D investment and innovation becomes more important in many countries (Brown et al., 2009; Choi & Williams, 2014; Cohen, 2010; Paunov, 2012). For instance, the "G8" group has economic development policies that rely more on innovation strategies (Aghion et al., 2012; Bronzini & Iachini, 2014; Nunes et al., 2012). However, R&D activities usually entail high initial inputs, and long-term investment, uncertainty, and slow investment returns. Thus, R&D investment requires a heavy commitment of firm resources, most important, finance and management capacity. Firms will invest in R&D when they have abundant financial resources. Once a firm has constrained financial resources, the firm tends to reduce productivity investment (Laeven, 2003). Managerial capability plays a key role in enhancing the return of R&D projects as superior management teams know how to monitor firms' investments to increase investment efficiency (Gan, 2019).

After the crisis, commonly exogenous factors hurt the firm's revenue and/or profits as well as ability to access external funds that cause a decrease in the firm's innovation investment (Francois & Lloyd-Ellis, 2003; Guellec & Wunsch-Vincent, 2009; Paunov, 2012). Further, new investment projects are more difficult to obtain funding during and after the crisis as the availability of external credit resources is limited (Bliss et al., 2015; Campello et al., 2010; Duchin et al., 2010). Thus, internal finance capacity plays a more crucial role for R&D investment once external capital resources are constrained. After the shock, diversified firms with effectively internal capital markets have an investment advantage relative to focused firms who mainly raise funds from external capital institutions (Kuppuswamy & Villalonga, 2016; Rajan et al., 2000; Scharfstein, 1998). Hence, diversified firms having efficient capital allocation system and internal capital markets will have potential advantages in R&D investment rather than their peers in an economic downturn.

Our study aims to investigate the role of capital allocation efficiency and diversification on R&D investment, emphasizing the presence of external financial constraints after the crisis which is likely to have exacerbated the influences of capital allocation efficiency and diversification on R&D investment behavior. The financial crisis in 2008 is an exogenous factor due to beginning in consumer finance that provides an ideal setting for investing the role of corporate finance on R&D expenditures.

Our study shows that capital allocation efficiency has a positive association with R&D spending such that has a greater impact for diversified firms than for focused firms. Further, diversified firms have a lower decrease in R&D expenditures compared to focused firms after the shock. Interestingly, diversified firms with capital allocation efficiency strongly promote R&D investment while their focused counterparts dramatically decline R&D spending after the crisis.

Our paper has contributions in several ways. Our research contributes to the growing academic literature about capital allocation efficiency (Mortal & Reisel, 2013; Wurgler, 2000) and R&D investment in an economic downturn (Filippetti & Archibugi, 2011; Katila & Shane, 2005; Paunov, 2012). Our study provides evidence that capital allocation efficiency positively enhances R&D investment in the relative stable period, however, this relationship is negative in the unstable period. Moreover, we extend prior studies about the impacts of diversification on R&D investment (Baysinger & Hoskisson, 1989; Hoskisson & Hitt, 1988) by exploring how this relationship changes in the presence of capital allocation efficiency as well as in dynamic setting relative to the stable setting. Our findings posit that the fit of superior managerial ability in capital allocation and financial advantage due to internal capital markets strongly promote R&D investment in diversified firms compared to focused firms in the whole period. Further, diversified firms decrease in R&D investment less than focused firms when the external financial shock appears. Lastly, we contribute to the academic literature on the role of capital allocation efficiency in diversified firms in the unstable period (Hovakimian, 2011; Kuppuswamy & Villalonga, 2016) by considering the economic consequence of a combination between capital allocation efficiency and diversification. We find that this combination provides power for firms to better respond to the shock and build competitive advantage through R&D activities.

2. Theoretical background and hypotheses

2.1. After the financial crisis of 2008

The financial crisis in 2008 collapsed the global financial system that required the support of the national government to the insured financial organizations. According to Lazette (2017), following the financial crisis, the total number of bank failures was more than 500 from 2008 to 2015. The biggest failures were not traditional banks but investment banks that mainly served institutional investors. It indicates that the financial markets dropped following the financial crisis last long beyond the crisis year 2008. This event caused a sharp decline in the stock market; and the smaller amount of loans and the higher costs of external capital. Banks limited their long-term and short-term credit facilities for corporate borrowers (Brunnermeier, 2009). This is a critical issue as the syndicated loan is a major capital source for corporates (Ivashina & Scharfstein, 2010). Further, the financial crisis caused a long-term decrease in capital supply in developed nations due to stricter financial rules and an increase in risk-averse behavior of financial organizations after the crisis. The decrease in credit supply and the increase in the cost of credit caused a lowering corporate investment (Campello et al., 2010). Investment dramatically plunged in 2009 that has a slow speed of recovery. Even the percentage of R&D investment to GDP in the US, the UK, Germany, and France was still about 3-4% points lower than its pre-crisis level in 2013 (IMF, 2014). Capital supply shocks result in long-lasting distortions in capital allocation that extremely hurt small firms and new ventures or firms depending on external finance. Reducing R&D spending and new venture entry following the financial crisis led to a decline in innovation capacity and productivity of economies.

2.2. R&D investment after the crisis

Economic and financial crises have potential influences on a firm's innovation strategy (Francois & Lloyd-Ellis, 2003; Guellec & Wunsch-Vincent, 2009; Paunov, 2012). The negative effects of economic shocks enable firms to fall into resource constraints due to shrinking sales and/or profits and difficulty to access external credit that leads to a decrease in R&D spending (Katila & Shane, 2005; Filippetti & Archiburgi, 2011). Further, the financial crisis enables a firm's investment opportunities to be less certain and expected returns to be lower (Johnson et al., 2000) that declines a firm's willingness to invest in R&D options (Filippetti & Archiburgi, 2011; Archibugi et al., 2013). In an economic downturn, the downsize of demand in potential customer demand for innovation outcomes reduces incentives to undertake R&D projects because Nelson and Winter (1982) argue that there is a demand sensitivity of the degree of inventive effort.

Previous studies have explored the determinants and consequences of R&D investment behaviors in the aftermath of the crisis. For instance, Chung (2017) uses Korean data from 2005 to 2011 to study the effects of financial constraints on R&D investment. By using a dummy after-crisis (a 2009-2011 period), they indicate that the external financial constraints in the post-crisis limits R&D expenditures. However, cash holdings decrease the impact of the credit shock on R&D investment. Further, by using survey data from Korean SMEs from 2008 to 2014, Jung et al. (2018) find that R&D investment was a poor option for general firms to survive, but an effective tool for innovative firms in the unstable period. Coldbeck and Ozkan (2018) use dynamic panel data from US firms from 2002 to 2016 to investigate the adjustment speed of R&D investment and capital investment in the recession. Their results find that the adjustment speed of R&D investment is slower than capital investment before the recession, however, firms increase the adjustment speed of R&D investment compared to that of fixed investment during the recession (2008-2009) and after the recession (2010-2016). Tahinakis (2014) uses panel data from 2005 to 2013 to investigate R&D investment and earning management in Eurozone firms in the aftermath of the crisis (2010-2013). Their findings show that firms reduce R&D spending to limit earning losses or declines after the crisis. The above findings show that R&D investment is extremely suffered from the financial shock.

2.3. Capital allocation efficiency and R&D investment decisions

Capital allocation is the process of distributing and investing a firm's financial resources in ways that increase value-creation and long-term financial stability. A fundamental task of a firm's managers and board is to allocate capital efficiently. Capital allocation efficiency fosters maximize a firm's profit, sustainable growth, and success (Drobetz et al., 2019). Scholars argue that a firm gets higher capital allocation efficiency when the firm has a stronger adjustment of investment to changes in the firm's investment opportunities (Mortal & Reisel, 2013; Wurgler, 2000).

If a firm obtains capital allocation efficiency, the firm has used its capital in smart ways to increase the firm's financial performance by good reactions in investments following growth opportunities. Smarter capital allocation strongly encourages capital flow among various investment sectors (including R&D investment) to gain maximum capital allocation efficiency. Thus, smarter investors actively allocate funding to potential R&D investment opportunities to obtain value-creation that breaks financial barriers for R&D activities.

Further, scholars posit that managerial ability positively influences investment efficiency (e.g., Gan, 2019). Firms with efficient capital allocation exhibit that firms possess the firm's board and managers with superior management capability as talented CEOs know how to monitor their firms' investments based on investment opportunities. The firm's managers and board are good at capital investment allocation, they will have sufficient confidence and managerial ability to make R&D investment decisions effectively that generates incentives to undertake new R&D opportunities. Thus, we would expect that capital allocation efficiency promotes R&D activities. We give a hypothesis,

Hypothesis 1: Capital allocation efficiency has a positive impact on R&D investment.

2.4. The moderating role of organizational forms

Strategic literature shows that diversification hurts R&D investment (Doukas & Pantzalis, 2003; Hitt et al., 1991; Hoskisson & Hitt, 1988; Hoskisson & Johnson, 1992). Keats and O'Neill (2001) argue that the scope of the organization rises when firms pursuing a diversification that offers a high administrative burden. Specifically, corporate executives in highly diversified firms have limitations of the managerial capacity to deeply understand all multiple businesses (Hitt et al., 1994). Hence, headquarters are forced to decentralize authority to division managers and evaluate the results of managers by financial ratios (Hoskisson et al., 1993). Over-emphasizing financial controls leads to a managerial short-term orientation and less risk-taking (Hoskisson & Hitt, 1988), and thereby limit R&D spending in M-form firms (Hoskisson et al., 1993).

In contrast, financial economists argue that diversification with internal capital markets promotes R&D investment (Gertner et al., 1994; Stein, 1997; Williamson, 1975). Diversified firms can transfer capital among their businesses, called cross-subsidization. Businesses of diversified firms can access to cash flows of other businesses as well as their cash flows that generate broader internal financial resources to foster innovation. However, diversified firms have inefficient capital allocation due to cross-subsidization from higher to lower-performing businesses (Berger & Ofek, 1995; Scharfstein & Stein, 2000), or overinvestment in units owning low opportunities (Berger & Ofek, 1995), or information asymmetry between headquarters and division managers (Harris & Raviv, 1996). Inefficient capital allocation causes R&D underinvestment in diversified firms (Klein & Wuebker, 2020).

A diversified firm's capital allocation efficiency reflects that the firm exploits its internal capital markets effectively by transferring capital resources from businesses with low investment opportunities to ones with high growth opportunities. ‘Smarter-money’ effects of diversification create generous internal financial resources that limit barriers to obtaining funding from the imperfect external capital markets for fostering R&D activities. Further, diversified firms have superior internal information, control rights, and selective interventions to make R&D investment decisions better than external investors in focused firms mainly using external capital markets (Stein, 1997). We assume that diversification with financial advantage due to internal capital markets will create a complementing effect on the association between capital allocation efficiency and R&D investment. We give a hypothesis,

Hypothesis 2: The joint effect of capital allocation efficiency and diversification has a positive impact on R&D investment.

2.5. The moderating role of organizational forms in the context of after facing financial shocks

In the context of an economic downturn, the role of flexibility abilities in meeting the newly changing customer demand is more crucial. Innovation activities in the economic downturn enable firms to achieve a high competitive advantage (Hausman & Johnston, 2014). Technology development from investment in R&D help firms more flexible since R&D investments offer opportunities to generate new products (Sanchez, 1993). The above benefits offer incentives to implement new R&D projects in an economic downturn. However, the majority of firms are forced to reduce innovation activities due to scared funding after the crisis. While diversified firms have financial edge due to internal capital markets that finance R&D projects that may not obtain funding from external credit supply in the post-crisis period.

However, undertaking R&D investment requires not only finance capacity, but also managerial ability to obtain high potential returns of R&D investment in an unstable period. Thus, not all diversified firms can turn a financial edge into a competitive advantage by raising R&D investment in an economic downturn. Beckmann et al. (2012) find that only top diversified firms who maintain relatively stable operating cash flow, avoid reduction and evenly increase R&D investment to achieve a competitive edge during the recession.

We propose that only diversified firms with superior managerial ability in capital allocation may allocate their cash flows in smart ways to obtain financial stability, and thereby promote R&D activities after the crisis. Moreover, outperforming diversified firms in investment allocation have more confidence to take risks than underperforming ones in an unstable period. While focused firms with high capital allocation efficiency may still reduce R&D investment due to poor internal financial functions. We give a hypothesis;

Hypothesis 3: The joint effect of capital allocation efficiency and diversification has a greater positive impact on R&D investment after the crisis compared to before the crisis.

3. Methodology

3.1. Data and samples

To examine our predictions, we use a sample of US firms during the 2003-2013 period which is drawn from the Compustat Industry Segment database. Following Berger and Ofek (1995), we remove firm-years with any financial segments (i.e., SIC codes 6000 - 6999) and exclude observations with negative segment sales or total sales or R&D expenditures. We further remove firm-year observations whose sum of segment sales was not within 1% of the firm's total sales or the sum of segment assets was not within 25% of the firm's total assets in that year. We also require observations having total sales equal to or above $20 million. To avoid the potential issues with outliers, we remove observations of variables beyond the range of the 1st and 99th percentiles in their distributions. The final sample is 7978 firm-year observations including 1542 observations belong to diversified firms, and 6436 observations come from focused firms.

3.2. Measurements

3.2.1. Dependent variables

The explained variable is R&D intensity which is the ratio of R&D spending over total sales (Baysinger & Hoskisson, 1989).

3.2.2. Independent variables

Following Rajan et al. (2000), we use Absolute Value Added by Internal Capital Allocation (AVA) as a proxy for capital allocation efficiency. AVA measures the extent to which a firm better do in investment decision-making compared to others in the same industry.

$$\text{AVA} = \frac{\sum_{j=1}^{n} assets_j * (q_j - 1) * (\frac{capx_j}{assets_j} - \frac{capx_j^{ss}}{assets_j^{ss}})}{Total\ firm\ assets}$$

Where j is each one of the firm' segments, q is the median market-to-assets ratio of single-segment firms in the same industry of segment j and year, $\frac{capx_j^{ss}}{assets_j^{ss}}$ is the average investment rate of single-segment firms in the same industry and year of segment j.

We create a dummy variable Post-crisis (T) which equals one if the year belongs to after the crisis in 2008 (2009-2013) and otherwise zero (2003-2007).

Also, we create a dummy variable Diversification (Div), which equals one if the firm reported two or more businesses in different four-digit SIC codes at the end of its fiscal year and otherwise zero.

3.2.3. Control variables

We use return on assets (ROA), firm size, firm leverage, cash, industry R&D intensity, and Tobin Q as control variables. ROA is the ratio of a firm's net income over its total assets (Hitt et al., 1991). Size is calculated by taking the natural logarithm of a firm's asset (Baysinger & Hoskisson, 1989). Leverage is calculated as the ratio of a firm's total debt to its total assets (Myers, 1977). Cash is the ratio of cash and cash equivalents over total assets (Baysinger & Hoskisson, 1989). Industry

R&D investment is the average of firm R&D intensity among firms in the same industry (at 2-digit SIC codes) in each year (Hitt et al., 1991). Further, we use Tobin Q to control the impact of investment opportunities on R&D investment in the aftermath of the crisis (Choi et al., 2014; Chung, 2017).

4. Results

4.1. Main results

Table 1 exhibits descriptive statistics and correlations for describing the variables. Almost all correlation coefficients are low; and that all are below the accepted cutoff value of 0.80 (Judge et al., 1980). Our analyses have no serious problems related to multicollinearity.

Table 1. Descriptive statistics and correlations

	Mean	SD	1	2	3	4	5	6	7	8	9
1.R&D intensity	0.127	0.197									
2. Ava	-0.003	0.030	-0.049*								
3.Diversification (Div)	0.193	0.395	-0.226*	0.023*							
4.Post-crisis (T)	0.426	0.494	0.025*	0.006	-0.017						
5.ROA	-0.002	0.148	-0.413*	0.044*	0.076*	-0.016					
6.Industry R&D	0.129	0.093	0.473*	-0.025*	-0.083*	0.067*	-0.146*				
7.Size	5.721	1.676	-0.086*	0.046*	0.219*	0.090*	0.263*	-0.077*			
8.Leverage	0.435	0.255	-0.055*	0.019	0.156*	0.031*	-0.222*	-0.128*	0.157*		
9.Cash	0.275	0.222	0.504*	-0.098*	-0.362*	0.013	-0.128*	0.367*	-0.202*	-0.323*	
10.Tobin Q	2.272	1.601	0.212*	0.062*	-0.182*	-0.048*	0.066*	0.196*	-0.030*	-0.062*	0.392*

Note: n = 7978 firm-year observations

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Our data set is a pooled time-series cross-sectional database that has the possibility of cross-sectional variables and within-unit serial correlation. Thus, we adopt feasible generalized least squares (FGLS) regression models (Greene, 1993; Hitt et al., 1998; Wooldridge, 2002). FGLS allows the analysis to control for auto-correlation and cross-sectional variables (Dielman, 1983). We used mean-centered continous variables before entering interaction terms. The main results is shown in Table 2. We find that ROA, Size, Leverage, Cash, Tobin Q, and Industry R&D intensity are significant in all models. The results show that external financial constraints hurt the overall R&D investment trend after the crisis. Further, diversification declines R&D spending.

Hypothesis 1 suggests that capital allocation efficiency positively promotes R&D intensity. In Model 1, the estimated coefficient of AVA has a positive significant influence on R&D intensity (0.048, $p \leq 0.01$). It supports Hypothesis 1.

Hypothesis 2 predicts that the joint effect of capital allocation efficiency and diversification is positively related to R&D investment. In Model 3, Ava x Div has a positive and significant coefficient (0.075, $p \leq 0.01$). It supports Hypothesis 2.

Finally, Hypothesis 3 predicts that the joint effects of capital allocation efficiency and diversification more strongly foster R&D investment after the shock than before the shock. Model 7 shows that the indicator AVA x Div x T has a positive influence on R&D intensity (0.380, $p \leq 0.01$). It supports Hypothesis 5.

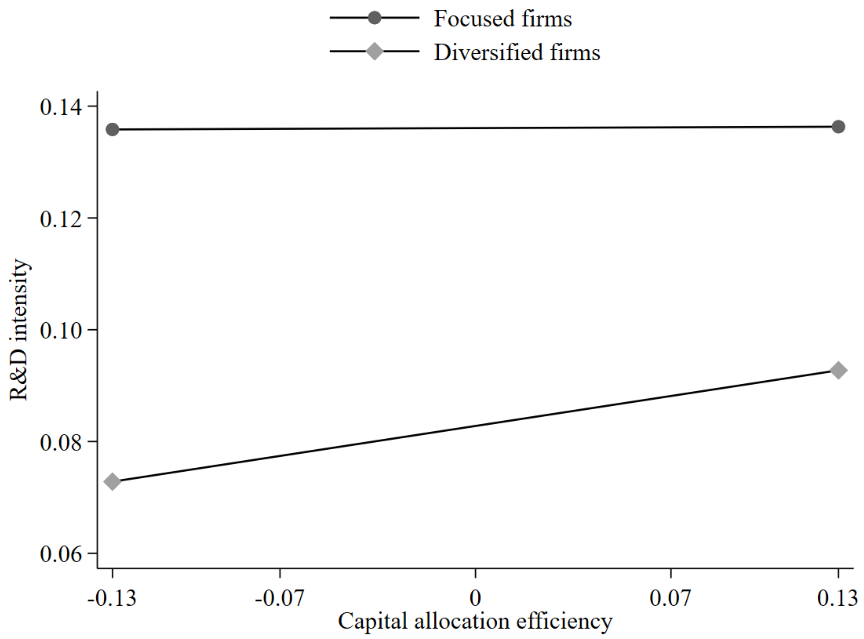

Figure 1: The impact of capital allocation and diversification on R&D intensity

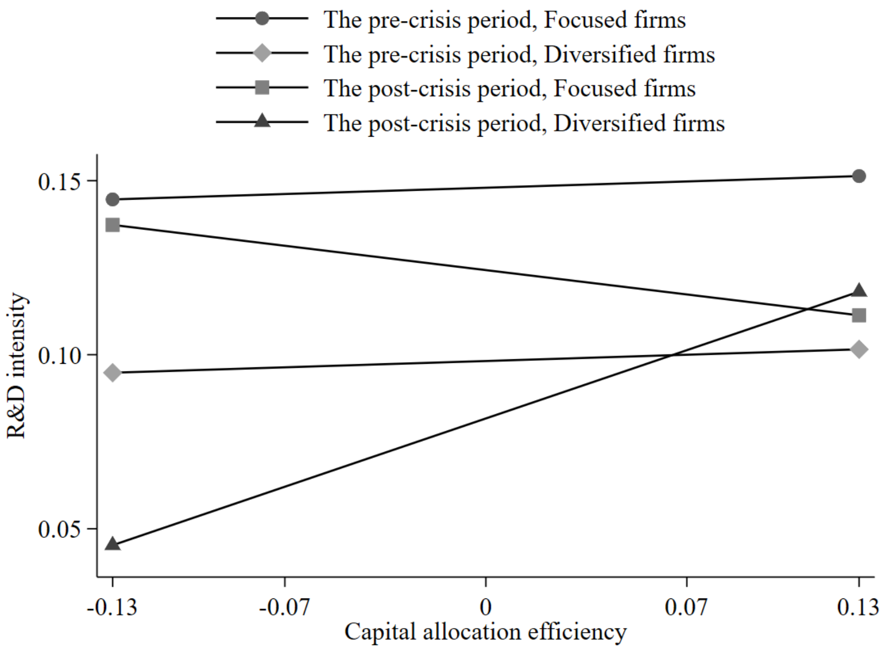

Figure 2: The impact of capital allocation, diversification and dummy Post-crisis on R&D intensity

Table 2. Results of pooled sample analyses of R&D intensity

Dependent variable: R&D intensity

	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.104***	-0.083***	-0.083***	-0.085***	-0.086***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
ROA	-0.364***	-0.360***	-0.360***	-0.367***	-0.372***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Size	0.012***	0.013***	0.013***	0.013***	0.013***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash	0.247***	0.233***	0.227***	0.250***	0.250***
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)
Industry R&D	0.692***	0.717***	0.709***	0.702***	0.712***
	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Leverage	0.004***	-0.003***	-0.004***	-0.002	-0.002**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Tobin Q	0.004***	0.002***	0.002***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Post-crisis (T)		-0.023***	-0.021***	-0.025***	-0.024***
		(0.001)	(0.001)	(0.001)	(0.001)
AVA	0.048***	0.017***	0.002	-0.022***	0.026***
	(0.003)	(0.004)	(0.003)	(0.008)	(0.006)
Diversified (Div)		-0.054***	-0.053***	-0.051***	-0.050***
		(0.001)	(0.001)	(0.001)	(0.001)
AVA x Div			0.075***	0.116***	4.01E-05
			(0.007)	(0.011)	(0.010)
AVA x T				-0.008	-0.126***
				(0.009)	(0.012)
Div x T				0.003***	0.007***
				(0.001)	(0.001)
AVA x Div x T					0.380***
					(0.024)

Year dummies	Yes	Yes	Yes	Yes	Yes
Wald	6.06E+07***	576665.61***	313241.62***	1.52E+07***	3.65E+07***
Observations	7,978	7,978	7,978	7,978	7,978

*Note: Standard errors are in parentheses. Multicollinearity is not present. *** p<0.01, ** p<0.05, * p<0.1*

4.2. Robustness check

We do robustness check of our findings by controlling Self-selection biases. Our study aims to examine the impact of capital allocation efficiency, diversification on R&D investment in the context of the credit supply shock. As there are endogeneity problems in the decision to engage in diversification (Campa & Kedia, 2002), we use Heckman's two-step approach. In the first step, we introduce a selection equation (Heckman, 1979) that is a probit model regressing a dummy diversification on firm characteristics (such as ROA, Cash, Size, Leverage, and Minority interest - MI) and industry characteristics (Industry attractiveness and Firm's value relative). We use Industry attractiveness, Firm's value relative (Campa & Kedia, 2002) and dummy Minority interest (Dimitrov & Tice, 2006; Kuppuswamy & Villalonga, 2016) as exogenous variables to meet the requirement of Heckman's method. Industry attractiveness is measured by the ratio of diversified firms to all firms in the industry. A firm's value relative measures the firm's value relative to the median value of all firms in the same industry in that year. Minority interest is a binary variable with one value if a firm has nonzero the amount of minority interest on its balance sheet and otherwise 0.

Table 3. Results of probit regression analysis for diversification choice

Dependent variable: Selection	
	(1)
Constant	-13.66***
	(0.502)
Industry attractiveness	16.22***
	(0.619)
Firm value relative	-0.172
	(0.114)
MI	0.586***
	(0.148)
ROA	-0.128
	(0.420)
Cash	-6.373***
	(0.543)
Size	0.846***
	(0.0575)

Leverage	0.784***
	(0.269)
Log-likelihood test statistic	4.026***
	(0.0631)
Wald $\chi 2$	1080.57***

Standard errors are in parentheses.

**** p<0.01, ** p<0.05, * p<0.1*

Table 3 exhibits that Industry attractiveness, MI, Size, and Leverage is positively and significantly associated with diversification choices. Cash is negatively significant in predicting the firm's diversification choice, while ROA and a firm's value relative are not significant. We used the fitted value from the first step (Lamda) in the first step in the main analyses.

Table 4 shows the results of our analyses for Hypotheses in the second step of the Heckman approach. The findings highly support our predictions after controlling Self-selection biases.

Table 4. Results of pooled sample analyses of R&D intensity (Controlling Self-Selection).

Dependent variable: R&D intensity					
	Model 1	Model 2	Model 3	Model 4	Model 5
Intercept	-0.104***	-0.011***	-0.009***	-0.003	-0.001
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
ROA	-0.364***	-0.353***	-0.349***	-0.353***	-0.346***
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Size	0.012***	0.005***	0.005***	0.004***	0.004***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash	0.247***	0.299***	0.299***	0.306***	0.303***
	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)
Industry R&D	0.692***	0.743***	0.735***	0.705***	0.711***
	(0.005)	(0.003)	(0.003)	(0.003)	(0.003)
Leverage	0.004***	0.008***	0.009***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Tobin Q	0.004***	0.003***	0.003***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Post-crisis (T)		-0.020***	-0.019***	-0.022***	-0.023***
		(0.001)	(0.001)	(0.001)	(0.001)
AVA	0.048***	0.037***	0.029***	0.027***	0.018***

	(0.003)	(0.003)	(0.005)	(0.007)	(0.004)
Diversified (Div)		-0.056***	-0.057***	-0.060***	-0.061***
		(0.001)	(0.001)	(0.001)	(0.001)
AVA x Div			0.041***	0.038***	0.003
			(0.009)	(0.008)	(0.010)
AVA x T				-0.031**	-0.057***
				(0.012)	(0.009)
Div x T				0.012***	0.011***
				(0.001)	(0.001)
AVA x Div x T					0.155***
					(0.031)
Lamda	-	-0.008***	-0.008***	-0.008***	-0.008***
		(0.000)	(0.000)	(0.000)	(0.000)
Year dummies	Yes	Yes	Yes	Yes	Yes
Wald	6.06E+07***	1786840***	1224381***	1.13E+07***	2596795***
Observations	7,978	7,978	7,978	7,978	7,978

*Note: Standard errors are in parentheses. Multicollinearity is not present. *** p<0.01, ** p<0.05, * p<0.1*

5. Discussions and conclusions

This research is designed to examine how the role of capital allocation efficiency and diversification as well as their interaction for firm innovation in the aftermath of the crisis. Our findings extend the growing academic literature about capital allocation efficiency and R&D investment. Our results illustrate that capital allocation efficiency positively fosters R&D investment. It indicates that firms smartly using financial resources tend to push cash flows into other areas such as R&D investment to maximize the efficiency of capital allocation and gain a sustainable competitive advantage due to innovation. Further, a firm is good at distributing in capital investments (long-term and high-risk projects), the firm has sufficient confidence and incentives to invest in R&D.

Our analysis confirms that diversified firms have a lower R&D spending than focused firms (e.g., Hoskisson & Hitt, 1988). We extend prior findings by examining the impact of diversification on R&D investment in the presence of capital allocation efficiency and external financial constraints after the crisis. The findings show that the benefits of capital allocation efficiency on R&D spending are greater in diversified firms that can raise funds from internal capital markets while focused firms commonly raise funds from external institutions. Further, the results exhibit that diversified firms have a lower reduction in R&D spending than focused firms in the post-crisis period.

Interestingly, our findings contribute to the growing literature about the value of capital allocation in diversified firms in conditions of a highly turbulent environment (Hovakimian, 2011;

Kuppuswamy & Villalonga, 2016). Hovakimian (2011) finds that when external financial supply is hard to access and costly in recessions, conglomerates have incentives to improve the efficiency of capital transfers among their firm's segment. From this advantage, Kuppuswamy and Villalonga (2016) find that capital allocation performance in diversified firms increases during the financial crisis rather than focused firms. We extend them by investigating the role of capital allocation efficiency and diversification for R&D investment decisions in conditions of external financial constraints after the crisis. Our analysis shows that firms with high capital allocation efficiency maintain and evenly increase R&D spending in the post-crisis period when they have a financial advantage. Specifically, diversified firms with efficient capital allocation ability can exploit their financial edge due to internal capital markets to foster R&D projects that may not obtain funding from external credit suppliers after the crisis. While their focused peers have to limit R&D expenditures because of limited funding. It indicates a big gap between diversified firms outperforming capital allocation and their focused counterparts in R&D spending in the dynamic period. Also, this implies that not all diversified firms are willing to increase R&D expenditures, only diversified firms with high internal capital allocation efficiency strongly raise R&D spending in an economic downturn. Also, Beckmann et al. (2012) find that only top diversified firms maintain and expand R&D investment in the presence of external financial constraints. Finally, our study controls Self-selection biases by using the Heckman method. The results highly confirm all Hypotheses that prove our findings cannot be attributed to sampling selection biases.

Our study also has practical implications. Our findings posit that investment management ability efficiently plays a crucial role to foster R&D investment. Further, our study exhibits that diversified firms show discount value by reducing R&D spending. However, when diversified firms do well in capital allocation, they may enhance firm value by promoting R&D investment rather than focused firms. Interestingly, our paper help managers and policy-makers understand the intrinsic value of capital allocation efficiency and diversification that enable firms against to suddenly exogenous factors. In the credit shock, diversified firms with outperforming capital allocation system can deploy their financial advantage for investing in R&D. In contrast, their focused counterparts having limited funding due to difficulties to obtain external funding and poorly internal finance are forced to reduce R&D expenditures in the post-crisis period. This indicates that the joint of capital allocation efficiency and internal capital markets provide the best value for diversified firms to debate the negative shock and achieve competitive advantage. In practice, while major firms reduced R&D spending in the economic downturn, several top diversified firms still maintain and increase R&D spending after the shock, for example, diversified firms in the health care industry such as: Pfizer increased at 20% R&D expenditure in 2010 compared to in 2009 ($US 9.413 million) and its R&D intensity was 13.9%; Merck increased at 53% R&D expenditure and its R&D intensity was about 18% in the same year. General Motors – a diversified firm in the automobile industry - raised 16% R&D expenditure and its R&D intensity was 5.1% in 2010 (Jaruzelski, Loehr, and Holman, 2011). Also, General Electric company enhances R&D activities in the aftermath of the crisis that generates Apple's iPod and fuel-efficient aircraft engines (Scheck & Glader, 2009).

Our study also remains questions that open for future research. Our research mainly emphasizes R&D investment between diversified firms and focused firms without consideration types of diversification. Scholars posit that unrelated firms and related firms have financial advantages differently in the presence of external financial constraints (Kuppuswamy & Villalonga, 2016); and behave different R&D investment (Hoskisson & Hitt, 1988). It will be interesting to consider how unrelated firms have reactions in R&D investment relative to related firms when they get efficient capital allocation in the credit shock. Moreover, this research is confined to only US firms that has different organizational forms and firm's characteristics behaving R&D investment differently after the crisis compared to peers in other countries. It will be interesting to explore how the role of capital allocation efficiency and diversification for R&D investment at the same period in different countries. For instance, China, who is an emerging economy and one of the fastest growing economies on over the world after the crisis, have highly supports and welcome from governments to achieve an emergent innovation following the crisis (Bruche, 2009). Further, our study focuses on innovation inputs without offering insights related to innovation outputs. Future studies may investigate the crucial roles of capital allocation efficiency and diversification on the innovation outcomes such as patents and/or new product development in the unstable period.

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Enhancing Customer Retail Loyalty and Ewom Behavior Through Smart Retail Technology? A Case Study in The Vietnamese Retail Sector

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ABSTRACT

Because of the fast-growing of SRT in the digital era, the retail sector also has a transformation in the way of interacting with customers and day-to-day activities. This study thus employs the value-based adoption model to investigate customer retail loyalty and eWOM behavior after experiencing the SRT through the customers' value-based perspective that may be neglected in prior studies. A total of 515 survey data were collected and analyzed. By considering the customers' perception of SRT in both benefits and sacrifices aspects which shape customers' perceived value of SRT, findings show that the customers' perceived value of SRT has a positive relationship with retail store loyalty and eWOM behavior of customers.

Keywords: Smart retail technology (SRT), Value-based adoption model, SOR (Stimulus-Organism-Response) model, Model Retail loyalty, eWOM, Perceived value of SRT.

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The Impacts of Strategic Leadership; And Continuous Learning on Knowledge Sharing and Firm Innovation

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ABSTRACT

Firm innovation is one of the critical ways to maintain a competitive edge in today's increasingly volatile business environment. In this study, we examine the relationship between strategic leadership, continuous learning, knowledge sharing, and organizational innovation. Research data is collected from 173 employees who are team leaders/ department heads/ directors at enterprises in Vietnam. Research results indicate that strategic leadership, and continuous learning have positive impacts on knowledge sharing, and firm innovation. In addition, the study also explores the mediating role of knowledge sharing among these relationships.

Keywords: Continuous learning; Strategic leadership; Knowledge-sharing; Firm Innovation.

1. Introduction

A severe global economic downturn is expected in 2023, as the International Monetary Fund (IMF) has forecasted that global growth in 2023 will be 2.7%, down 0.2% from the July 2022 report. At the same time, the report also warns that the worst is yet to come. In December 2022, the World Bank (WB) also said that Vietnam's two growth drivers, export and domestic demand, both slowed down due to the influence of weak external demand and the slow recovery of post-covid consumption (GSO, 2022). Faced with these difficulties, on January 3, 2023, during the online conference to develop a socio-economic development plan 2023, Prime Minister Pham Minh Chinh gave the motto "turning danger into chances". According to experts, "turning danger into chances" requires Vietnamese businesses to expand innovation, and to determine the attitude to always be proactive and flexible to adapt to fluctuations in the market and the economy. Innovation is currently an action-triggering term in businesses in Vietnam (Vinh, 2023). Some evidence shows that businesses that invested heavily in innovation during the recent global pandemic will reap better business results than their competitors. Research by (Nhạ & Quân, 2013) also suggests that after the

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downturn of economic growth, countries like Singapore and China have risen strongly through large investments in innovation. This is also an example demonstrating the importance of innovation to economic growth. However, the percentage of enterprises in Vietnam that are capable of scaling up innovation is generally low. According to the WIPO report in 2021, Vietnam is ranked 44th out of 132 countries and economies in the survey on the Global Innovation Index (GII).

Knowledge is considered an important resource for organizations to achieve innovation and sustainable competitive advantage (Özbebek & Kilicarslan Toplu, 2011). Many recent studies emphasize that employees in organizations possess different knowledge backgrounds, which is more or less expressed through their thinking ability and problem-solving (Abu-Shanab & Subaih, 2019). Knowledge sharing enables employees to learn and improve their knowledge and problem-solving abilities through the experiences of others. Knowledge sharing helps create a collaborative learning environment, where individuals participate in gathering and contributing knowledge to generate collective knowledge power among everyone, thus increasing creativity, and promoting an increase in ideas for innovation (Arsawan et al., 2022). Although there have been many studies on the relationship between knowledge sharing and firm innovation in the world and in Vietnam, there is currently a lack of research that simultaneously explores the factors of strategic leadership, continuous learning, knowledge sharing, and firm innovation in the same research topic and the relationship between these factors. Meanwhile, continuous learning enables employees to stay updated with the latest industry trends, and their problem-solving abilities, and promotes innovation within the organization. Strategic leadership helps establish a shared vision for innovation, make important decisions, and align organizational resources to achieve its goals. Aware of the need to examine the relationship between these factors, the authors carried out the topic: "Research the impact of strategic leadership, continuous learning on knowledge sharing and firm innovation”. In this study, the verification and re-evaluation of the scales were built on the basis of the synthesis of previous studies to provide a suitable model in the Vietnamese context.

2. Hypotheses and research models

2.1. Strategic leadership (SL) and its relationship with knowledge- sharing (KS) and firm innovation (FI)

Strategic leadership is the intellect and foresight of planning and implementing plans in an uncertain, complex strategic environment (Guillot, 2003). Other, strategic leadership is the act of leaders providing support and utilizing learning strategically to attain exceptional outcomes (Marsick & Watkins, 2003).

Knowledge sharing is the act of providing knowledge to others, and sharing knowledge between individuals is a process in which knowledge is transformed into a form that others can understand, absorb, and use (Ipe, 2003).

Innovation is the process of creating, accepting, and implementing new ideas, processes, products, or services (Calantone et al., 2002.; Liao, 2006). A company that wishes to innovate successfully should encourage its employees to generate lots of ideas, assess and develop prospective ideas, then successfully implement those ideas (Ng, 2004).

Leaders play an important role in helping others find direction and purpose through a shared vision (Griffin et al., 2010). Vision also helps leaders make decisions intelligent decisions to achieve the ultimate goal of the business (Bardhan & Patwardhan, 2014). Having a common vision helps organizational members tend to research similar topics or share their experiences and knowledge under the same goal (Liao, 2006). Members of an organization with a shared vision are more likely to become partners in sharing and exchanging their resources and knowledge with each other (Tsai & Ghoshal, 1998). Research by (Taminiau et al., 2009) investigated and confirmed that strategic leaders have an important role in knowledge sharing among individuals, and thereby lead to innovation in the organization. Strategic leadership can be one of the tools that increase employees' innovative behavior through knowledge sharing (Gharama et al., 2020). In addition, strategic leadership is also seen as a catalyst and source of organizational creativity and innovation (Radi Al-Zoubi, 2012). A strategic leader's vision is more likely to see environmental trends affecting the future of the organization and provide information about industry trends and the direction of the organization to members of the organization, which enhances the level of organizational innovation (Elenkov et al., 2005). The previous study(Cortes & Herrmann, 2021) has also shown that strategic leadership promotes organizational innovation. Through these arguments, the authors propose the following hypothesis:

H1a: Strategic leadership has a positive impact on knowledge sharing.

H1b: Strategic leadership has a positive impact on firm innovation.

2.2. Continuous learning (CL) and its relationship with knowledge-sharing (KS) and firm innovation (FI)

Continuous learning is learning without beginning or end, which is the continuous process of learning and development, which can be done formally or informally, including thinking, consciously contemplating, and learning something (Jain & Martindale, 2012).

The rapid development of science and technology and artificial intelligence such as AI, and ChatGPT (Arif et al., 2023) has impacted the employment of workers in a diverse and complex way, with both positive sides and negative sides (Zarifhonarvar, 2023). Artificial intelligence technology can applicant in several professions such as digital assistants, robotics engineers... On the other hand, artificial intelligence technology can also automate many processes, leading to job losses in some industries. This requires workers to make continuous learning efforts to improve their knowledge (Zarifhonarvar, 2023). Continuous learning will keep employees up to date with the latest knowledge, skills, technologies, and trends in their field, which helps individuals develop their thinking and improve their ability to adapt to new situations change and solve problems more quickly and flexibly (Chanani & Wibowo, 2019). Employees will have a good motivation and attitude for sharing knowledge if the organization fosters learning, values, and rewards learning, and they are eager to open up and absorb new information. Through continuous learning, individuals gain a more comprehensive knowledge base and have better equipped to contribute to knowledge sharing efforts. They become more confident in their abilities and are more likely to share their knowledge with others. Research (Hsu, 2006; Karkoulian et al., 2013) indicates that continuous learning enhances knowledge sharing and internal motivation of employees. As employees continuous learning and absorb new knowledge, they can come up with new, more creative solutions to the problems they face at work or the problems facing the organization, it enhances employees' productivity while helping their organization gain a competitive advantage and create business innovation. Furthermore, continuous learning fosters a culture of experimentation and risk-taking within organizations. Individuals who are constantly learning are more likely to be open to trying new things and taking calculated risks. This is allowing them to explore new ideas and approaches without fear of failure, and encourages firm innovation. From these arguments, the authors propose the following hypothesis:

H2a: Continuous learning has a positive impact on knowledge sharing.

H2b: Continuous learning has a positive impact on firm innovation.

2.3. Knowledge sharing (KS) and firm innovation (FI)

Knowledge is critical to the innovation process, so employees must acquire, interact and disseminate knowledge within the organization to demonstrate innovative behaviors(Spender, 1996; Thornhill, 2006). An organization that wants to innovate effectively needs to encourage its members to generate a variety of ideas, evaluate and develop potential ideas, and successfully implement those ideas (Ng, 2004). Knowledge sharing is considered a fundamental tool to promote the innovative behavior of employees, facilitate innovation activities (Wang et al., 2017) and stimulate critical thinking reasoning, leading to an increased ability to translate ideas into innovation (Mura et al., 2013). When knowledge is shared among employees, they are more likely to construct, integrate, and explain information than simply pass it on to recipients (Zhu & Mu, 2016). This process stimulates participation in behavior innovation, including finding an opportunity for change and applying it to the work practices present (Abukhait et al., 2019). From that argument, the authors propose the following hypothesis:

H3: Knowledge sharing has a positive impact on firm innovation.

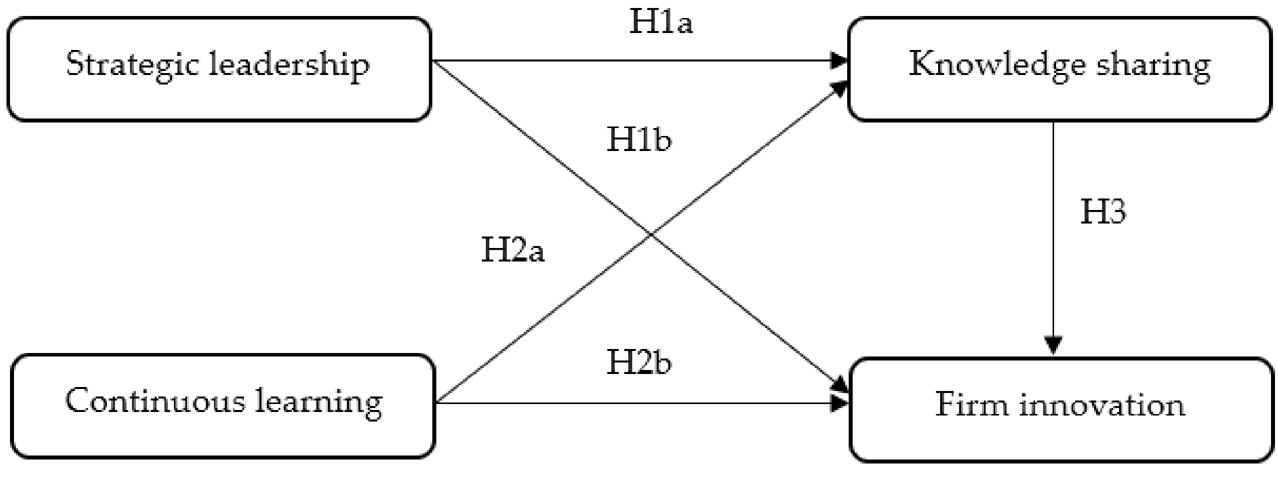

Figure 1. Research model

Source: Author's recommendation.

3. Research methods

This study surveyed leaders at the level of team leader/department head/director in enterprises in the city of Da Nang and Quang Nam Province, Vietnam. These leaders have a comprehensive understanding of the organization's goals, strategies, and objectives. They are responsible for driving innovation and ensuring that it aligns with the overall vision of the organization. By surveying leaders, authors can gain insights into their perspectives on innovation and its importance within the organization. Moreover, leaders play an important role in fostering a culture of innovation. They set the tone for the organization and influence the attitudes and behaviors of employees. Hence, surveying leaders can help identify the extent to which they encourage and support innovation, as well as any barriers or challenges they face in doing so. This study used a quantitative method with a questionnaire built using scales inherited from previous studies. Initially, a pilot survey was conducted with 20 leaders to assess the feasibility/ acceptability of an approach to be used in a larger-scale study. Then, conducted a large-scale formal investigation of 173 leaders. This research used an online survey method to collect data. The questionnaire is designed on the Google Form platform to collect data quickly, conveniently and inexpensively. Participants were approached using contact information from an available contact list, through invitations sent via social networking sites and email. Data for the main study were collected for 4 months. In this study, PLS (Partial Least Squares) was chosen since it is better suited to causal modeling when the sample size is small and research with an undeveloped theoretical foundation (Fornell & Bookstein, 1982; Hulland, 1999). Following the research by (Wixom & Watson, 2001), the application of PLS requires a minimum sample size of 30, and one that is 10 times greater than the number of items comprising the most formative constructs, or the number of independent constructs directly influencing a dependent construct. Our research's sample size of 173 meets these requirements. The software used for analyses was SmartPLS (Hansmann & Ringle, 2004).

Table 1. Demographic Information

Characteristics		**Frequency**	**Rate (%)**
Gender	Male	60	34.7
	Female	113	65.3
Age	Under 30 years old	84	48.6
	From 30 to under 50 years old	79	45.7
	50 years old or older	10	5.7
Job position	Leader	161	93.1
	Head of Department	10	5.8
	Director	2	1.1

Source: Author's data processing results.

4. Research results

4.1. Measurement model evaluation

Table 2. Reliability and Convergence Evaluation Indicators

	Outer loading	**CA**	**CR**	**AVE**	**Correlation Index HTMT**			
					CL	**FI**	**KS**	**SL**
CL	[0.8583 - 0.9006]	0.845	0.9065	0.7639				
FI	[0.7394 - 0.8579]	0.870	0.9064	0.6602	0.823			
KS	[0.7489 - 0.8630]	0.836	0.8911	0.6722	0.875	0.8937		

SL	[0.8265 - 0.8511]	0.856	0.9025	0.6984	0.882	0.8374	0.893

Source: Author's data processing results.

The measurement model was evaluated by analyzing the internal consistency reliability, convergent validity, and discriminant validity.

The internal consistency reliability was evaluated using factor loadings, Cronbach's alpha values, and composite reliability values. The results of the implementation of PLS Algorithm show that the observed variable FI5 has a factor loading coefficient less than 0.4, so it is excluded from the model. After removing the observed variable FI5, the obtained results are shown in Table 2. As shown in Table 2, factor loadings of all indicators are above the suggested cut-off of 0.7 (Hair Jr et al., 2016) showing that all indicators are reliable. Moreover, Cronbach's alpha values are also above the cut-off level of 0.7 (DeVellis, 2016) and the composite reliability value of all items is above 0.7 (Henseler et al., 2013). Therefore, the composite reliability of all the scales is acceptable. Table 2 also delineates that the average variance extracted (AVE) of all the scales is higher than the 0.5 cut-off level (Hair et al., 2009), hence, all the scales are shown to be convergence. The discriminant validity of the research variables used to be acceptable because of all Hetertotrait - Monotrait (HTMT) values over 0.9 (Henseler et al., 2015).

4.2. Structural Model Evaluation

The structural model was evaluated using: path coefficient by performing the complete bootstrapping method with a sub-sample of 5000, VIF coefficients, adjusted r-squared (R^2 adjusted), effect size (f^2), and prediction coefficients (Q^2, q^2).

Table 3. Results of testing the research hypotheses and mediating effect of knowledge sharing

	Effect	β	T values	P values
Direct	**SL -> KS**	0.4661	6.0023	0.0000
	SL -> FI	0.2515	3.0198	0.0025
	CL -> KS	0.3883	4.3177	0.0000
	CL -> FI	0.2152	2.8846	0.0039
	KS -> FI	0.4164	3.9483	0.0001
Indirect	**SL -> KS -> FI**	0.1941	3.7829	0.0002
	CL -> KS -> FI	0.1617	2.5085	0.0122

Source: Author's data processing results.

The results in Table 3 showed that the relationship between strategic leadership and knowledge sharing was significant and positive ($\beta = 0.4661$, $t = 6.0023$, $p < 0.05$), supporting Hypothesis 1a. Similarly, strategic leadership significantly and positively predicts firm innovation ($\beta = 0.2515$, $t = 3.0198$, $p < 0.05$), thus Hypothesis 1b was accepted. Moreover, the results also showed that continuous learning has a positive and significant impact on knowledge sharing and firm innovation ($\beta = 0.3883$, $t = 4.3177$, $p < 0:05$), ($\beta = 0.2152$, $t = 2.8846$, $p < 0.05$), respectively, therefore, supported Hypothesis 2a and 2b. Furthermore, knowledge sharing was found to have a positive and significant impact on firm innovation ($\beta = 0.4164$, $t = 3.9483$ $p < 0.05$) providing support for Hypothesis 3.

In addition, this study also confirmed that knowledge-sharing has a mediating effect on the relationship between strategic leadership, continuous learning and firm innovation.

Table 4. Evaluation coefficients: VIF, R^2, f^2, Q^2 and q^2

	VIF		R^2 Adjusted	f^2		Q^2	q^2	
	FI	**KS**		**FI**	**KS**		**FI**	**KS**
CL	2.7320	2.3123		0.0492	0.1815		0.0165	0.0754
FI			0.6498			0.4229		
KS	2.7836		0.6365	0.1810		0.4221	0.0721	
SL	2.9171	2.3123		0.0630	0.2616		0.0246	0.1071

Source: Author's data processing results.

The results of testing the structural model in Table 4 indicate that the VIF coefficient is consistently less than 3 (Hair et al. , 2019), therefore it can be concluded that there is no multicollinearity in the research model. Continuous learning and strategic leadership explain 63.65% (R^2 adjusted = 0.6365) of the variance of knowledge sharing. Strategic leadership, continuous learning and knowledge sharing explain 64.98% (R^2 adjusted = 0.6498) of the variance of firm innovation. The independent variables in the SEM model all have an influence on the dependent variable because the f^2 index is all over 0.02. However, the degree of influence between the variables is different. While the impact of strategic leadership and continuous learning on knowledge sharing and knowledge sharing on innovation is medium ($f^2_{SL\text{-}KS} = 0.2616$, $f^2_{CL\text{-}KS} = 0.1815$, $f^2_{KS\text{-}FI} = 0.1810$), the impact between strategic leadership and continuous learning on innovation is at a low level ($f^2_{SL\text{-}FI} = 0.0630$, $f^2_{CL\text{-}FI} = 0.0492$).

The results of Q^2 calculation are 0.4221, 0.4229 for knowledge sharing and firm innovation respectively. According to the study of (Hair et al. , 2019), the Q^2 value ranges from 0.25 - 0.5, demonstrating that this model has average predictive accuracy. q^2 coefficient represents the predictive relevance of inner model paths to the endogenous variable. According to (Cohen, 1988), the $q^2_{CL\text{-}KS} = 0.0754$, $q^2_{SL\text{-}KS} = 0.1071$ indicate the independent variables continuous learning and strategic leadership have low predictive power for the dependent variable knowledge sharing ($0.02 < q^2 < 0.15$). The $q^2_{CL\text{-}FI}$, $q^2_{KS\text{-}FI}$, and $q^2_{SL\text{-}FI}$ were 0.0165, 0.0721 and 0.0246, respectively, confirming continuous learning has very low predictive power for firm innovation, while two remaining variables have low predictive power for firm innovation.

5. Discussion and suggestions

In this study, the authors examined the influence of strategic leadership, continuous learning, and knowledge sharing on firm innovation. The moderating role of knowledge sharing in this relationship was also explored. In support of hypotheses 1a and 1b, the results confirmed that strategic leadership has a strong positive impact on knowledge sharing and firm innovation. This finding indicates that by strategic leadership, leaders can set clear goals and create an environment that encourages employees to share their knowledge and ideas, leading to increased collaboration, learning, and innovation within the organization (Taminiau et al., 2009). Furthermore, effective strategic leaders have the ability to inspire and motivate individuals to think creatively, take risks, explore new opportunities, and try new ideas (Gharama et al., 2020). Employees are provided resources and create a climate that supports innovation. Through their strategic decision-making process, leaders can align organizational objectives with the exploration and exploitation of new ideas, leading to improved firm innovation and achieving competitive advantage. Based on these findings, it can be seen that organizations can benefit from implementing strategies to enhance strategic leadership capabilities. Therefore, leaders can actively take part in training programs that focus on nurturing visionary and transformational leadership behaviors. This will cultivate and enhance the skills and attributes necessary for effective leadership in today's dynamic and complex business environment. Similar to previous studies by (Cortes & Herrmann, 2021; Gharama et al., 2020; Karkoulian et al., 2013), our findings in this are in strongly support that strategic leadership has a strong positive impact on knowledge sharing and firm innovation. However, previous studies have mostly focused on investigating a specific area and they surveyed almost employees; in addition, the context and environment between studies are different. For this study, we investigated many different professional fields and focused on the survey subjects who were managers at all levels (team leader, department head, director).

This study also supports hypotheses 2a and 2b, the results confirm that continuous learning has a substantial impact on knowledge sharing and firm innovation. This relationship implies that the organization possesses a culture of continuous learning, in which learning is valued and employees are provided with opportunities to collaborate, be rewarded for their learning efforts and their colleagues are willing to open up and absorb new knowledge, they will be more active in sharing knowledge. To promote continuous learning in the organization, leaders should create mechanisms to protect people willing to help each other learn, and develop a system of rewards for learning equitably. In addition, leaders can also facilitate and support employees in learning to improve their professional knowledge and new skills through training programs, skills development courses, allowances for employees to participate in training programs, and creating virtual learning environments such as eLearning, web, combined study, and exams. In addition, technology artificial intelligence can be applied to create a personalized learning experience for each employee, with a system of reminders to motivate learners to stimulate self-study and continuous learning. This study also supports the findings of (Hsu, 2006; Karkoulian et al., 2013).

Our findings also indicated that knowledge sharing has a positive impact on firm innovation (Hypothesis H3 was supported). This demonstrates that knowledge sharing within the organization motivates employees to generate more ideas, evaluate and develop potential ideas, and stimulate critical thinking, leading to an increased ability to turn ideas into innovation. This is consistent with findings from previous studies (Abukhait et al., 2019; Arsawan et al., 2022; Liao, 2006). The research results suggest that leaders should implement tools and platforms that facilitate easy and efficient knowledge sharing, such as internal social networks, knowledge management systems, or online forums. These platforms can enable employees to share their insights, experiences, and best practices with their colleagues. Moreover, leaders should recognize and reward employees who willingly participate actively in knowledge sharing activities and foster a sense of pride and ownership in sharing their expertise. The last suggestion for leaders is to encourage individuals from different departments or teams to collaborate and exchange ideas. This is because cross-functional collaboration allows for diverse perspectives, leading to innovative solutions and breakthroughs.

The research results not only test the proposed hypotheses, but also confirm the significant role of knowledge-sharing in mediating the relationship between strategic leadership, continuous learning, and firm innovation. Previous studies have examined the mediating role of knowledge sharing, but in the relationship between other factors such as knowledge management practices and firm innovation (Ode & Ayavoo, 2020) or transformational leadership and innovation (Al-Husseini et al., 2021),...There are still no studies examining the mediating relationship between strategic leadership and continuous learning to organizational innovation. This can be considered as one of the new findings of this study. This result suggests that in an organization, if leaders implement strategic leadership, create, and promote a culture of continuous learning, and actively encourage knowledge-sharing within their organizations are more likely to drive innovation. The mediating effect of knowledge-sharing also highlights an important role of it and suggests that it acts as a bridge between strategic leadership, and continuous learning to firm innovation. When individuals in an organization actively share their knowledge and expertise with their colleagues, it enhances the collective intelligence of the organization, allowing for the exchange of ideas, promoting collaboration, and ultimately leading to the generation of innovative solutions. Furthermore, knowledge-sharing helps to encourage cross-functional collaboration between different departments, enabling them to contribute their diverse perspectives to the innovation process.

6. Limitations and directions of future research

Besides the above contributions, this study also has some limitations. The authors approach respondents according to a favorable sample depending on the previous relationship, so there is a large disparity between the number of respondents with different administrative levels, so the sample is not large enough and not highly representative. Moreover, our research only focuses on 2 factors affecting knowledge sharing: strategic leadership, and continuous learning, and 3 factors affecting firm innovation: knowledge sharing, strategic leadership, and continuous learning. Although these factors have yielded important research findings and results, there may be many other factors influencing knowledge sharing and firm innovation that have not been included in the research model. Therefore, future studies may consider doing qualitative research to exploit and explore the factors that have a stronger influence on knowledge sharing and firm innovation.

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APPENDIX

Appendix A. Scale items

	The Original scales	Sources
Strategic leadership	In my organization, leader mentor and coach those they lead.	(Jyothibabu et al., 2010; Leufvén et al., 2015)
	In my organization, leaders continually look for opportunities to learn.	
	In my organization, leaders ensure that the organization's actions are consistent with its values.	
	In my organization, leaders share up to date information with employees about competitors, industry trends, and organizational directions.	
Continuous learning	In my organization, people help each other learn.	(Leufvén et al., 2015)
	In my organization, people are given time to support learning.	
	In my organization, people are rewarded for learning.	
Knowledge sharing	It is easy to share knowledge between coworkers.	(Abu-Shanab & Subaih, 2019)
	The gained experiences are stored and shared in my company.	
	The knowledge inventory is open for all employees.	
	The company management and the environment encourages technology use for storing and utilization of knowledge for the future.	
Firm innovation	Our company frequently tries out new ideas.	(Calantone et al., 2002)
	Our company seeks out new ways to do things.	
	Our company is creative in its methods of operation.	
	Our company is often the first to market with new products and services.	
	Innovation in our company is perceived as too risky and is resisted.	
	Our new product introduction has increased over the last 5 years.	

Appendix B. Measurement model evaluation

B.1 Factor loading

Table 5. Factor loading including FI5

	CL	FI	KS	SL
CL1	0.8580			
CL2	0.9007			
CL3	0.8627			
FI1		0.8542		
FI2		0.8443		
FI3		0.8265		
FI4		0.7441		
FI5		0.0878		
FI6		0.7792		
KS1			0.8173	
KS2			0.8627	
KS3			0.7499	
KS4			0.8450	
SL1				0.8328
SL2				0.8322
SL3				0.8263
SL4				0.8513

Source: Author's data processing results.

Table 6. Factor loading after removing FI5

	CL	FI	KS	SL
CL1	0.8583			
CL2	0.9006			
CL3	0.8624			
FI1		0.8579		
FI2		0.8530		
FI3		0.8205		
FI4		0.7394		
FI6		0.7858		
KS1			0.8182	
KS2			0.8630	
KS3			0.7489	
KS4			0.8448	
SL1				0.8328
SL2				0.8322
SL3				0.8265
SL4				0.8511

Source: Author's data processing results.

B.2 Construct Reliability and Validity

Table 7. Reliability and Validity Evaluation Indicators

	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
CL	0.8454	0.8489	0.9065	0.7639
FI	0.8708	0.8781	0.9064	0.6602
KS	0.8363	0.8404	0.8911	0.6722
SL	0.8561	0.8581	0.9025	0.6984

Source: Author's data processing results.

B.3 Discriminant Validity

Table 8. Heterotrait-Monotrait Ratio (HTMT)

	CL	FI	KS	SL
CL				
FI	0.8234			
KS	0.8751	0.8937		
SL	0.8829	0.8374	0.8938	

Source: Author's data processing results.

Appendix C. Structural Model Evaluation

C.1 Path Coefficients

Table 9. Direct effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CL -> FI	0.2152	0.2080	0.0746	2.8846	0.0039
CL-> KS	0.3883	0.3763	0.0899	4.3177	0.0000
KS -> FI	0.4164	0.4104	0.1055	3.9483	0.0001
SL -> FI	0.2515	0.2593	0.0833	3.0198	0.0025
SL -> KS	0.4661	0.4726	0.0777	6.0023	0.0000

Source: Author's data processing results.

C.2 Indirect effect

Table 10. Indirect effect

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values
CL -> KS -> FI	0.1617	0.1581	0.0645	2.5085	0.0122

SL -> KS -> FI	0.1941	0.1915	0.0513	3.7829	0.0002

Source: Author's data processing results.

C.3 Collinearity Statistics (VIF)

Table 11. Inner VIF Values

	CL	FI	KS	SL
CL		2.7320	2.3123	
FI				
KS		2.7836		
SL		2.9171	2.3123	

Source: Author's data processing results.

C.4 R Square

Table 12. R^2 adjusted

	R Square	R Square Adjusted
FI	0.6559	0.6498
KS	0.6408	0.6365

Source: Author's data processing results.

C.5 f Square

Table 13. Effect size f^2

	CL	FI	KS	SL
CL		0.0492	0.1815	
FI				
KS		0.1810		
SL		0.0630	0.2616	

Source: Author's data processing results.

C.6 Q Square

Table 14. Out-of sample predictive power of knowledge sharing

	SSO	SSE	Q^2 (=1-SSE/SSO)
CL	519.0000	519.0000	
KS	692.0000	399.9358	0.4221
SL	692.0000	692.0000	

Table 15. Out-of sample predictive power of firm innovation

	SSO	SSE	Q^2 (=1-SSE/SSO)
CL	519.0000	519.0000	

FI	865.0000	499.2151	0.4229
KS	692.0000	692.0000	
SL	692.0000	692.0000	

Source: Author's data processing results.

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PART 5.
HUMAN RESOURCE MANAGEMENT & INNOVATION

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Factors Affecting Employee Commitment: Gen Z Case Study in Small and Medium Enterprises in Thanh Hoa Province

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ABSTRACT

This study aims to identify factors that influence Gen Z employees' commitment to small and medium enterprises in Thanh Hoa province. In the process of measuring the effect of factors on Gen Z's commitment to SMEs there, the researchers conducted a reliability test, exploratory factor analysis and linear regression model analysis to confirm the relationships of factors. Based on a survey of 487 valid respondents, the test results showed that 06 proposed factors positively impact Gen Z's commitment to SMEs. The level of impact is, respectively: Working environment, Job Characteristics, Compensation Policy, Development Opportunities, Leadership style and finally Organization's Reputation. The article also explains a deep understanding of Gen Z's characteristics affecting their commitment at work in the era in which Gen Z has been creating a new reality and change in management views for managers and organizations. Therefore, SMEs in Thanh Hoa province need appropriate HRM strategies to retain Gen Z employees for recovering, stabilizing and developing in the post-Covid 19 pandemic.

Keywords: Employee; Commitment; Gen Z; Small and Medium Enterprises (SMEs); Thanh Hoa Province

1. Introduction

For most businesses, human resources are the core factor of the company's growth and development. In the post-Covid 19 pandemic, companies are racing on the road to recovery; therefore, human resources are a unique asset and a decisive factor for the survival of businesses. Moreover, the world is entering an era of technical technology, coming to the presence of AI - artificial intelligence, which requires companies to have a young, creative and capable workforce to grasp these trends quickly, which is Generation Z (Gen Z). However, in the context of a volatile

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business environment, fierce competition, changes in technology and awareness of workers, especially in the minds of today's young generation, Gen Z employees' commitment is becoming a big challenge for businesses. Meanwhile, organizational commitment has become crucial to assessing employees' loyalty to the company [36].

Gen Z is the demographic group between the Millennials and the Alpha generation. This generation has grown up and started participating in the Vietnam labor market. According to data from the General Statistics Office, it is predicted that Gen Z will account for nearly 30% of Vietnam's working-age population by 2025 [22]. In Thanh Hoa province, more than 27,000 businesses are registered, of which 95% are small and medium enterprises (SMEs) with about 70,000 young employees of Gen Z. Although the scale is still limited, according to the annual statistics, the tremendous and comprehensive contribution of these SMEs to all aspects of society can be confirmed. Without exception, it is becoming increasingly important for SMEs in Thanh Hoa province to understand the factors that promote employees' commitment, especially as new generations - Gen Z with different values and needs when enter the workforce.

Although various individual studies examine the relationship between employee commitments, very little research focuses particularly on Gen Z. Research on factors affecting the work commitment of Gen Z employees is a relatively new field. However, in recent years, the number of studies on work motivation, satisfaction and commitment to the organization of Gen Z employees has begun to increase. Moreover, the post-Covid 19 era in the world of work has changed the game's rules and set new challenges for managers and organizations, mainly in light of employee behavior changes with an emphasis on young employees from Gen Z [4]. Determining human resources is one of the breakthroughs in the development process, especially for Gen Z with sharp thinking and the ability to access technology, facilities and resources; State agencies as well as SMEs in the province are focusing on solving the problem of attracting and developing high-quality young human resources, contributing to increasing competitive advantages, meeting development requirements of organizations and international economic integration. This study proposes to fill that gap with the objective: (1) to identify and analyze the factors that will increase the newest members of the workforce - Gen Z's commitment, (2) to suggest recommendations to help SMEs' employers in Thanh Hoa province have effective strategies to attract and retain GenZ employees in the future.

2. Literature Review and Research Model

2.1. Employee commitment

Commitment is defined as an employee's desire to remain an organization member. It is an act that represents an employee's level of involvement in the organization [7]. It is considered the psychological connection between an individual and their organization that makes them less likely to leave the organization voluntarily. Employees committed to their organizations feel integrated and understand organizational goals [9]. According to Dordevic (2004), the importance of commitment is employees' behavioral implications starting with a performance at work, absence, and other organizational behavior [16].

2.2. Generation Z employees and their characteristics

The Oxford Dictionary defines Generation Z as "*the group of people born between the late 1990s and the early 2010s, who are regarded as being very familiar with the Internet*". The first generation matured alongside advanced technologies [33], particularly the rapid evolution of how people communicate and interact [35]. Gen Z has some similar characteristics but many different features than previous generations (Table 1). They tend to like to work in an independent, highly creative environment. At the same time, they also require a high degree of flexibility in work and expect rapid advancement opportunities. Most Gen Z young people are trained with the necessary life skills to become global citizens. Many of them can use foreign languages and information technology effectively, contributing a lot to the development of industries related to technology, communication, marketing, e-commerce, etc.

Table 1: Compare the characteristics of Gen Z with other generations

Generation X	Generation Y	Generation Z
Diligence	Creativity	Entrepreneurship
Communicativeness	Impatience	Need for feedback
Loyalty	Average loyalty	The "here and now" generation
Skepticism	Indecisiveness	Pragmatism
Monotasking	Multi-tasking	Multi-tasking
Independence	Tech-savvy	The ability to connect the virtual and real worlds

Source: Edyta (2022) [19]

According to Dolot (2018), many studies describe Generation Z as a connected, communicating, content-centric, computerized, community-oriented, and changing generation. Gen Z relies heavily on smartphones to manage all aspects of their lives. The ability to function in both real and virtual worlds as complementary leads to a limitless amount of information they can get [15]. In the world of work, the sense of confidence in technology affects the choices Gen Z. It will make a difference from those made by previous generations and thus creates a challenge both to managers and human resource managers [26]

Gen Z grew up adapting to changes that occurred in the environment. They are brave, creative, and never lack initiative [13]. Research literature has shown that Gen Z seeks personal growth in the workplace and needs continuous feedback [27]. A survey conducted by McKenzie in 2022 emphasized the change in employees' expectation of feedback from periodic and instant feedback. On the other hand, Gen Z is more sensitive to criticism and is likely to translate this even more radically by leaving the workplace [17]. Their enjoyment factors at work differ from those of employees from previous generations; they are more driven by intrinsic motivation than previous generations [29].

Moreover, the Covid-19 period honed the intergenerational gap in the world of work. Studies conducted during this period showed that in a period of uncertainty, the need for stability and security stood out in Gen X in contrast to Gen Z, which did not view this value as necessary, but what was very important was pleasure derived from work [30]. Ongoing working from home is difficult for them, Gen Z feels less productive when they only work from a distance, and the hybrid work model is a complete solution for them. It is a generation that needs social interaction at work [32].

Gen Z employees are currently facing several challenges when participating in the domestic labor market, such as fierce competition to find jobs, unemployment, intergenerational conflicts in the workplace, limited access to resources and a lack of a tendency to commit to long-term work. It is also a matter of fact that "job-hopping" is quite common and normal for them [8]. The term "job-hopping" refers to certain circumstances in which an individual keeps switching between jobs. This behavior is undoubtedly associated with the concept of organizational commitment. Furthermore, both work satisfaction and motivation greatly influence employees' commitment to the company [31]. Therefore, to maintain Gen Z's motivation to work and fulfill its satisfaction in the organization, it is crucial to identify their work preferences and get an insight into their expectation of jobs [1].

(i) Working environment: The working environment is the conditions surrounding all activities of an employee in the organization. The working environment includes relevant physical and mental conditions that affect employees' working process and development. Businesses need to create a dynamic and creative working environment with an exciting and comfortable atmosphere because Gen Z employees are at most of the time at the company. Kubatova (2016) also emphasized that investment in conducive working environment practices can promote Gen Z employees' organizational retention [25].

H1: Working environment positively affects Gen Z employee's commitment to the enterprises

(ii) Compensation policy: is considered a retention factor affecting job satisfaction [20]. It is a fundamental factor in ensuring the daily lives of Gen Z in human resource management [3]. If employees are not satisfied with salaries and fringe benefits, they will have no choice other than to look for alternative organizations that will provide better wages and benefits [28]. The higher the compensation policy is, the higher the commitment of Gen Z employees.

H2: Compensation policy positively affects Gen Z employee's commitment to the enterprises

(iii) Job characteristics: Gen Z employees were proclive to work with large organizations that provided employment security. They value mentoring, problem-solving skills, and opportunities for professional development. Goh and Lee (2018) confirm these findings when they posit that Gen Z workers have long working hours, pressure to perform, and low pay as demotivating [23]. Furthermore, they value working on exciting tasks, cross-training, and professional growth at their workplace. The study suggested that job characteristics and issues pertinent to the immediate work environment have a bearing on the commitment of Gen Z employees.

H3: Job characteristics positively affect Gen Z employee's commitment to the enterprises

(iv) Development Opportunities: Organizations need to provide development opportunities (including career development and training) for Gen Z employees since when an employee learns and grows, they can support the organization's overall business goals. Employees who get learning opportunities tend to stay longer in the organization. Deloitte (2017) also found that Gen Z is ready to work hard but expects to move up quickly in their career [14].

H4: Development Opportunities positively affect the employee's commitment to the enterprises

(v) Organization's Reputation: Unlike previous generations, Gen Z employees pay great attention to corporate social responsibility. Gen Z is the first generation born and raised with the internet and digital technology. Gen Z has the ability to access information more widely and quickly. They tend to be sensitive and interested in social issues, such as environmental protection, business ethics, diversity and gender equality… Therefore, to attract and retain Gen Z employees, businesses need to meet the requirements of social responsibility and reputation [24, 37].

H5: Organization's Reputation positively affects Gen Z employee's commitment to the enterprises

(vi) Leadership style: is considered one of the most important elements of Gen Z commitment to work. Many studies investigate that leadership style has an impact on employee retention. Chitra (2013) concluded that most leaders' leadership style influences employee retention [11]. It is the same conclusion from Christeen (2015) that identified leadership style and management support is important features of employee retention, especially Gen Z employees [12]. Gen Z is critical and opinionated, does not accept things as obvious and therefore, conflict with managers and the organization is more frequent; their lack of fear of stability alongside high self-confidence allow employees to leave without fear and believing that this is the route to their personal and professional development.

H6: Leadership style positively affects Gen Z employee's commitment to the enterprises

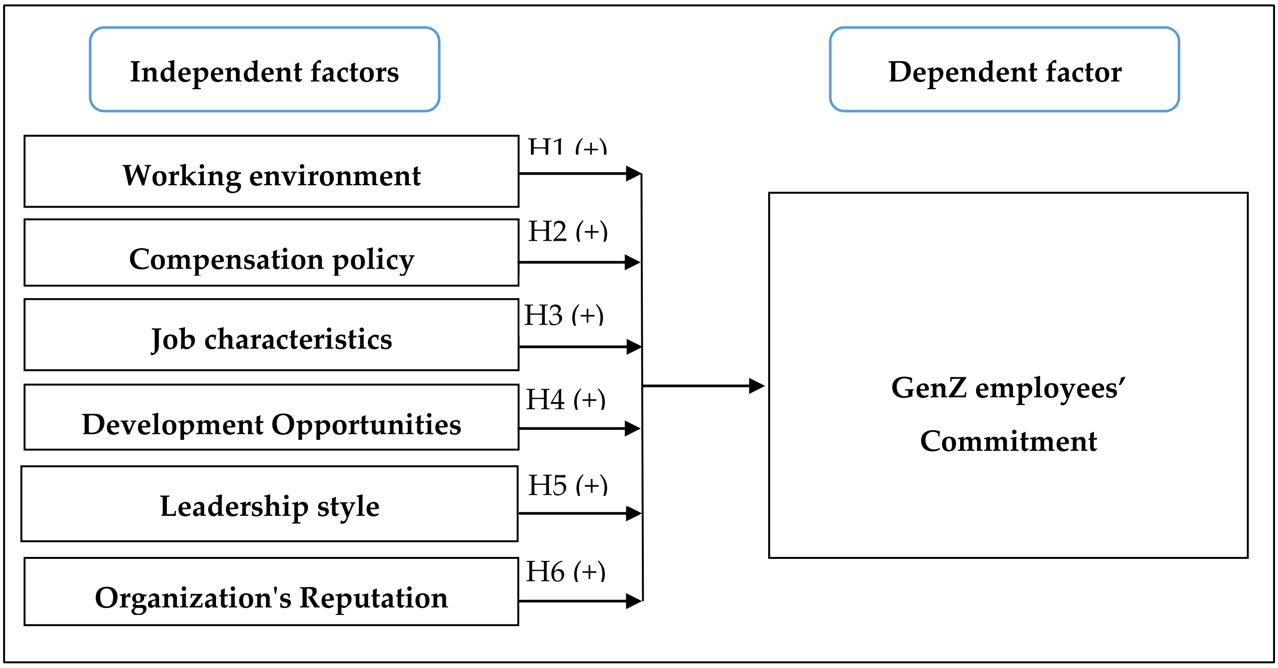

Figure 1: Research Model

3. Research Method

Research locale: Research in small and medium enterprises in Thanh Hoa province, with the distribution of the number of survey questionnaires according to the operation and location of enterprises in the province.

Sample size: refer to many sampling methods; this study agreed that the minimum sample size is 200 votes [2, 5]. Excluding the unqualified questionnaires and matching the research capacity, the research team distributed 500 questionnaires.

Sampling method: The study sample was selected based on the random sampling method of employees working for small and medium enterprises in Thanh Hoa province aged from 18 to 28 years old (born between 1995 and 2005) in both direct and online forms. The questionnaire was designed based on a 5-Likert scale ranging from strongly disagree to strongly agree.

Scale development: Aimen Ghaffar (2013) said that many dimensions were being used to explain the elements influencing job commitment proposed through the differing dimensions among organizations; the variations could be more obvious [6]. The study of job commitment among Gen Z is complex as it considers people's opinions and feelings; therefore, in this study, the researchers use the models proposed by some researchers as Maslow's needs theory, Herzberg's motivation-hygiene theory and adjust for Gen Z employees' characteristics. The scales were modified and supplemented to suit research purposes referenced from other researchers in this field. The number of observed variables on the final scale is 29. After receiving the questionnaires, conduct information cleaning, filter the questionnaires and encode necessary information in the questionnaires, enter data and analyze data using SPSS software version 22.0.

4. Results and Discussion

4.1. Findings

4.1.1. Descriptive analysis

The number of questionnaires to be distributed to the study survey is expected to be 500. The study collected 487 valid questionnaires for analysis. The basic information describing the respondents by age, gender, education levels, work fields, years of experience and marital status is presented on Table 2.

Table 2. Characteristics of the respondents

Characteristics		**Frequ-ency**	**Percent %**	**Characteristics**		**Frequ-ency**	**Percent %**
Age	18 - 22	182	37.37%	***Work Fields***	Agriculture, Forestry & Fish Products	82	16.84%
	23 - 28	305	62.63%		Mining and processing	76	15.61%
	Total	487	100%		Industrial production & construction	121	24.85%
Education Levels	College and Graduate	240	49.28%		Trade and services	178	36.55%
	Post Graduate	53	10.88%		Others	30	6.16%
					Total	487	100%
	Other	194	39.84%	***Years of experience***	< 3 years	226	46.4%
					> 3 years	261	53.6%
	Total	487	100%		Total	487	100%
Gender	Female	286	58.7%	***Have ever changed jobs?***	Yes	300	61.6%
	Male	201	41.3%		No	187	38.4%
	Total	487	100%		Total	487	100%

Most Gen Z employees surveyed are aged 23 to 28 (62.63%) with more than 60 percent trained at college level or higher. The number of employees by gender and years of experience are quite similar between groups whose work fields are in trade and services. These can show that this is a relatively young workforce and can devote much time and effort to the job. However, Gen Z employees who used to jump jobs are accounted for a much higher proportion of the two groups. Compared to previous generations, Gen Z is more comfortable choosing a career with the common idea of "jumping jobs" to choose a better or more suitable company when they are very young.

4.1.2. Cronbach's Alpha Reliability

Table 3 shows the reliability test of the scale. The result indicates that both scales have a reasonably strong Cronbach's Alpha coefficient with the Corrected item - Total correlation are all more than 0.3 except for variable JC5 because its correlation coefficients of the total variable is less than 0.3. Thus, the remaining 28 observed variables measure the same concepts and the scales are reliable for the following steps. Descriptive statistics of the average response value according to the scales from employees are also shown in Table 3. Accordingly, the average values fluctuate from 3.55 to 4.01, representing the different assessment levels.

Table 3. Results of Reliability Test

No	Factors	No of variables	Description of scales	Mean	Cronbach's Alpha
1	Working environment	5	- Open and airy working space - Good working relationship - Knowledge sharing among colleagues - A workplace that uses many technologies - Equality at work	3.86	0.707
2	Compensation policy	3	- Satisfactory salary policy - A variety of reward and welfare policies - Salary and bonus policy in accordance with the dedication capacity of employees	3.55	0.816
3	Job Characteristics	6	- Stable job - Flexible work and time - The job requires initiative and creativity - Interesting, meaningful work - Work recognized by society - Multitasking	3.89	0.713
4	Development Opportunities	3	- Opportunity for training and development - Promotion opportunities - Opportunity to achieve personal goals	3.67	0.824
5	Leadership style	4	- Sociable superiors - Superiors provide support - Superiors recognize and praise the dedication - Friendly leadership style	3.81	0.842
6	Organization's Reputation	3	- Company with a good reputation - A unique corporate culture	3.68	0.795

			- The company demonstrates social responsibility to the community		
7	GenZ employees' Commitment	5	- I strive to accomplish well-assigned tasks - I desire to remain a member of the organization - Organization's problems are my own - I endeavor to improve my performance - I have no intention of changing jobs	3.86	0.866

4.1.3. Exploratory Factor Analysis (EFA)

The KMO test results for independent variables are as on Table 4. The test results are acceptable because the KMO coefficient is 0.821 (> 0.5) at Significance level. = 0.000 (< 0.05), and the Eigenvalues coefficient is 1.360 (>1), which is consistent with the evaluation criteria of EFA factor analysis.

Table 4. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.821
Bartlett's Test of Sphericity	Approx. Chi-Square	3340.383
	df	417
	Sig.	.000

Factor loading coefficients are greater than 0.5; this shows that factor analysis for the dependent factor is guaranteed. The variables were retained precisely as the groups in the original scale after Factor Loading Step. Six factors are extracted from 28 observed variables, with a total extracted variance of 59.41%.

4.1.4. Linear regression model

The results of the correlation analysis confirm the correlation between the dependent variable "CMT" and the independent variables. However, the degree of influence of these independent variables on the dependent variable will be specifically determined through linear regression analysis.

In the model (Table 5), R = .816a showing that this model is suitable, adjusted R2 = 0.665 (smaller than R). The regression model fits the data set at 95% confidence (the F-statistic in the model has Sig. = 0.000).

Table 5: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.816[a]	.665	.624	.28304	2.001
a. Predictors: (Constant), WE, CP, JC, DO, LS, OR					
b. Dependent Variable: CMT					

In the β regression model (Table 6), 6 factors with p value (Sig.) are all less than 0.05 (with 95% confidence). We accept the hypotheses H1,H2,H3, H4, H5, and H6.

Table 6: Regression analysis results

Coefficientsa								
Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Statistics Tolerance	VIF
1	(Constant)	.319	.222		3.478	.002		
	WE	.307	.044	.291	3.278	.000	.651	1.343
	CP	.198	.051	.183	6.031	.000	.618	1.516
	JC	.281	.050	.266	4.127	.000	.582	1.379
	DO	.185	.038	.163	3.576	.000	.795	1.565
	LS	.175	.050	.160	3.346	.001	.631	1.891
	OR	.136	.041	.196	2.951	.001	.884	1.111
a. Dependent Variable: CMT								

Thus, the normalized regression equation can be rewritten as follows:

$$CMT = 0.291*WE+ 0.183*CP + 0.266*JC + 0.163*DO+ 0.190*LS + 0.196*OR$$

All research hypotheses from H1 to H6 are accepted. The order of impact of factors on the commitment of Gen Z employees is Working environment, Job Characteristics, Compensation Policy, Development Opportunities, Leadership style and finally Organization's Reputation.

4.1.5 Discussion

In the era of the flat world, everything can be easily integrated and connected, giving Gen Z more opportunities than previous generations in terms of job search. More and more foreign enterprises are investing in Thanh Hoa province. Besides, the startup trend is flourishing, increasing the job opportunities of Gen Z. In addition, Gen Z is more mature and exposed to a more advanced education than the previous generation, strong in foreign language and computer skills. Therefore, they are confident in themselves and always expect a working environment worthy of what they have. That's why Gen Z values the working environment the most [18].

Besides, Gen Z was born and raised in the digital age, and has quick access to knowledge and culture, modern technology, etc. This generation is very inquisitive, dynamic and creative. Therefore, young people often have the thought of wanting to discover and experience new things at work. A tight and disciplined job will be difficult to retain young Gen Z employees. Gen Z is also very interested in balancing work and personal life. Therefore, the characteristics of the job and the suitability of those with their interests and abilities is also equally important factor. Understanding what makes a job meaningful and enjoyable for Generation Z is important for understanding their possible future career patterns. This is also confirmed similarly in the study of Fodor et al. (2017) [21], Iveta, L. & Inese (2023) [24].

The findings from the research also indicated that the third factor, which is Compensation Policy has a strongly positive relationship with the job commitment of Gen Z employees. Compensation is always a big concern of any generation when deciding to work and to dedicate. If previous generations could be dominated by finding a stable job and accepting to receive lower-than-expected wages, Gen Z is the complete opposite. They can turn down a stable job with low salary to switch to freelance or self-employed to have a lot of free time and have an attractive income.

Imposing the old recruitment mindset can make it difficult for businesses to get Gen Z elites to join them. If salary and bonus are necessary, benefits are a prerequisite for Gen Z to decide to choose and retain with a business. This is consistent with the results of previous researchers such as Lanier, K. (2017)[26], Chillakuri, B. (2020) [10], Thang et al. (2022) [37], etc.

Three other factors, including Development Opportunities, Leadership style and Organization's Reputation have a moderate impact on Gen Z commitment. These factors have one thing in common: they all come from the point of view of business leaders in orienting human development and business development in a more extended vision. The results present an approach for strengthening Generation Z employees' commitment through an understanding of their characteristics and expectations from organizations, improving management policies and leadership skills among managers from Generations X and Y, adapting employee induction processes to Generation Z characteristics and the managing style to new employee needs (Lev, 2023).

5. Conclusion

Currently, the issue of Gen Z commitment needs more attention and analysis because this generation is and will become a major force in developing the country's economy in the coming years. A report measuring Microsoft's working trends in 2022 revealed that 58% of Gen Z employees were considering changing their place of work in the coming year, compared to 43% of employees from previous generations [34]. Besides, Gen Z is also a generation with high confidence and independent thinking. Therefore, how to retain and promote the strengths of this young generation of employees is a problem for businesses, including SMEs in Thanh Hoa province. The article presents a deep understanding of the factors affecting Gen Z employees' commitment in the era in which Gen Z entered the work cycle and created a new reality and change in management views for managers and organizations. The view presented in the article combines Generation Z characteristics and organizations' characteristics required to produce solid and suitable strategies for Gen Z employees' commitment. It is supported by research literature and substantial work experience with managers and organizations of SMEs in Thanh Hoa province.

Obviously, this study also has some limitations that need to be mentioned. First of all, while we managed to work with 487 respondents from SMEs in Thanh Hoa province, the sample is still very small to generalize compared to the number of workers there. In addition, the study did not address external influences such as economic, social, attraction policies and culture of the local area where Gen Z works. Therefore, the following studies should explore these factors more deeply to ensure a better explanation of the work commitment of Generation Z employees.

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Exploring the Learning Experience of Students with ChatGPT: A Community of Inquiry (COI) Framework Perspective

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ABSTRACT

This study aims to investigate the learning experience of students engaging with ChatGPT, an AI-based conversational tool, through the lens of the Community of Inquiry (COI) framework. The COI framework emphasizes on the importance of cognitive, social, and teaching presences in creating a meaningful and effective online learning environment. By applying this framework to the context of ChatGPT, we seek to explore the student's usage pattern of ChatGPT and to understand how students in Vietneam perceive this technology in terms of its benefits and disadvantages in their learning journeys. The findings contribute to the existing body of knowledge by shedding light on the key factors that influence the learning experience of students utilizing AI-driven educational tools, with implications for pedagogical practice and the design of future AI-enabled learning environments. Future research should explore the perspectives of educators and administrators and include a more diverse participant pool to enhance generalizability.

Keywords: Students' use of ChatGPT for learning, COI framework, benefits and disadvantages.

1. Introduction

ChatGPT, an AI-based conversational agent introduced by OpenAI in late 2020, has gained popularity as a tool for language learning and educational purposes [1]. By leveraging natural language processing and deep learning algorithms, ChatGPT generates human-like responses to user queries, enabling students to engage in interactive conversations, ask questions, and receive immediate feedback to enhance their understanding of course content [2] [3] [4]. This personalized and real-time approach provides students with unique learning experiences [4] [5]. However, it is crucial to recognize the potential challenges and limitations associated with ChatGPT, such as the

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risk of overreliance, the absence of human interaction and personalized feedback, and the need for careful monitoring and regulation [5][6].

In Vietnam, policymakers and educators have quickly acknowledged the benefits and drawbacks of using ChatGPT in learning [7]. However, there is a scarcity of empirical studies focusing on the user experience of ChatGPT for learning purposes in Vietnam. A study by Le Vinh An [7] revealed that ChatGPT demonstrates a certain level of capability in solving math and Vietnamese language problems for 12th-grade students, although the quality of answers varied depending on multiple factors. Another research by Thai Thi Cam Trang [8] indicated that students exhibited a positive attitude towards ChatGPT's ability to support language learning through quick and accurate answers. Nevertheless, concerns were raised regarding the reliability, accuracy of information provided by ChatGPT, and its potential impact on critical thinking skills [7].

This study aims to investigate how students in Vietnam utilize ChatGPT for learning within the framework of the Community of Inquiry (COI) [9]. The research seeks to explore students' usage patterns, their perceived benefits, and the challenges they encounter while using ChatGPT for learning. Based on the anticipated findings, the study intends to propose initiatives for universities and lecturers to enhance the learner's experience when integrating technology into the learning process.

2. Literature review

2.1. Overview of the Community of Inquiry (COI) framework

Fig. 1. Community of Inquiry (COI) framework [9]

"The Community of Inquiry (COI) framework is a popular theoretical model originally used for understanding and enhancing online learning experiences. However, it can also be used to represent a process of creating a deep and meaningful learning experience in any communication medium. The framework is based on the idea that learning environments require an active and collaborative approach, where learners construct knowledge (cognitive presence) through interactions with their peers (social presence) and their teachers (teaching presence) [9]. More specifically, social presence refers to the ability of learners to project themselves socially and emotionally in the online environment, to build connections with their peers and create a sense of community. Cognitive presence is the extent to which learners can construct and confirm meaning through critical thinking and reflection. Teaching presence refers to the design, facilitation, and direction provided by the instructor to support and guide the learning process.

2.2. Community of Inquiry (COI) as a framework to investigate the use of ChatGPT

Applying the Community of Inquiry (COI) framework to investigate the learning experience with ChatGPT provides a comprehensive approach to understanding its benefits and drawbacks as an AI-based conversational tool. By examining the cognitive, social, and teaching presences facilitated by ChatGPT within the COI framework, we can gain valuable insights into its advantages and potential limitations.

Cognitive presence, a key dimension of the COI framework, encompasses students' active engagement in constructing meaning and knowledge. Research has shown that ChatGPT enhances content understanding, critical thinking skills, and problem-solving abilities [10]. For example, [11] found that students interacting with ChatGPT reported improved content understanding through personalized explanations. Studies reviewed by [4] highlighted how ChatGPT supports the development of problem-solving skills. However, it is important to note the limitations of ChatGPT in terms of nuanced understanding and expertise in certain domains [12] and deterioration of critical thinking [11].

Social presence, another crucial dimension of the COI framework, manifests through students' perceived interactions with ChatGPT and its impact on meaningful interactions among students. [12] found that students perceive ChatGPT as a supportive partner that offers guidance and assistance. ChatGPT creates a supportive learning environment by addressing queries and providing timely feedback, fostering social presence [11]. Additionally, ChatGPT facilitates peer interaction and collaborative learning, as observed in the study by [13]. However, the absence of empathetic and nuanced understanding in ChatGPT may limit the development of authentic social connections [5]. [4] recommended supplementing ChatGPT interactions with other forms of social presence, such as face-to-face discussions or group work.

Teaching presence, the third dimension of the COI framework, involves the design, facilitation, and direction of the learning process. Studies have explored ChatGPT's impact on teaching presence, highlighting its ability to provide guidance, feedback, and instructional support [13]. [11] reported that students value the instructional support and immediate feedback offered by ChatGPT. Moreover, ChatGPT can provide personalized recommendations and resources, as demonstrated by [5]. However, limitations in ChatGPT's teaching presence, such as the lack of adaptability and pedagogical expertise compared to human instructors, were acknowledged [5] Balancing the use of AI-driven tools like ChatGPT with human instructors is crucial for effective teaching presence.

In summary, Table 1 presents the main findings regarding the benefits and disadvantages of ChatGPT based on the COI framework. Themes related to cognitive, social, and teaching presence are identified and coded accordingly. The table provides an overview of the advantages (+) and disadvantages (-) associated with each theme. In the following sections, we will further explore these themes to investigate the usage of ChatGPT among students at a Vietnamese university.

Table 1: Summary of the learning benefits and disavantages of ChatGPT based on the Community of Inquiry (COI) as a framework

	Cognitive presence	Social presence	Teaching presence
Benefits of ChatGPT	- CP (1): Better understanding and knowledge acquisition [11] [16] - CP (2): better problems solving skills [4][16]	- SP (1): better peer interaction through simulation of conversations [16] - SP (2): ChatGPT as supportive partner that provide timely guidance and assistance [12][16] - SP (3): materials for group discussions and peer-to-peer learning [13][16] - SP (4): platform for students to work together, exchange knowledge, and jointly solve problem [13][16]	- TP (1): timely and ongoing guidance and support [12][16]
Disadvant-ages of ChatGPT	- CP (-1): Diminish the critical thinking skills [11] [14] - CP (-2): the lack of expertise in specilised fields [12]	- SP (-1): lacks the empathetic and nuanced understanding because of the lack of human interactions [15] [4]	-TP (-1): restriction of the depth and quality of guidance, in complex or ambiguous learning situations [5] - TP (-2): the tailored instructions are hindered by the lack of contextual understanding and nuanced interpretation [15]

3. Methodology

To investigate the learning experience of students with ChatGPT, a survey was administered among the students of University of Economics - the University of Danang. The questionnaire was distributed via Google Forms, and a total of 267 responses were collected in April and May 2023. The survey questions were designed based on the Community of Inquiry (COI) framework to capture relevant aspects of the students' interaction with ChatGPT. More specifically, questionnaire items are about the frequency of use, purpose of use, benefits, and challenges experienced by students while utilizing ChatGPT in their learning activities.

In order to address the specificities of ChatGPT, 17 closed-ended questions to measure the benefits and challenges associated with ChatGPT were chosen and adapted from survey questions developped by [16] and other author. The questions were then categorized as follows: CP1, which encompassed four categories, namely provision of general information, provision of explanation of concepts, assistance in language learning, and provision of learning resources and solutions/keys; CP2; SP1; SP2; SP3; SP4; TP1, which had two categories, namely summarization and correction of assignments; CP(-1); CP(-2); SP(-1); TP(-1); and TP(-2) (See table 1). A 5-point Likert scale was employed.

The survey was distributed to a diverse sample of students from various disciplines within the University of Economics following the convenience sampling method. Participation was voluntary and anonymous, ensuring confidentiality and data privacy. The research team provided clear instructions and explanations regarding the purpose of the study to ensure participants' informed consent. Ethical considerations were upheld throughout the research process, and all data collected were handled in accordance with relevant data protection guidelines.

Data analysis will involve mainly quantitative techniques. Descriptive statistics will be used to analyze the frequency of ChatGPT usage and to summarize the Likert scale responses on benefits and challenges of ChatGPT as well as other perceptions of students.

4. Results

4.1. Description of the sample

The survey sample for this study consisted of 267 students from different fields study and at the university, ensuring a comprehensive representation of the student body. By including a diverse sample, this study aimed to capture a wide range of perspectives and insights into the learning experience of students with ChatGPT. The participants' demographic information, such as gender, years of study and academic program, were presented in the Table 2.

Table 2 showed that the majority of respondents were female, accounting for 75.66% of the total. In terms of years of study, the highest percentage falls under the category of 3 years (40.82%), followed by 1 year and 2 years, each accounting for 25.84%. Regarding the field of study, Business was the most common choice among respondents. These demographic insights provide a glimpse into the characteristics of the surveyed population, which can help contextualize the findings and interpretations of the study.

Table 2: Description of the surveyed sample

Category	Count	Percentage
Gender	**267**	**100,00%**
Male	65	24,34%
Female	202	75,66%
Years of study	**267**	**100,00%**
1 year	69	25,84%
2 year	69	25,84%
3 years	109	40,82%
4 years	17	6,37%
>4 years	3	1,12%

Fielf of study	**267**	**100,00%**
Data science, Informatic System	44	16,48%
Business	188	70,41%
Law	19	7,12%
Public Administration	7	2,62%
Statistics	6	2,25%
Others	3	1,12%

4.2. Use of ChatGPT

Table 3 reveals that the majority of participants, accounting for 36%, have used ChatGPT for less than 2 weeks. The next significant group, comprising 35.2% of participants, reported using ChatGPT for both the duration of 1 to 3 months and 3 to 6 months. Participants who have used ChatGPT for 2 to 4 weeks represent 23.2% of the sample. Only a small portion, 0.7%, reported using ChatGPT for over 6 months. We can also see that the most common frequency of use is "Very often" (28.8%), followed by "Quite often" (25.5%) and "Sometimes" (22.5%). This suggests that a significant portion of the respondents use the technology or engage in the behavior with some regularity, but not necessarily on a daily basis. Data also show that the main language used is Vietnamese (65,5%).

Table 3: Statistics of students's use of ChatGPT

Time of use	N.	%	Frequency of use	N.	%	Language used	N.	%
Less than 2 weeks	96	36,0	Almost every day	24	9,0	Mainly English	11	4,1
From 2-4 weeks	62	23,2	3-4 times a week	77	28,8	Mainly Vietnamese	175	65,5
From 1-3 months	94	35,2	1-2 times per month	68	25,5	English as well as Vietnamese	80	30,0
From 3-6 months	13	4,9	Once every few months	60	22,5	Other language	1	0,4
Over 6 months	2	0,7	Rarely	38	14,2			
Total	**267**	**100,0**	**Total**	**267**	**100,0**	**Total**	**267**	**100,0**

4.3. Benefits and Disadvantages of ChatGPT

4.3.1. Benefits of ChatGPT

Table 4: Benefits and Disadvantages of ChatGPT as a learning tool

Themes/Likert scale value	1	2	3	4	5	Mean
Benefits of ChatGPT						
CP1(provision of general information)	1.1%	6.7%	36.7%	15.0%	**40.4%**	3.87
CP1(provision explanation of concept)	3.0%	11.6%	33.3%	12.7%	**39.3%**	3.74
CP1 (assistance of language learning)	10.9%	20.6%	**32.2%**	10.9%	25.5%	3.46
CP1 (provision of resources)	8.2%	16.9%	31.1%	14.2%	**29.6%**	3.40
CP1 (provision of solutions, keys)	2.6%	12.4%	28.5%	19.1%	**37.5%**	3.76
CP2	6.0%	32.2%	**30.7%**	13.9%	17.2%	3.19
SP 1 (simulations of conversation)	6.3%	27.4%	**44.3%**	16.4%	5.6%	3.34
SP 2 (supportive partner)	5.5%	16.8%	**27.7%**	32.1%	17.9%	3.27
SP 3 (materials for groupwork)	6.4%	14.6%	28.5%	17.6%	**33.0%**	3.56

SP 4 (platform for peer interaction)	12.3%	36.4%	**37.3%**	8.4%	5.6%	3.12
TP1 (summarization)	4.1%	16.1%	**33.3%**	13.1%	**33.3%**	3.55
TP1 (correction of assignment)	8.2%	21.0%	**33.3%**	11.2%	26.2%	3.26
Disadvantages of ChatGPT						
CP (-1)	7.9%	18.4%	**39.0%**	28.8%	6.0%	3.07
CP (-2)	4.5%	16.5%	**36.0%**	34.1%	9.0%	3.08
SP (-1)	3.7%	13.9%	**56.2%**	24.3%	1.9%	3.11
TP (-1)	2.2%	18.4%	**36.7%**	32.6%	10.1%	3.04
TP (-2)	2.6%	11.2%	**51.3%**	28.5%	6.4%	3.07

Table 4 presents the benefits and disadvantages reported by students of using ChatGPT in various categories of COI dimensions (e.g. social presence, cognitive presence, teaching presence). Each category is represented by a code followed by a description. The corresponding percentages indicate the distribution of responses for each benefit or disadvantages level (1 to 5). The means of level of benefit or disadvantage category are also presented.

Upon analyzing the provided data on the benefits reported by students when using ChatGPT across different categories of COI dimensions, the following observations can be made:

In terms of Cognitive Presence (CP categories), CP1 (provide general information) and CP1 (provide explanation of concept) both have high mean benefit levels of 3.87 and 3.74, respectively. These categories have the highest percentage of responses in the highest rating category (5) at 40.4% and 39.3%. This indicates that a significant percentage of students find these categories highly beneficial. CP1 (provide resources) and CP1 (provide solutions, keys) also receive relatively positive mean benefit levels of 3.4 and 3.76, respectively. These categories play a valuable role in supporting students' access to resources and assisting them in problem-solving.

Regarding Social Presence (SP) Categories, SP 3 (materials for groupwork) stands out as the most highly rated social presence category, with a mean benefit level of 3.56. This suggests that a substantial percentage of students find the provision of materials for group work to be beneficial for fostering social interaction and collaborative learning. SP 1 (simulations of conversation) and SP 2 (supportive partner) also receive positive mean benefit levels of 3.34 and 3.37, respectively. These categories contribute to creating a sense of social presence and support among students.

In the respect of Teaching Presence (TP) Categories, TP1 (summarize) has the highest mean benefit level among the teaching presence categories, with a score of 3.55. This indicates that a considerable percentage of students appreciate the summarization feature as a means of enhancing teaching presence and facilitating their learning process. TP1 (correction of assignment) receives a moderately positive mean benefit level of 3.26.

Among all the categories, CP1 (provide general information) stands out as the most beneficial, followed closely by CP1 (provide explanation of concept), SP 3 (materials for groupwork), and TP1 (summarize). SP 4 (platform for peer interaction) stands out with the lowest mean benefit level of 3.12, and only 5.6% of students rate it as 5. This suggests that a relatively small percentage of students find ChatGPT highly beneficial as the platform for peer interaction.

Overall, the students perceive cognitive presence categories (specifically, providing general information and explanation of concepts) as the most beneficial when using ChatGPT. Social presence and teaching presence categories also receive positive ratings, with materials for groupwork and summarization being perceived as highly beneficial. On the other hand, the category related to peer interaction is rated lower in terms of perceived benefits.

4.3.2. Disadvantages of ChatGPT

Similarly, upon analyzing the data on the reported disadvantages of using ChatGPT based on different categories of COI dimensions, the following observations can be made:

Regarding Cognitive Presence (CP) Categories, both CP (-1) and CP (-2) categories, which relate to the diminishing of critical thinking skills, have similar mean disadvantage levels of 3.07 and 3.08, respectively. This indicates that students express concerns about the potential negative impact on their critical thinking abilities. A significant percentage of students (39.0% and 36.0%, respectively) rated the disadvantage level as 3, highlighting their concern regarding the impact on critical thinking skills.

With respect to Social Presence (SP) Categories, the SP (-1) category, addressing the lack of empathetic and nuanced understanding without human interaction, has a mean disadvantage level of 3.11. Students perceive the absence of human interaction as a limitation in fostering empathetic and nuanced communication. A majority of students (56.2%) rated this disadvantage level as 3, indicating their significant concern about the limitations of social presence without human interaction.

Regarding Teaching Presence (TP) Categories, TP (-1) focuses on the restriction of depth and quality of guidance in complex or ambiguous learning situations, with a mean disadvantage level of 3.04. Students perceive this limitation in providing adequate guidance in challenging learning scenarios. TP (-2) addresses the hindered tailored instructions due to the lack of contextual understanding and nuanced interpretation, with a mean disadvantage level of 3.07. Students feel the absence of nuanced interpretation affects the effectiveness of tailored instructions.

Notable percentages include 56.2% of students rating the disadvantage level as 3 in the SP (-1) category, indicating prevalent concern about the absence of empathetic and nuanced understanding without human interaction. Additionally, 34.1% of students rated the disadvantage level as 4 in the CP (-2) category, suggesting significant concern about the potential impact on critical thinking skills.

Overall, the data highlights the importance of critical thinking skills and human interaction in the learning process. Students express concerns about the potential diminishing of critical thinking abilities and the lack of empathetic and nuanced understanding when using ChatGPT. The limitations in depth and quality of guidance, as well as the absence of contextual understanding, are also identified as disadvantages. The percentage distributions reveal varying levels of concern within each category, with certain categories receiving higher ratings for the perceived disadvantages.

5. Discussion

This study investigated the usage patterns, benefits, and disadvantages reported by students in their utilization of ChatGPT within the COI framework. The results revealed that the majority of participants had used ChatGPT for a relatively short period, with a significant proportion reporting usage ranging from 1 to 6 months. The most common frequency of use was "Very often," indicating regular engagement with the tool. Furthermore, the main language used by the participants was Vietnamese, reflecting the local context in which the study was conducted.

The results of the study also indicate that students perceive certain categories within the Cognitive Presence (CP), Social Presence (SP), and Teaching Presence (TP) dimensions of the Community of Inquiry (COI) framework to have both benefits and disadvantages when using ChatGPT.

In terms of Cognitive Presence (CP) categories, the provision of general information (CP1) and explanation of concepts (CP1) were highly rated by students. These findings align with previous literature that highlights ChatGPT's positive impact on content understanding and critical thinking skills [10], [11]. However, concerns were raised about the potential limitations of ChatGPT in nuanced understanding and expertise in certain domains [12]. This suggests the importance of balancing the benefits of ChatGPT with its limitations in cognitive engagement and critical thinking.

Regarding Social Presence (SP) categories, the provision of materials for groupwork (SP3) received the highest mean benefit level of 3.56. This finding is consistent with the literature that emphasizes ChatGPT's role in fostering social interaction and collaborative learning (Farrokhnia et al., 2023). Students also rated simulations of conversation (SP1) and supportive partner (SP2) positively, aligning with previous studies that highlight ChatGPT's ability to create a sense of social presence and support [12]. However, concerns were expressed about the absence of empathetic and nuanced understanding in ChatGPT, which may hinder the development of authentic social connections [5]. To address this limitation, the literature suggests supplementing ChatGPT interactions with other forms of social presence, such as face-to-face discussions or group work [4].

In terms of Teaching Presence (TP) categories, the summarization feature (TP1) was perceived as highly beneficial with a mean benefit level of 3.55. This finding is in line with previous research that highlights ChatGPT's ability to provide guidance and support in the learning process (Sallam et al., 2023). However, limitations in ChatGPT's teaching presence, such as the lack of adaptability and expertise compared to human instructors, were acknowledged [5]. To address this, the literature suggests balancing the use of ChatGPT with human instructors to ensure effective teaching presence.

Triangulating the results with the literature helps validate and contextualize the findings of the study. The positive benefits reported by students align with previous studies that have demonstrated ChatGPT's potential in enhancing content understanding, problem-solving abilities, and instructional support [10], [11] . Similarly, the identified limitations and concerns corroborate existing literature highlighting the need for caution regarding overreliance, the absence of human interaction and personalized feedback, and the impact on critical thinking skills [5], [6].

6. Implications, Limitations and Conclusion

6.1. Implications and Suggestions

Based on the findings, several recommendations and implications can be derived for universities and lecturers to enhance the learner's experience when integrating ChatGPT into the learning process, including Professional Development for Educators, Hybrid Learning Models, Designated Support Channels, Designated Support Channels:

+ Professional Development for Educators: Offer training and workshops for educators to familiarize them with ChatGPT and its potential benefits and limitations. This will enable educators to effectively integrate ChatGPT into their teaching strategies and provide guidance to students.

+ Hybrid Learning Models: Encourage a hybrid learning approach that combines the use of ChatGPT with human instructors. This model can provide a balance between the benefits of AI-driven tools like ChatGPT and the expertise and personalized guidance offered by human instructors.

+ Designated Support Channels: Establish dedicated channels for students to seek additional support and clarification when using ChatGPT. This can include online forums, discussion boards, or virtual office hours with instructors. Such channels can address the limitations of ChatGPT in nuanced understanding and provide a platform for meaningful interaction.

+ Continuous Improvement and Feedback Mechanisms: Regularly gather feedback from students regarding their experiences with ChatGPT and use it to refine and improve the tool. This can involve incorporating student suggestions, addressing identified limitations, and enhancing the adaptability and pedagogical expertise of ChatGPT.

6.2. Limitations and future research

While this study contributes to our understanding of the benefits and disadvantages of using ChatGPT within the COI framework, it has certain limitations.

Firstly, the study relied solely on students' perceptions, which may be subjective and influenced by individual experiences. Further research could include additional methods, such as objective performance measures or comparative studies with other educational tools, to provide a more comprehensive evaluation.

Secondly, the sample size and context were limited to a specific university, which may restrict the generalizability of the findings. Future research should aim to include a more diverse participant pool and explore additional dimensions and aspects of ChatGPT's impact on teaching and learning.

Thirdly, one notable aspect that appears to be neglected in the analysis is the examination of disadvantages related to academic integrity. Issues such as the risk of plagiarism, copyright infringement, and academic dishonesty can have significant implications for the learning environment. Although these concerns may not directly align with the COI framework, they are nonetheless important factors to consider when evaluating the overall impact of using ChatGPT in educational settings. Future research could explore these aspects to provide a more comprehensive understanding of the potential limitations and challenges associated with incorporating AI-based tools like ChatGPT in learning environments.

Additionally, future research should also investigate the necessary capabilities and skills that students require to effectively use ChatGPT as a learning tool while overcoming its disadvantages. This research could delve into identifying the specific cognitive, metacognitive, and digital literacy skills that enhance students' ability to engage critically with the generated responses from ChatGPT.

Furthermore, exploring strategies for training students to effectively evaluate and validate information obtained from ChatGPT can help mitigate the potential disadvantages related to academic integrity and critical thinking skills.

6.3. Conclusion

In conclusion, this study provides valuable insights into the benefits and disadvantages reported by students regarding their use of ChatGPT within the COI framework. The findings highlight the advantages of ChatGPT in terms of cognitive presence, social presence, and teaching presence, including its ability to provide information, explanations, solutions, simulations of conversation, support in group work, and corrections. However, limitations were identified in relation to critical thinking skills, expertise in specialized fields, empathetic understanding, comprehensive guidance in complex situations, and contextual interpretation. These findings can inform the further development and implementation of AI-based educational tools, enabling the maximization of benefits while addressing the identified limitations. By considering the recommendations and implications highlighted in this study, universities and lecturers can effectively integrate ChatGPT into their educational practices.

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Development of A Theoretical Framework of Factors Affecting Marketing Innovation in Enterprises: From Capabilities-Based View and Contingency Theory

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ABSTRACT

Enterprises need to innovate their marketing strategies to succeed in the rapidly evolving business climate of today and achieve a competitive edge. Marketing innovation provides enterprises with an opportunity to reach all customer segments and successfully market their products and services, resulting in production performance and financial performance. However, marketing innovation in enterprises depends on various internal and external factors. Through synthesizing related studies and theories, this paper proposes a model for empirical studies on the factors affecting marketing innovation in enterprises which includes contingent factors and capabilities-based factors.

Keywords: Marketing innovation; factors; enterprises; affecting.

1. Introduction

Innovation has long been regarded as a fundamental component of business operations, a key factor for the growth and competitive advantage of any business [1, 2]. Along with the development of the economy, the needs and desires of consumers are increasingly demanding in terms of both quality and quantity, posing challenges for businesses to innovate, especially from a marketing perspective [3]. In fact, the development of logistics and supply chain management is driving a shift in production activities from a "Push" approach to a "Pull" approach, thereby initiating marketing activities right from market research to understand consumer needs and habits [4]. In the globalized business environment, all enterprises engaged in the production of goods and services require marketing innovation to survive and succeed [5]. When a business performs marketing innovation, such as introducing a new product design, changing the distribution method, or altering promotional strategies and pricing, it can effectively reach potential customers, increase market

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share, boost profitability, and significantly improve the operational efficiency of the enterprise, especially in the current booming era of digital economy where various new marketing approaches and ideas are emerging. Innovating product or service innovation entails risks due to high and uncertain costs, and not every business can implement them [6]. If a business chooses to innovate its products or services, there is no guarantee of success. On the other hand, if a business fails to engage in innovation activities, its market position may be threatened. An alternative option for businesses is to implement new marketing methods, also known as marketing innovation. These new marketing methods can be applied to both new and existing products. Therefore, marketing innovation can stem from the need to promote new products, services, or as a strategy to substitute product innovation. It is important to understand the factors that influence innovation to achieve the benefits of innovation in terms of growth and competitive capability for businesses [7]. Therefore, it is necessary to research and analyze factors that impact marketing innovation of enterprises in Vietnam. However, the factors influencing marketing innovation have not received widespread attention [6, 8]. Previous studies show that marketing innovation in businesses is influenced by several groups of factors, including firm characteristics [9], technological capabilities, R&D activities, market orientation [3], organizational learning, organizational memory [10, 11]. Most studies are grounded in resource-based theory, knowledge-based theory, and dynamic capability theory. As there is no one-size-fits-all approach to managing the innovation process because it depends on the specific circumstances of each business [12], a contingency approach for potential factors affecting innovation is proposed, depending on specific environmental aspects that form the basis for analysis and the selection of appropriate factors [13]. In Vietnam, resource-based theory and stakeholder theory have been employed to identify factors influencing marketing innovation in enterprises, including firm size, internal knowledge acquired through R&D activities and internal training, collaboration with competitors and private consultants, export orientation, foreign ownership, and marketing objectives [6]. Resource-based theory and dynamic capability theory are used to analyze the impact of knowledge management capability, process innovation management capability, and organizational learning capability on marketing innovation in small and medium enterprises [14]. Therefore, the main objective of this paper is to develop a model analyzing factors that can potentially impact marketing innovation in enterprises based on capabilities-based view and contingency theory. The research results will provide a basis for further empirical studies identifying factors influencing marketing innovation in enterprises and the level of influence of each factor in the future. If such research results are obtained, they will provide useful information for managers and stakeholders in making decisions to promote appropriate marketing innovation in Vietnam.

2. Literature review

2.1. Marketing innovation

According to American Marketing Association (1985), marketing is the process of planning and executing the pricing, promotion, and distribution of ideas, goods, and services to create exchanges that satisfy individual, organizational, and societal objectives.

Marketing innovation refers to new marketing solutions that involve significant changes in product design, packaging, distribution, promotion, or pricing compared to previous approaches.

Specifically, significant changes in product design include modifications in appearance, form, or packaging without altering the functional characteristics of the product. New methods of product distribution primarily involve introducing new sales channels. Innovations in product promotion relate to the use of entirely new promotional concepts to market goods and services. Finally, pricing innovations involve the use of new pricing strategies to market goods or services [15].

2.2. Capabilities-based view

The Capabilities-based view (CBV) is a theoretical framework that explains the relationships between capabilities, innovation, and sustainable competitive advantage [16]. The capabilities-based view of the firm distinguishes two types: resources (assets controlled and accumulated by the firm) and capabilities (the ability to use, combine, and deploy the firm's resources for desired purposes) [17]. Capabilities are considered as firm-specific and non-transferable resources that allow the firm to improve the productivity of its other resources [18]. This study focuses on two knowledge-based capabilities considered to be decisive factors for marketing innovation: organizational memory and organizational learning [10, 11].

Organizational memory refers to information stored throughout the history of an organization and can influence present-day decision-making. Organizational memory resides in the minds of employees and can be embedded in work processes or in lessons learned from past experiences [19]. Organizational memory enables access to the organization's past knowledge, such as information about competitive environment, market, and current customers [11]. This type of knowledge is particularly difficult to transfer or imitate and therefore represents a valuable asset for the business [20].

Organizational learning refers to the process of accumulating and developing new knowledge and insights gained from the collective experience of individuals within the organization, which has the potential to influence behavior and enhance the organization's capabilities [21, 22]. This process involves receiving information and existing knowledge from both the internal and external environment of the organization, distributing information within the organization, interpreting, and storing it in organizational memory for future use [23].

2.3. Contingency theory

Contingency theory focuses on the uncertain factors that influence organizational behavior, specifically the impact on activities, structure, and functions of a business, such as the environment, strategy, experience, scale, culture, etc. [24, 25]. Contingency theory is based on the assumption that there is no standard model that applies to all businesses but rather depends on the specific circumstances and factors that influence the business operations [13].

According to contingency theory, the marketing innovation of a business should be aligned with the characteristics of the industry, company size, experience, expertise, technological capabilities, and business strategy in each specific stage of its development. In other words, it should be suitable for the operational environment of the business. Therefore, based on contingency theory, both internal and external factors of the business are considered to have an impact on marketing innovation. The internal factors may include management hierarchy, company size, managers' knowledge, employees' knowledge, ownership, market orientation, organizational strategy, etc. The external factors may include competition, legal environment, and the application of information technology.

3. Methodology

This paper utilizes a theoretical research method combined with statistical analysis. The authors use keywords such as "marketing innovation", "factors" , “affecting” to search for relevant studies in both English and Vietnamese. For studies in Vietnam, the authors utilize Google Scholar and the database of Vietnamese scientific journals available at http://www.vjol.info.vn/. The results indicate that there are three studies that address the impact of factors on marketing innovation in business. Currently, there are not many studies on the effect of factors on marketing innovation in Vietnamese enterprises, so the investigation is extended to explore the factors influencing innovation. The search results include 14 publications published from 2015 onwards, with the majority of these focusing on technological innovation (product innovation and process innovation).

Furthermore, for foreign research on marketing innovation and influencing factors, the author collected data from various internet databases such as Google Scholar, Science Direct, Research Gate, JSTOR, Emerald Insight, etc. The search yielded 26 international publications from 1999 to 2022.

4. Hypotheses and research model

Based on the reviewed literature, this paper focuses on analyzing and explaining the influence of factors on marketing innovation, including two main groups: (i) contingency factors group - firm size, managers’ knowledge, ownership, market orientation, technological adoption, competition, employees’ knowledge, (ii) capability-based factors group - organizational memory and organizational learning. In the literature of capability-based theory, these knowledge-based capabilities are considered to be central to the process of generating innovation, but their theoretical and empirical relationship with marketing innovation needs to be further studied in detail. Additionally, the success of the innovation process is determined by various internal and external factors (contingency factors) that act as drivers or inhibitors of the innovation performance of the business.

4.1. Organizational memory

It is argued that organizational memory provides businesses with the ability to perceive market events and trends faster than their competitive counterparts, enabling them to respond more accurately to retain or attract customers and improve relationship channels [17]. This demonstrates that organizational memory facilitates marketing innovation [10, 11]. For example, previous information that a business possesses about customers and the market can help identify early changes in consumer preferences and provide the groundwork for introducing new marketing tools to differentiate the business's products from competitors. Similarly, knowledge stored in organizational memory about the best processes and systems for organizing work can create favorable conditions for implementing innovations in product distribution. Therefore, the following hypothesis is proposed:

Hypothesis 1: Organizational memory positively impacts marketing innovation.

4.2. Organizational learning

Organizational learning involves a commitment to self-learning, a willingness to embrace new things, and knowledge transfer [26]. Organizational learning stimulates creativity, sparks new knowledge and ideas, while enhancing understanding and application capabilities. Businesses perceive learning as the key to continuous improvement and are more likely to discover new ways to better serve customers. Therefore, organizational learning can lead to the development of new marketing tools to differentiate, distribute, promote, or price the business's products more effectively [11]. Effective organizational learning helps businesses become more responsive, enabling them to quickly and flexibly change their marketing strategies to anticipate, mitigate, or capitalize on disruptions in an unstable environment [27, 28]. Hence, the following hypothesis is proposed:

Hypothesis 2: Organizational learning positively influences marketing innovation.

4.3. Firm size

The large size of a business is an indication of strong financial capability [29]. As innovation activities are costly and risky, companies with strong financial resources have an advantage in implementing innovation because they have more funding for R&D and other supplementary activities like marketing, which increases the effectiveness of innovation, as a result, larger-scale businesses are more likely to innovate [9, 30]. Therefore, the following hypothesis is proposed:

Hypothesis 3: Firm size positively influences marketing innovation.

4.4. Managers' knowledge

The educational level and awareness of top-level managers have been identified to influence a firm's innovation [31]. Managers with higher educational qualifications have higher awareness and are better equipped to gather and process complex information, make faster decisions when considering new concepts, and are more inclined to engage in innovation [32, 33]. As a result, he following hypothesis is proposed:

Hypothesis 4: Managers' knowledge positively influences marketing innovation.

4.5. Employees' knowledge

The success of marketing activities relies on creating an effective cross-functional team that operates as a value-creating unit for customers [7]. Therefore, the skills and capabilities of the workforce are crucial for firms when engaging in marketing innovation. Companies with skilled and well-trained personnel are better able to acquire and apply new knowledge, leverage technological opportunities for innovation, and demonstrate greater potential for developing innovations [34, 35]. Therefore, the following hypothesis is proposed:

Hypothesis 5: Employees' knowledge positively influences marketing innovation.

4.6. Ownership

Business innovation decisions are closely linked to the objectives of the owners [6]. As most FDI inflows into developing countries target profit generation from low-cost input materials [36], the objectives of foreign owners may not necessarily include innovation. Conversely, foreign-owned enterprises may be more focused on labor-intensive processing [37], which requires less effort in marketing innovation. Therefore, foreign-owned firms may exhibit a lower inclination towards marketing innovation [6, 38]. Hence, the following hypothesis is proposed:

Hypothesis 6: Foreign ownership has a negative impact on marketing innovation.

4.7. Market orientation

Market orientation consists of three main aspects: customer orientation (where businesses strive to understand their target customers), competitor orientation (where businesses seek to understand what their competitors are doing), and inter-functional coordination (where the organizational culture aligns employees in all departments to understand the market, including customers and competitors). Additionally, it is guided by two criteria: long-term focus and profit maximization [39]. Market orientation is related to innovation [40, 41]. First, market orientation enables businesses to access new ideas from the market and increases their motivation to meet market demands. Second, strong market orientation reflects insightful knowledge of customer needs and competitive situations. Third, market orientation enhances opportunities for well-adjusted innovations that meet market requirements, thus instilling business confidence in innovation as a management activity. Finally, market orientation creates a favorable organizational environment for innovation. Therefore, the following hypothesis is suggested:

Hypothesis 7: The level of market orientation has a positive impact on marketing innovation.

4.8. Technological adoption

Any form of innovation, whether it be product, process, organizational, or marketing, is reflected in the implementation of purchasing machinery, equipment, computers, or software [42]. The procurement of these goods directly relates to the benefits of innovation, which can be seen through the quality and diversity of the goods, increased capacity and flexibility in production, as well as reduced product and service delivery time. Under the influence of the Fourth Industrial Revolution, businesses can leverage opportunities to innovate their marketing activities. For example, small and medium enterprises can apply technologies like AI or Big Data to profile target customers and facilitate easier customer access, adjust marketing solutions based on consumer behavior and customer requirements [43]. The continuous development of technology leads to the constant emergence of new products. Therefore, businesses need to find ways to extend the life cycle of existing products to maximize profitability or engage in the race of innovation to keep up with trends. Hence, the following hypothesis is proposed:

Hypothesis 8: Technological adoption has a positive impact on marketing innovation.

4.9. Competition

Competition stimulates innovation because businesses must introduce new methods, products, or processes to maintain their position in a fierce environment [44]. Competition drives the emergence of more capable and innovative businesses because positive pressure from competitors stimulates innovation as much as the desire to lead [45]. Therefore, the following hypothesis is proposed:

Hypothesis 9: The level of competition has a positive impact on marketing innovation.

4.10. Research model

Based on the above analysis, this paper proposes a research model of the factors influencing marketing innovation in enterprises as shown in Figure 1.

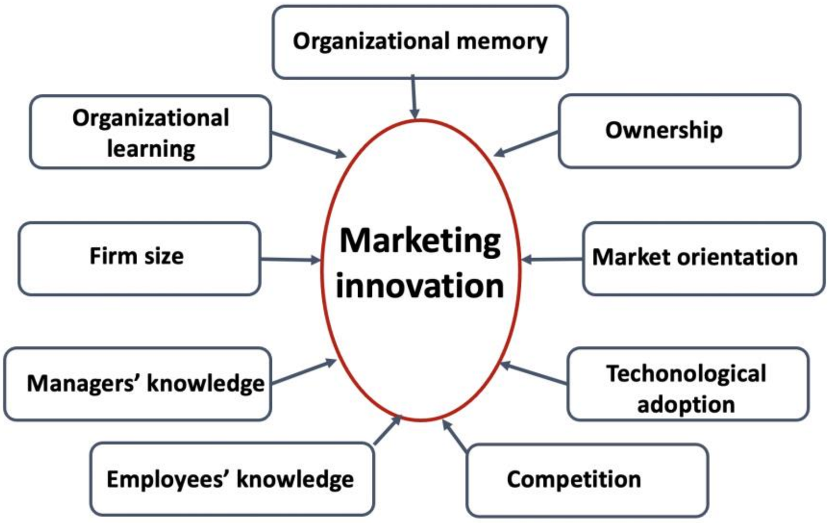

Fig. 1. Theoretical model

Source: Authors' research

5. Conclusion

Based on the analysis of literature on the factors influencing marketing innovation, grounded in the capability-based theory and contingency theory, this study proposes a model of factors influencing marketing innovation in enterprises. The results indicate that the following factors: organizational memory, organizational learning, firm size, managers' knowledge, employees' knowledge, ownership, market orientation, competition, and technological adoption, are considered to have potential impacts on marketing innovation in enterprises.

To ensure the generalizability and assess the influence of these factors on marketing innovation in enterprises in Vietnam, future research should be conducted by collecting data on the variables in the proposed model, using probability sampling methods for testing the proposed research model. However, before conducting quantitative research to test the model, the measurement scales of the variables in the research model need to be developed, ensuring content validity and contextual relevance in the context of enterprises in Vietnam. The results of empirical studies on the key factors influencing marketing innovation in enterprises will provide a basis for proposing recommendations to enhance marketing innovation in enterprises in Vietnam.

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The Impact of Digital Skills on Acceptance of Digital Technology by Vietnamese Commercial Banks' Employees

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ABSTRACT

This study aims to examine the impact of digital skills on intention to use digital technology of employees of Vietnamese commercial banks. The research ultilized a survey of 432 employees from 21 Vietnamese commecial banks. The results revealed that perceived ease of use and perceived usefulness possitively influenced intention to use the digital technologies. In addittion, digital skills possitively affected perceived ease of use and perceived usefulness. These research results provide implications for Vietnamese commecial banks. The discussions and limitations will be presented at the end of this paper.

Keywords: Digital skills, perceived ease of use, perceived usefulness, intention to use, and Vietnamese commercial banks.

1. Introduction

Digital transformation is an evitable trend that Communist Party and the Vietnamese government encourage. To implement the policy of the Communist Party and Vietnamese government, the Governor of the State Bank of Vietnam has issued a plan to digitally transform the banking sector to 2025, with an orientation to 2030 (according to Decision No. 810/QD-NHNN dated May 11th, 2021). Following the policy of the State Bank, 81% of Vietnamese commercial banks replies that they have been building a digital transformation strategy, and 88% of those banks have chosen to digitally convert both customer communication channels (front-end) and internal operations (back-end) or fully digitize, only 6% of those banks plan to digitize customer communication channels[1]

Digital transformation has a positive impact on banks' financial performance [2] However, this great benefit is only achieved when employee habits and working processes change to accommodate digital transformation policies[3] Digital transformation requires employees to adapt to new

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technologies[4] Some employees will adapt immediately, while others will take a long time [5] Adopting digital technologies can face problems stemming from employee resistance[6, 7] They can consciously or unconsciously resist digital transformation[8]

The technology acceptance model (TAM) is proposed by Davis [9], [10] bases on the theory of planned behavior. The TAM model is still considered the most reliable model in explaining technology acceptance [11, 12] and has been extended to TAM 2 [13] and TAM 3 [14] models.

The studies on digital acceptance employ two types of samples, customers [15-17] and employees [18, 19] The technologies mentioned in those studies on digital transformation adoption are varied, including artificial intelligence (AI), big data [20] , and virtual reality [21, 22] Besides there are also studies on digital transformation technology in general [4] In the banking sector, empirical studies are mainly focused on customer technology adoption, while little attention is paid to employees' technology adoption [11] Acceptance of technology for consumers and employees is different. The application is mandatory for employees if the consumer is free to choose [23] When the use of new technology is imperative, if employees want to retain organizational membership, they have no other choice but to accept the innovation wholeheartedly [24] Those who do not wholeheartedly welcome digital technologies can delay or hinder implementation, resent, inefficient use, or sabotage the new system [24, 25]

The relationship between digital skills and the intention to use digital technologies has been investigated [26-28] Empirical research confirms the direct relationship between digital skills and digital technologies' intention to use [26-28] Other studies reveal the indirect link between perceived ease of use [29] and perceived usefulness [29] Several research displays the moderator role of digital skills on the linkages between predictors - intention to use [30] The samples employed in those studies vary from librarians[26], academic staff [29, 30], healthcare professionals [31], and banking staff [32] To the author's knowledge, there has been no research on the impact of digital skills on digital technology adoption among Vietnamese commercial bankers.

This study contributes to the research and practice of digital transformation in the banking sector based on the following aspects. First, Vietnamese commercial banks need digital transformation, which can only be truly successful when all employees accept digital technology. This study provides a perspective on the impact of digital skills on digital technology adoption. Second, few studies demonstrate a relationship between digital skills and perceived usefulness. This study investigates the relationship between digital skills and perceived usefulness.

2. Literature review

2.1. Perceived ease of use and intention to use.

Perceived ease of use is an individual's perception of using technology with little or no effort on their part [10] Behavioral intention refers to a person's subjective probability that they will perform some behavior [33] According to the TAM, an individual who finds a technology easy to use will intend to use that technology. Conversely, if an individual finds technology difficult to use, they will not intend to use it. A wide range of studies has demonstrated the impact of perceived ease of use and intention to use. [34, 35]

Therefore, the author proposes the following hypothesis:

Hypothesis H_1: Perceived ease of use has a positive effect on intention to use

2.2. Perceived usefulness and intention to use.

Perceived usefulness is defined as an individual's perception that using technology will increase their job performance [10] Behavioral intention refers to a person's subjective probability that he or she will perform some behavior [33] According to the TAM model, an individual who finds the new technology valuable and good for their job will use it. On the contrary, when individuals perceive technology as having no impact on their lives and work, they will not intend to use it. There are several studies demonstrating the relationship between perceived usefulness, and intention to use technology includes studies [34, 35]

Therefore, the author hypothesizes that:

Hypothesis H_2: Perceived usefulness has a positive impact on intention to use.

2.3. Digital skills and perceived ease of use

Research on digital skills and perceived ease of use has been studied [36, 37] Digital skills are defined as a range of abilities using digital devices, communication applications, and networks to access and manage information [38] Internet, IOT, telephone, and social networking skills positively affect ease of use and perceived usefulness [37] In addition, individuals who perceive themselves as having digital capabilities will find that using technology does not take much of their effort [37]

Therefore, the author hypothesizes that:

Hypothesis H_4: Digital skills have a positive effect on perceived ease of use.

2.4. Digital skills and perceived usefulness

The relationship between digital skills, knowledge, and perceived usefulness has been examined [39] Individuals with high levels of digital skills tend to have low computer anxiety [40], resulting in higher perceived usefulness and acceptance to use technologies [41] Moreover, digital skills positively affect perceived ease of use [36, 37], which positively affects perceived usefulness [42] Hence, it is reasonable to infer that there is a positive relationship between digital skills and perceived usefulness.

Therefore, the author hypothesizes that:

Hypothesis H_4: Digital skills have a positive effect on perceived usefulness.

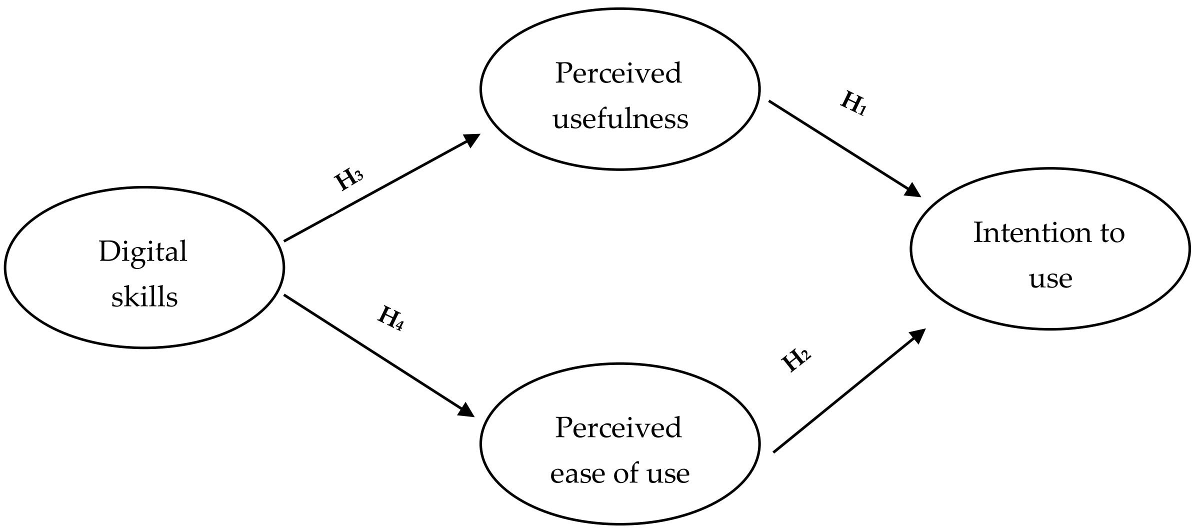

Figure 1. Research model

3. Methodology

3.1. Samples

The questionnaire was designed on a Google form link and sent to employees of 21 banks. The author uses the Snowball technique to send the questionnaire. The authors received 471 responses, but 39 observations were missing information related to the bank they were working for. The author decided to eliminate these 39 observations. In the end, the total number of participants answering the questionnaire was 432 people.

Table 1 presents the sample demographic.

Table 1. Sample demographic

Variables and catergories	Frequency	Percentage
Banks		
Agribank	46	10.6
ACB	16	3.7
Bac A bank	8	1.9
BIDV	45	10.4
GP bank	10	2.3
HD bank	10	2.3
Techcombank	12	2.8
Lien Viet Post bank	19	4.4
SHB	23	5.3
MB	36	8.3
MSB	23	5.3
NCB	18	4.2
Viettin	36	8.3
Vietcombank	32	7.4
VIB	21	4.9
Tien Phong bank	15	3.5
VP Bank	19	4.4
Sacombank	19	4.4
Oceanbank	11	2.5
OCB	9	2.1
SEA Bank	4	0.9
Sex		

Male	188	43.5
Female	244	56.5
Education		
College	2	0.5
Undergraduate	342	79.2
Post-graduate	88	20.8
Positions		
Staff	300	69.4
First-line managers	98	22.7
Middle managers	29	6.7
Top managers	5	1.2

Source: Survey data analysis

The sample group used in the study was from 21 Vietnamese commercial banks. The sample group was slightly biased toward women, mostly university graduates and most employees. The sample group structure was suitable for the context of Vietnamese commercial banks because the population of employees working in the Vietnamese banking sector it is slightly biased toward women, with the majority of university degrees and the majority of employees. The women bias is acceptable because 58% of employees working in the banking sector are women. [43]

3.2. Measure

The questionnaire was designed online on Google Forms and sent to 20 Vietnamese commercial bank employees. The authors asked these people to read the questionnaire carefully and make comments to adjust the items. Then, based on these people's comments, they adjusted the questionnaire. For example, PU 3: *Using digital technology in my work increases my productivity* is changed to *Using digital technology at work helps me increase my work productivity*.

After the questionnaire was adjusted, the authors designed an online questionnaire on Google form to send to 20 Vietnamese commercial bank employees. They asked them to send it to their co-workers. The Snowballing method is widely used in the questionnaire survey.

Perceived usefulness, perceived ease of use, and intention to use were measured using Davis [9] suggestions. Six items measured perceived usefulness. Six statements measured perceived ease of use. Intention to use was measured using a 3-item scale. Respondents were asked to rate their level of agreement/disagreement with the statements, with = completely disagree, 2 = disagree, 3 = doubtful, 4 = agree, and 5 = totally agree. An example of perceived usefulness was, *" Using digital technology in my work helps me complete tasks faster."* An example of items in perceived ease of use was " I find digital technology ease to use." An example of items in intention to use was *" I plan to use digital banking technology in the next month."* The Alpha's coefficients for intention to use, perceived usefulness, and perceived ease to use were 0.663, 0.893, and 0.848, respectively.

Digital skills were measured using scales suggested by Van Deursen, Helsper [44] Van Deursen, Helsper [43] the proposed 8–item scale. Respondents were asked to assess their level of agreement/disagreement with the statements, with 1 = completely disagree, 2 = disagree, 3 = doubtful, 4 = agree, and 5 = totally agree. An example of digital skills was *" I can create and upload content to the Internet."* The Alpha's coefficient for digital skills was 0,881

4. Results

4.1. Reflective measurement model

The author used the outer loadings to assess the quality of the scales used in this study. According to Hair Jr, Sarstedt [45], the outer loadings should exceed 0.7. Outer loading results showed that most of the outer loadings were more significant than 0.7 except for PEU2, with the outer loading was 0.693. Following the suggestion of Hair Jr, Sarstedt [44], the author decided to delete PEU2 from the following analysis—table 2 displays the outer loadings after deleting PEU2.

Table 2. Outer loadings

Code	DS	IU	PEU	PU
DS1	0.751			
DS2	0.809			
DS3	0.779			
DS4	0.761			
DS5	0.759			
DS6	0.750			
DS7	0.734			
DS8	0.751			
IU1		0.771		
IU2		0.772		
IU3		0.775		
PEU1			0.801	
PEU3			0.798	
PEU4			0.816	
PEU5			0.772	
PEU6			0.753	
PU1				0.825
PU2				0.794
PU3				0.792
PU4				0.835

PU5	0.732
PU6	0.861

Note: DS: digital skills; IU: Intention to use; PEU: perceived ease of use; PU: perceived usefulness.

Source: Survey data analysis

All the outer loadings ranged from 0.732 to 0.835, indicating good measurement quality.

To assess the constructed reality, validity, and discriminant, the author uses Cronbach alpha, composite reality (CR), Average value extracted (AVE), and Heterotraid-mononitrate ratio (HTMT), following the guidance of [45] Table 3 displays the results of construct reality, validity, and discriminant.

Table 3. Results of construct reality, validity, convergence, and discriminant

Variables	Cronbach's Alpha	CR(rho_c)	AVE	HTMT
Digital skills	0.881	0.907	0.583	0.343 – 0.747
Intention to use	0.663	0.816	0.597	
Perceived ease of use	0.848	0.891	0.621	
Perceived usefulness	0.893	0.918	0.652	

Source: Survey data analysis

As displayed in Table 3, all Cronbach's Alpha was waster than the threshold of 0.6 proposed by Hair, Black [45] The composite reality coefficients exceeded the cut-off of 0.7 suggested by Hair, Black [45] Hair Jr, Sarstedt [44] propose that AVE should be more than 0.5. As is shown in Table 3, the AVE coefficients ranged from 0.583 to 0.653, more significant than 0.5. The HTMT coefficients varied from 0.343 to 0.747, smaller than the upper limit of 0.85 proposed by [44] In short, construct reality, validity, and discriminant results revealed a good fit for the reflective measurement model.

4.2. Path coefficients

The internal VIF coefficients that measure multicollinearity ranged from 1,000 to 1,275. According to Hair [45], a VIF index of less than 3 means no multicollinearity, and from 3 to 5 means that multicollinearity is possible but uncertain. The multicollinearity test results show that there is insignificant multicollinearity in the model.

Table 4 displays path coefficients

Table 4. Path coefficients

Paths	Path coefficients	Standard deviation	P-value	Decisions
DS→ PEU	0.389	0.057	0.000	Accept H_3
DS → PU	0.313	0.057	0.000	Accept H_4
PEU → IU	0.395	0.034	0.000	Accept H_1
PU → IU	0.356	0.032	0.000	Accept H_2

Note: DS: digital skills; IU: Intention to use; PEU: perceived ease of use; PU: perceived usefulness.

The results show that perceived usefulness positively impacts the intention to use digital technologies (standardized $\beta = 0.356$; $p = 0.000$). Thus, hypothesis H_2 is accepted. Perceived ease of use positively affects intention to use (standardized $\beta = 0.395$; $p = 0.000$). Thus, hypothesis H_1 is accepted. When comparing the impacts between perceived usefulness and perceived ease of use on intention to use, perceived ease of use has a slightly more substantial impact on intention to use. The survey data analysis reveals that digital skills positively affect perceived ease of use and usefulness (standardized $\beta = 0.389$; $p = 0.000$; and standardized $\beta = 0.313$; $p = 0.000$). Thus, hypotheses H_1 and H_2 are supported.

5. Discussions and limitations

5.1. Discussions

The purpose of this study is to investigate the influence of digital skills and intention to use digital technologies in Vietnamese commercial banks. The research results reveal that both perceived ease of use and perceived usefulness have a positive relationship with intention to use. These results agree with prior studies [34, 35] These findings suggest that to increase the acceptance of digital technologies by Vietnamese commercial bank employees, the banks should improve the perceived usefulness and ease of use. The results also indicate that digital skills positively affect perceived ease of use in light of previous studies [36, 37] This finding means that enhancing digital skills supports employees' perception of ease of use. This study confirms the relationship between digital skills and perceived usefulness, which is consensus with previous studies. This finding infers that Vietnamese commercial banks should improve the employees' digital skills to improve perceived usefulness.

5.2. Theoretical and practical implications

This study contributes to the literature on digital acceptance in the following aspects. This research extends the literature on digital acceptance by providing the role of digital skills comprised of the TAM model. To the author's knowledge, there is a dearth of studies on the role of digital skills in digital acceptance through perceived ease of use and perceived usefulness. Future studies investigating the predictors of digital intention to use should include digital skills as an exhibitor of digital acceptance. Moreover, this study confirms the relationship between perceived ease of use and perceived usefulness to intention to use in the context of employees of Vietnamese commercial banks. Most of the previous studies investigate the intention to use from customers rather than employees.

The findings of this research provide several practical implications for Vietnamese commercial banks. First, to enhance the acceptance of digital technologies by the employees, Vietnamese commercial banks should improve the perceived ease of use and perceived usefulness. Moreover, as digital skills positively influence both perceived ease of use and perceive usefulness, it is necessary to improve the digital skills of Vietnamese commercial banks' employees. This implication is implicit in the change in the practice of training and recruitment of Vietnamese commercial banks.

5.3. Limitations

Although this study has certain contributions to digital transformation in the banking sector, readers, researchers, and practitioners should consider the following limitations when using this study or generalizing its findings. Firstly, the scale in the study is the previous scale and translated into Vietnamese. However, the author uses the same scale as the digital technology acceptance scale for the digital transformation acceptance scale. Although Vietnamese commercial banks are in the second stage of digital transformation, applying digital technology, so using the scale in this study is also valid. However, the subsequent studies using a more comprehensive scale will complement this study. Secondly, regarding the data collection method, the survey questionnaire was designed and asked the staff of Vietnamese commercial banks at the same time; the variables measured in one questionnaire one time may cause errors. Common variance. This error can inflate relationships. Future studies that investigate at multi stages for each variable will be more valuable than this study. Third, the scale used in the study is subjective. Questionnaire respondents rated themselves on levels without objective scales. This way of assessing the scale can lead to a higher assessment of the intention to apply digital technology than it actually is. Future studies using more objective scales will complement this study. Fourth, although the sample group size is guaranteed according to [45] , the sample group structure is not guaranteed; most of the respondents to the questionnaire are female with university education. Therefore, the following studies using a guaranteed sample group will be more valuable than this study. Fifth, the sample group in this study is a convenience sample group. Thus, the research results may be biased due to this convenience sample group. Future studies using random samples will be more valuable.

Although this study has the above limitations, however, the authors believe that this study also has certain contributions to the research and practice of digital transformation at Vietnamese commercial banks.

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PART 6.
MARKETING
& E-COMMERCE

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Understanding The Consumer Intention to Use Mobile Money in Vietnam: A TAM - Based Approach

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ABSTRACT

In the current context of diverse electronic payment services, Mobile Money has distinct advantages in developing countries due to its ability to facilitate payments without the need for internet access or a bank account. In Vietnam, Mobile Money was piloted starting in 2021 and has shown significant development. This study focuses on explaining the intention to use Mobile Money in Vietnam through an extended Technology Acceptance Model (TAM) and the moderating effects of individual variables. The results of a random survey of 528 Mobile Money users have shown that the TAM model effectively explains the intention to use Mobile Money in Vietnam. Additionally, individual factors including Brand Awareness, Personal Innovativeness, and Customer Experience have been found to moderate the influence of Social Influence on Behavioral Intention. Based on the research findings, several solutions for mobile money service providers are also discussed.

Keywords: Mobile Money, TAM Model, Behavioral intention, Intention to use, E-payment

1. Introduction

Mobile Money (MM) was launched in 2007 in Kenya. This service was developed by the mobile telecommunications company Safaricom in collaboration with Kenya Commercial Bank, an electronic banking institution. Mobile Money, known as M-Pesa, has achieved tremendous success in Kenya and later expanded to many other countries worldwide (Ngugi et al., 2010). While most financial services require internet connectivity and bank accounts, MM utilizes the mobile network to facilitate transactions. This provides a significant advantage for MM in developing countries,

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where the percentage of people without bank accounts is high, and internet infrastructure is still underdeveloped, particularly in rural and mountainous areas.

In Vietnam, the Prime Minister signed and issued Decision No. 316/QD-TTg dated September 3, 2021 approving the pilot application of MM with three telecommunication service companies, including Viettel, Vinaphone and Mobifone. By July 2022, the number of registrations and users of the mobile money service reached nearly 2 million people, marking a 440% increase compared to the end of 2021. Among them, the number of registrations and users in rural areas, mountains, remote areas, border regions, and islands exceeded 1.3 million people, accounting for 68% of the total registered and active users. However, the growth rate of mobile money subscriptions has shown a declining trend over the months. In January 2022, the highest growth rate was recorded at 64%, but by July 2022, this rate had decreased to 11% (Dao H.T.T and P.T.H An, 2022).

The e-payment market in Vietnam is predicted to have potentially significant growth regarding to market scale, quantity and quality of users as well as the increase of mobile phone users (Nguyen, 2022). However, Luong (2022) argued that two of the most notable challenges for users to adapt MM is their habit of using cash and the anxiety of getting used to a new type of e-payment. The survey conducted by Hạ Thị Thiều Dao and Phùng Thị Hoàng An (2022) indicates that MM remains complex and difficult to understand, making it less user-friendly compared to banking services and e-wallets. Furthermore, MM has not yet established a distinctive advantage in terms of limits and costs when compared to other financial services, lacking utility value (Dao H.T.T and P.T.H An, 2022).

In theory, numerous studies have successfully explained the intention to adopt a new technology using the TAM model, including electronic payment technologies (Ezeh, 2018; Kaur et al., 2020; Alhassan, 2020). Ezeh (2018) argued that TAM has been validated as a powerful and parsimonious framework for explaining the acceptance of Information Technology in different contexts. Besides, Kaur et al. (2020) believed that TAM is termed as "the most powerful research model" to explain users' behavior and intention to use a new technology. This study examines whether the factors of the TAM model have explanatory value for the intention to use MM in Vietnam. Additionally, this study also examines how individual factors such as Brand Awareness, Personal Innovativeness, and Customer Experience influence the intention to use MM.

2. Literature review and research model

2.1. Mobile money service

According to GSMA (2010), Mobile Money is defined as "a service in which the mobile phone is used to access financial services". In 2023, GSMA suggests that a service should meet these criteria to be a mobile money service: *(i) It includes transferring money, conducting and receiving payments via mobile phone; (ii) It must be available to people are unbanked (not having any formal accounts at any financial institutions); (iii) A network or physical transactional points (agents) are necessary to make the service available to everyone*.

Globally, there has been roughly 1.6 billion MM users, with a total daily transaction value of about $3.45 billion in 2022 (GSMA, 2023). This service has become popular not only during the immense outbreak of the Covid-19 but also in the post-pandemic period. Mobile Money is now considered to be a "mainstream financial service" in various nations. As can be seen from Figure 1, Sub-Saharan African is now leading the world in term of number of registered MM accounts, followed by East Asia & Pacific area.

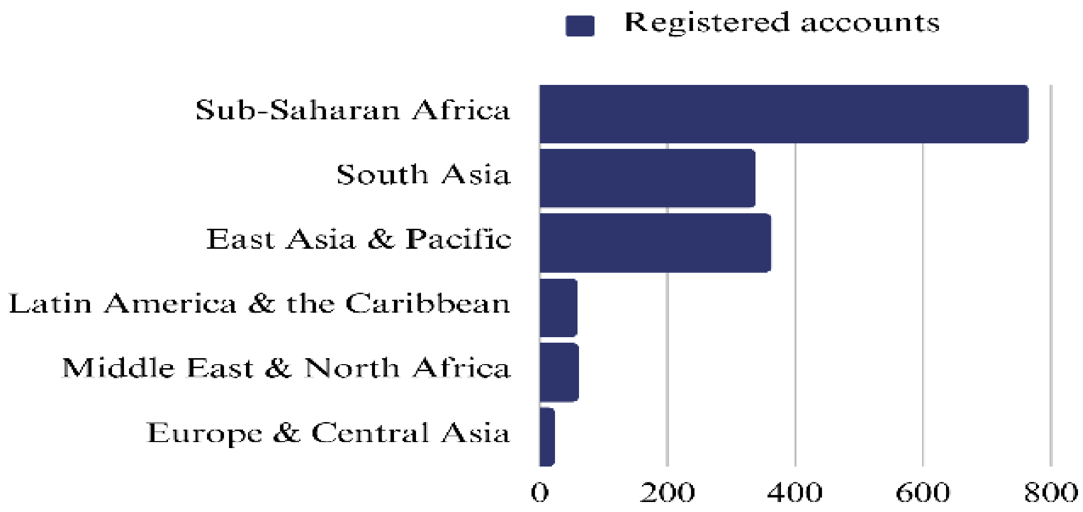

Figure 1. Registered accounts (million) of MM in the world (GSMA, 2023)

Considered as a cashless payment solution suitable for developing countries, the Government of Vietnam has allowed the three largest telecommunications corporations (Viettel, Vinaphone, and Mobifone) to pilot mobile money services for a period of two years (Ministry of Information and Communication, 2021). Mobile Money is expected to be a promising and effective solution for Vietnam to deploy financial services to all people, especially people in remote areas and people who do not have a bank account (State Bank of Vietnam, 2021). This is considered a crucial direction in Vietnam's Financial Inclusion Strategy, aiming to move towards a cashless society. Now, 47% of Vietnamese consumers use electronic payments (including wire transfers, e-wallets, domestic cards, credit cards, etc.) (Thế Vinh, 2022). With more than 93.5 million smartphone subscribers, this is a golden opportunity for Vietnamese to use mobile money for shopping (Nguyen Tran Hung, 2022), towards the objective of MIC VietNam: 100% smartphone users owning mobile money by 2022 (Thu Thuy, 2022).

2.2. Literature review and research model

2.2.1. The Technology Acceptance Model (TAM)

The objective of this research is to explain the formation of the intention to use Mobile Money services in Vietnam. Behavioral Intention was described as "the strength of one's intention to perform a specified behavior" (Alhassan et al., 2020). In this study, this factor is believed to indicate the extent to which users intend to accept and use new mobile payment technology such as mobile money service.

The Technology Acceptance Model (TAM) is a widely used theoretical framework for understanding users' acceptance and adoption of new technologies. The model was first proposed by Davis in 1989 and has since been extensively studied and validated in various contexts. The TAM model is rooted in cognitive psychology and the theory of reasoned action (TRA). It posits that users' behavioral intention to adopt a technology is determined by two key factors: perceived usefulness (PU) and perceived ease of use (PEOU). Perceived usefulness refers to the degree to which a user believes that using the technology will enhance their performance or productivity, while perceived ease of use refers to the user's perception of the effort required to use the technology. The TAM model suggests that PU and PEOU directly influence users' attitude towards using the technology, which in turn affects their behavioral intention. Numerous studies have confirmed the significance of PU and PEOU in explaining technology adoption behavior (Legris et al., 2003; Gbongli, 2022).

In 2000, Venkatesh and Davis has proposed the TAM2 model and introduced several new constructs and factors beyond the original TAM. The TAM2 model incorporated the concept of external variables, such as subjective norm and image, to account for social influences and the impact of reputation or image on users' attitudes and intentions. These external variables were considered to have indirect effects on users' acceptance of technology through their influence on perceived usefulness and perceived ease of use.

Additionally, TAM2 introduced the concept of cognitive instrumental processes, which refers to users' beliefs about the effectiveness and efficiency of a particular technology. These beliefs were believed to mediate the relationship between perceived usefulness, perceived ease of use, and users' attitudes and intentions. Furthermore, TAM2 emphasized the role of facilitating conditions, which refers to the availability of resources and support that can facilitate the use of technology. Facilitating conditions were added as an important factor that could influence users' intentions and actual technology usage. The evolution from TAM to TAM2 expanded the original model by incorporating external variables, cognitive instrumental processes, and facilitating conditions. This allowed for a more comprehensive understanding of the factors influencing technology acceptance and adoption.

We have chosen the TAM model due to its popularity and effectiveness in explaining technology acceptance behaviors, including technologies in the financial and banking sector (Gbongli, 2022). Additionally, individual factors such as brand awareness, personal innovativeness, and customer experience are considered as moderating variables in the explanatory power of the TAM variables (Figure 2).

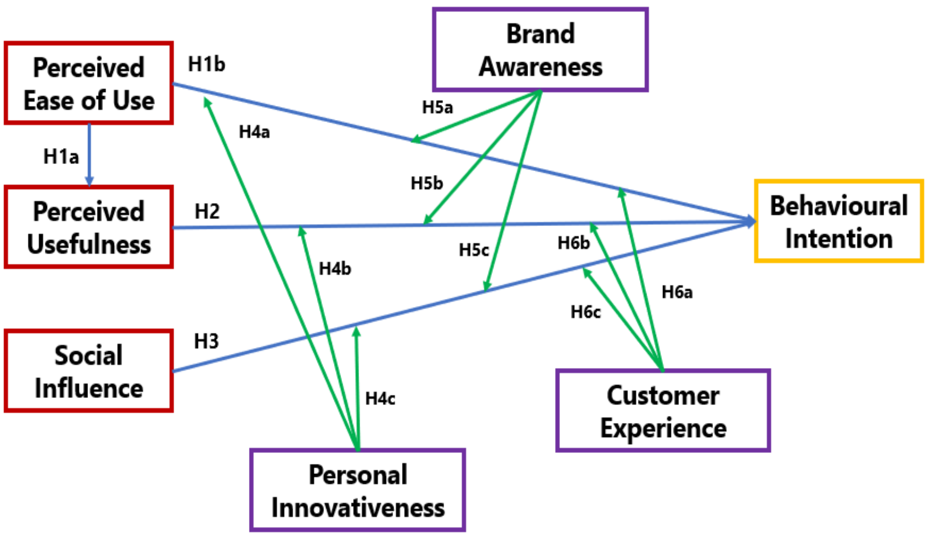

Figure 2. Research model

2.2.2. TAM's Factors

Perceived Ease of Use (PEOU)

Perceived Ease of Use (PEOU) is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989). Many studies have proved that Perceived

Ease of Use (PEOU) is a vital factor in determining customers' intention to accept towards a fresh technology (Gbongli et al., 2019). Nur and Panggabean (2021) suggested that PEOU is a crucial determinant of adopting modern technologies by individuals. PEOU is also considered as one of the important determinants in the TAM model that affect customers' behavior in using technology (Cobla and Osei-Assibey, 2018).

H1a: In the context of mobile money service, Perceived Ease of Use positively affects Perceived Usefulness

H1b: In the context of mobile money service, Perceived Ease of Use positively affects Behavioral Intention

Perceived Usefulness (PU)

Davis (1989) stated that PU is defined here as "the degree to which a person believes that using a particular system would enhance his or her job performance". MM is believed to give its customers multiple benefits, for instance, the ease and convenience in conducting payment compared to other methods, and this is considered to endorse a positive attitude toward mobile-based money transfer (Gbongli et al., 2019). The perceived utility of mobile payment systems or the perks given by paying with a mobile device can also assist newcomers or existing customers in making better use of the system (Patil et al., 2020).

H2: In the context of mobile money service, Perceived Usefulness positively affects Behavioral Intention

Social Influence (SI)

Venkatesh et al. (2012) stated that "Social Influence is the extent to which consumers perceive other important people (e.g., family and friends) believe they should use a particular technology". Social Influence tries to know the changes in behavior of a person, brought by external inputs like information that is communicated to them (Kaur et al., 2020).

Previous research has pointed out the role of SI towards identifying customers' behavioral intention. According to Musa et al. (2015), SI is confirmed to be a factor having a certain influence on the behavioral intention to use mobile payment devices in Qatar. SI is also stated to be a factor with a significant direct positive influence on behavioral intention towards mobile payment in India (Patil et al., 2020). Koenig-Lewis (2015) stated that users of mobile payment are sensitive to SI and consider their friends' expectations when using a technology.

H3: In the context of mobile money service, Social Influence positively affects Behavioral Intention

2.2.3. Individual Factors

Personal Innovativeness (PI)

Personal Innovativeness is defined as "the willingness of an individual to try out any new information technology" (Agarwal and Prasad, 1998). Besides, Upadhyay and Jahanyan (2016) considers PI to "imply the user's willingness to a new system or service". It is believed that when people are exposed to an unfamiliar thing, they would have instinctive reactions due to their differences in personal innovativeness. According to Patil et al. (2020), PI has not been a part of empirical research models of technology acceptance. However, it has been an essential predictor of innovation adoption across other disciplines.

Young people, especially Gen Z, tend to look for state-of-the-art technologies and they are ones who love to be exposed to innovation as much as possible. Furthermore, these people tend to have enormous ego, which stimulates them to learn more about advanced innovation to catch up with their peers. As MM is a new way of transaction in Vietnam, it is believed that the Personal Innovativeness would play a moderating role in the relationship between TAM variables and Behavioral Intention.

H4a: In the context of mobile money service, Personal Innovativeness moderates the relationship between Perceived Ease of Use and Behavioral Intention

H4b: In the context of mobile money service, Personal Innovativeness moderates the relationship between Perceived Usefulness and Behavioral Intention

H4c: In the context of mobile money service, Personal Innovativeness moderates the relationship between Social Influence and Behavioral Intention

Brand Awareness (BA)

Brand Awareness is a crucial signal mentioning how customers perceive the brand and could help to foresee their buying behavior (Wang, 2010). Keller (1993) defined BA as "brand recall and recognition performance by consumers". Wang (2010) found that BA positively moderates the relationship between brand credibility and the customers' purchase intention. Brand awareness creates associations with the performance of the product or service, thereby potentially enhancing the influence of perceived usefulness of the technology on behavioral intentions.

Three Mobile Money Service Providers in Vietnam are three big telecommunication corporations, including Viettel, Vinaphone and Mobifone. Thus, mobile money users in Vietnam are mostly telecommunication service users of these companies. It is assumed they have specific awareness about the brand, the products that these brands are supplying, and they are also aware of its functions. The more familiar users are with the telecommunications brand, the more they trust in its usefulness and familiarity with the product or service, thereby increasing their behavioral intentions.

H5a: In the context of mobile money service, Brand Awareness moderates the relationship between Perceived Ease of Use and Behavioral Intention

H5b: In the context of mobile money service, Brand Awareness moderates the relationship between Perceived Usefulness and Behavioral Intention

H5c: In the context of mobile money service, Brand Awareness moderates the relationship between Social Influence and Behavioral Intention

Customer Experience (CE)

The Theory of Reasoned Action, Theory of Planned Behavior, and TAM Model do not explicitly or formally include experience. However, user's experience moderates the association between some specific components, such as perceived ease of use, perceived usefulness, and attitude toward behavior, according to Venkatesh et al. (2012).

H6a: In the context of mobile money service, Customer Experience moderates the relationship between Perceived Ease of Use and Behavioral Intention

H6b: In the context of mobile money service, Customer Experience moderates the relationship between Perceived Usefulness and Behavioral Intention

H6c: In the context of mobile money service, Customer Experience moderates the relationship between Social Influence and Behavioral Intention

3. Research Methodology

3.1. Construct and measurement scale

The research employs a survey instrument with 6 measurement scales and 33 items inherited from previous studies to seek answers to the research hypotheses. The contents of the survey instrument and the applied references can be found in Table 1. The Likert scale from 1 to 5 is used to measure the constructs cited.

Table 1: Measurement scale of construct

	Construct/Dimension	Item code	Source
1	**Perceived ease of use**	PEOU	Davis (1989)
	I know how to use Mobile Money quickly	PEOU1	
	It is easy for me to remember how to perform tasks using Mobile Money	PEOU2	
	My interaction with Mobile Money is easy for me to understand.	PEOU3	
	I find it easy to get Mobile Money to do what I want it to do.	PEOU4	
	I find it easy to recover from errors encountered while using Mobile Money	PEOU5	
	I find it flexible to interact with Mobile Money	PEOU6	
2	**Perceived usefulness**	PU	Davis (1989)
	Mobile Money make my transactions faster	PU1	
	Mobile Money will help improve the performance of my transactions	PU2	
	Mobile Money will help increase the efficiency of my transactions	PU3	
	Mobile Money increase the efficiency of transferring money	PU4	
	Mobile Money will make it easier to transfer money	PU5	
	I find Mobile Money useful in my daily life	PU6	
	The services which I use every day accept Mobile Money	PU7	
3	**Behavioral Intention**	BI	Venkatesh (2003)
	I intend to use Mobile Money in the next 3 months.	BI1	
	I predict I would use Mobile Money in the next 6 months.	BI2	
	I plan to use Mobile Money in the next 12 months.	BI3	
4	**Social Influence**	SI	Nath, Bhal, and Kapoor (2013)
	People who influence my behavior think that I should use Mobile Money	SI1	
	People who are important to me think that I should use the system	SI2	
	People whose opinions that I value prefer that I use Mobile Money	SI3	
	My family/friends/customers/colleagues are using Mobile Money	SI4	

5	**Personal Innovativeness**	PI	Lua, Yaob and Yua (2005) Kwon (2013)
	When I heard about a new technology, I would look for ways to experiment with it	PI1	
	Among my peers, I am the first one to try out new information technologies	PI2	
	In general, I am not hesitant to try out new information technologies	PI3	
	I'm open to trying new technology	PI4	
6	**Brand Awareness**	BA	Kilei, Iravo and Omwenga (2016)
	I can identify my telecommunications network from others	BA1	
	When I think of my favorite telecommunications network, I immediately think of the one I'm using	BA2	
	The telecommunications network I'm using is the only one I remember whenever I want to buy a new sim or make telecommunications transactions	BA3	
	I can quickly remember the icon or logo of the telecommunications network that I am using	BA4	
	I know what my telecommunications network’s main color is	BA5	
	When someone talks about using telecommunications services, I immediately think of my telecommunications network	BA6	
7	**Customer Experience**	CE	Trivedi (2019)
	I like to use electronic payment apps on my phone	CE1	
	My experience of using electronic payment applications on my phone is very enjoyable	CE2	
	I like the experience of using electronic payment applications	CE3	

3.2. Data collection and analysis

The data was collected through a questionnaire survey that was administered to the participants during 2 months from Jan to Mars 2023. The survey was distributed through various means, such as online platforms and in-person distribution. The study participants are Vietnamese customers who had used or have intention to use mobile money service, based on convenience sampling method. The survey involved 528 participants with different demographic characteristics (Table 2), and they are required to evaluate items’ statements according to their knowledge, experience, and perception. The data then has been cleared and processed through SPSS, which brought out some specific indicators to test the proposed hypotheses.

The primary interviewees are mainly young people (aged 18 to 25), including students and pupils, with the majority being females (75.9%). This is the result of convenience sampling and the process of filtering interview candidates. This study requires interviewees with a certain level of knowledge about mobile financial services. Although the sample distribution in the research is not fully representative of the mobile phone users in Vietnam, the users of mobile financial services are typically young students. Therefore, this research sample can be used to test hypotheses.

Table 2: Profile of respondents (n=528)

	n	%		n	%
Gender	528	100%	**Age**	528	100%
Female	401	75.9%	Under 18	7	1.3%
Male	127	24.1%	18 – 25	500	94.7%
Education	528	100%	25 – 55	21	4.0%
Intermediate	9	1.7%	**Monthly Income**	528	100%
College	202	38.3%	< 3 million	368	69.7%
University	297	56.3%	3-5 M	96	18.2%
Postgraduate	20	3.8%	5-10 M	32	6.1%
			>10 M	32	6.1%

4. Data analysis & Research Results

The EFA analysis has been conducted with independent and moderating variables, which are: Perceived Ease of Use, Perceived Usefulness, Social Influence, Brand Awareness, Personal Innovativeness and Customer Experience. As can be seen from Table 3, Barlett's Test is significant (p = 0,000) and the KMO value is 0.936, which proves that the model is considerably appropriate, according to Hair et al. (2010).

Table 3: Explanatory Factor Analysis

KMO and Barlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.936
Bartlett's Test of Sphericity	Approx. Chi-Square	7723.642
	df	351
	Sig.	.000

- ***Validation of TAM model in the context of mobile money service***

The multiple regression has proved the determining role of the three independent factors including Perceived Ease of Use, Perceived Usefulness and Social Influence. Table 4 indicated the coefficient value while implementing regression with PU (Perceived Usefulness), PEOU (Perceived ease of use), SI (Social Influence) and BI (Behavioral intention). As can be seen from Table 4, the p value of independent variables PU, PEOU, SI was 0.000, 0.001, and 0.000 respectively. This pointed out that these independent variables PU, PEOU, SI have positive effects on BI. Furthermore, SI have the most effect on BI. A recurrence equation was formed as below:

Behavioral Intention = 0.208 * Perceived Usefulness + 0.153 * Perceived Ease of Use + 0.429 * Social Influence + ε

Table 4: Results of direct effects evaluation

Hypotheses	Coefficient	t-value	p-value	Hypothes' Validation (yes/no)
H1a: PEOU ◎ PU	0.696	22.206	0.000	Yes
H1b: PEOU ◎ BI	0.153	3.372	0.001	Yes
H2: PU ◎ BI	0.208	4.395	0.000	Yes
H3: SI ◎ BI	0.429	10.471	0.000	Yes

- ***Evaluation of moderating effects***

Table 5 presents the results of the moderation tests examining the roles of brand awareness, personal innovativeness, and customer experience. The results indicate that these individual variables moderate the impact of social influence on behavioral intentions in the context of mobile money services in Vietnam. The extent to which these three moderators affect the relationship between social influence and behavioral intention is roughly the same. Besides, it has been found from the result that Brand Awareness also contributes to moderating the relationship between Perceived Usefulness and Behavioral Intention. However, its moderating role is not considerably efficient with the coefficient value of 0.151 only.

Table 5: Results of indirect effects evaluation

Hypotheses		Coefficient	t -value	p- value	Hypothese Validation (yes/no)
H4a	PI x PEOU◎BI	.091	1.154	.249	No
H4b	PI x PU◎BI	.089	1.062	.289	No
H4c	**PI x SI✾BI**	**.523**	**7.919**	**.000**	**Yes**
H5a	BA x PEOU◎BI	.011	.146	.884	No
H5b	**BA x PU✾BI**	**.151**	**1.989**	**.047**	**Yes**
H5c	**BA x SI✾BI**	**. 559**	**9.453**	**.000**	**Yes**
H6a	CE x PEOU◎BI	.004	.049	.961	No
H6b	CE x PU◎BI	.077	.975	.330	No
H6c	**CE x SI✾BI**	**.548**	**8.603**	**.000**	**Yes**

5. Discussion

The results of data analysis have confirmed hypotheses H1 to H3, indicating that the factors in the TAM model have a positive influence on the formation of the intention to use mobile money. These findings demonstrate that TAM remains a robust model for explaining the intention to adopt new financial technologies (Gbongli, 2022).

The assessment of the moderating effects of the individual variables (from H4 to H6) reveals the moderating roles of brand awareness, personal innovativeness, and customer experience. However, contrary to expectations, only the impact of social influence on behavioral intentions is moderated by these three variables (H4c, H5c, H6c). In other words, these individual variables interact with social influence in explaining the intention to use mobile money services. This suggests that the opinions of others have a strong connection to individuals' perceptions and attitudes, at least within the context of Vietnam. This could be an interesting suggestion for future research.

5.1. Theoretical implications

The results of this study suggest several theoretical implications. First and foremost, this research has once again acclaimed the role of Perceived Ease of Use and Perceived Usefulness in affecting and accelerating customers' Behavioral Intention as well as the influence of Perceived Ease of Use on Perceived Usefulness. Once again, the TAM model is reaffirmed to be significant in explaining the behavioral intention to use the mobile money services as a new technology. This result contributes additional evidence confirming that the variables of TAM are still very strong in explaining technology acceptance behavior compared with other research models.

Among the three independent variables, Social Influence tends to be the most robust variable in affecting Behavioral Intention. This is reasonable as Mobile Money is a new method of payment in Vietnam; therefore, users need encouragement from their acquaintances to start using the technology. Another reason for this is that using a payment system that most of your surrounding relationships also helps to make your transactions convenient and comfortable. It is not surprising that Social Influence affects Behavioral Intention even more powerfully than Perceived Usefulness or Perceived Ease of Use. It is possible that for Vietnamese people, personal decisions are more influenced by others.

The influence of Perceived Ease of Use is the second most powerful as it would control roughly 25.5% of users' behavioral intention. This indicates that the belief and intuition that the system is easy to use would encourage customers to try Mobile Money for the first time. Besides, Perceived Usefulness affects around 15.3% on Behavioral Intention, which is also the least robust among the three independent variables. This could be explained that customers are now not fully aware of the usefulness of Mobile Money compared to other mobile payment methods. It is not easy to point out the difference and advantage of Mobile Money among tens of similar applications and payment methods such as e-wallet or bank apps.

Secondly, this study has discovered the moderating role of individual variables in the relationship between TAM variables and behavioral intention. This is an important finding, indicating that the variables of the TAM model will be heavily influenced by individual variables. This could be the answer to the contradictory findings in previous TAM studies. Furthermore, this moderator role of brand awareness, personal creativity, and customer experience only in the case of social influence suggests that it is possible that for Vietnamese people, the influence of others on personal decisions is very strong.

5.2. Practical implications

There are some implications for mobile network operators to increase customers' behavioral intention to use their service. First, the influence of others (celebrities, family members, friends, etc.) is an important factor in shaping the intention to use mobile money. Mobile money service providers can develop communication strategies by leveraging celebrities, word-of-mouth marketing, or building a brand community. As Brand Awareness and Customer Experience proved to be the two moderators which are highly powerful in moderating relationship between Social Influence and Behavioral Intention, it is suggested for these companies to raise people awareness about the brand via using consistent image, messages, as well as other media resources to make sure they could impress the potential customers.

Secondly, the research findings revealed that consumers will use mobile money services when they have a clear understanding of the benefits and receive comprehensive guidance on how to use them (in a user-friendly manner). Mobile money service providers need to improve their communication activities, enhance the promotion of mobile money benefits, and implement instructional programs and trial experiences to increase familiarity with the service. Additionally, mobile companies should enhance the user interface and usability features of mobile money apps to make them more user-friendly, especially for older consumers.

5.3. Limitations and suggestions for future research

This study has some limitations. The first and most important is related to the problem of sampling. Due to the process of filtering interview candidates and convenient sampling methods, the sample may not be the best representative for the overall user of the mobile money service. Further research can fix this problem by expanding the sample size by proportional methods and the wider sample area.

The second limitation is to ignore the intermediate variables of the TAM model such as attitudes toward the use of mobile money or behavioral control. Since this study focused only on clarifying the interpretability of the TAM model for intended use, these variables were eliminated. Further research will likely extend this study using the extended_TAM model with more variables.

6. Conclusion

In the context of the emergence of various new financial services in Vietnam, gaining a better understanding of mobile money acceptance behavior holds significant theoretical and practical implications. This study aims to elucidate the formation of the intention to use mobile money services in Vietnam by applying the TAM model and exploring the moderating effects of individual variables. The research findings once again affirm the explanatory power of the TAM model in understanding technology acceptance behavior in Vietnam in general, and specifically in the context of mobile money services. Additionally, the moderating roles of individual variables have been identified, further contributing to our understanding of technology usage behavior and mobile money acceptance in Vietnam.

This study sheds light on the factors influencing the intention to use mobile money services in Vietnam, offering valuable insights for practitioners and researchers alike in the realm of financial technology acceptance.

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APPENDIX

Author	Title	Year	Findings
Kaur, J., Kaur, S., Syan, A. S., & Sharma, R. R.	Factors Influencing the Adoption of Payment Banks in India Using an Extended TAM.	2020	PEOU has the highest influence on the behavioral intentions while PU showed lower impact
Alhassan, Li, Reddy & Duppati	Consumer acceptance and continuance of mobile money: Secondary data insights from Africa using the technology acceptance model	2020	PEOU is the most significant determinant of mobile money usage in Africa, besides, PU also plays an important role.
Koenig-Lewis, N., Marquet, M., Palmer, A., & Zhao, A. L.	Enjoyment and social influence: predicting mobile payment adoption.	2015	Users of mobile payment are sensitive to SI and consider their friends' expectations when using a technology
Patil, et al.	Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal.	2020	Social influence is stated to be a factor with a significant direct positive influence on behavioral intention towards mobile payment in India
Wang, X., & Yang, Z.	The Effect of Brand Credibility on Consumers' Brand Purchase Intention in Emerging Economies: The Moderating Role of Brand Awareness and Brand Image.	2010	Brand Awareness positively moderates the relationship between brand credibility and the customers' purchase intention.

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TCO Concept – An Optimal Cost Model for Purchasing Strategy

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ABSTRACT

This research paper explores the potential of optimizing Total Cost of Ownership (TCO) as a means to generate value in purchasing processes. With nearly 70% of surveyed experts acknowledging the importance of TCO in the future of supply chain management (Gartner, 2019), a shift towards a value-focused approach rather than a price-focused one is becoming increasingly critical. However, the lack of a definitive cost allocation framework and a mechanism for information sharing has hindered the realization of this objective. To address this gap, this study proposes the development of a globally applicable cost model and a supporting platform. The TCO model is suggested as an optimal cost model for selecting and evaluating the supplier selection effectively (Hosseinzadeh et al, 2023). By debunking the myth of life-cycle costs and facilitating effective communication between suppliers and buyers, this research aims to establish an optimal cost model and enhance collaboration in purchasing negotiations. The proposed cost model is intended to serve as a valuable tool for procurement professionals worldwide.

Keywords: Total cost of ownership, purchasing, cost model, optimal

1. Introduction

Before diving in the development of TCO model, it is a good start to investigate into the market standard of TCO models for preliminary understanding of the norm in practice. Moreover, this exploration will later on play the role of a benchmarking reference that helps improve and adapt the TCO model derived from this study to the norm in practice.

TCO practices in the business sector especially machinery manufacturers. Most TCO models or life-cycle costing models in general are preferably used to evaluate capital decisions rather than the purchase of commodities, every day elements and services due to the great number of input variables needed and the complexity of the analysis (Rudzki and Trent, 2011). TCO practice is common in automotive and IT-related items purchasing, limited information is given for machinery

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procurement. The general observation is that the annual cost of maintenance should be about three to five percent of the purchase price, yet for a cheaper and lower-quality machine, maintenance costs are typically from 10 to 15 percent of the purchase price (Stauffer, 2016).

Graco – a US manufacturer of equipment for fluid handling, stated that TCO could provide a way to conduct comparable analysis between machines and suggested a formula to calculate TCO of an equipment as shown in figure 1. In each cost component of the formula, the definition is given.

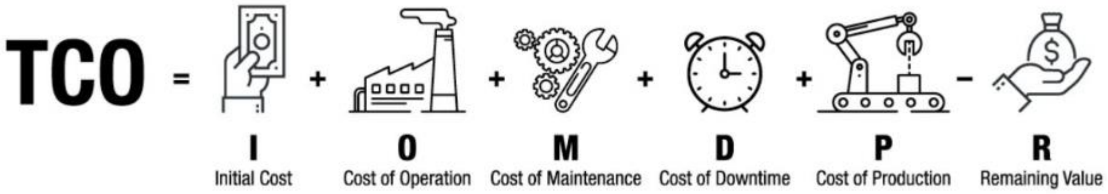

Figure 1. Formula to calculate TCO for an equipment (Graco, no date)

2. Literature review

2.1. The purchasing process

The six-step purchasing process advocated by Van Weele (2010) covers the sequence of activities to purchase an item. Overall, the sequence is divided into two parts: strategic and tactical purchasing. In strategic purchasing process, first the purchasing specifications (i.e. required quality and quantity) of the item of interest are determined. Then the best possible supplier is selected via tendering and negotiations. Consequently, a contract is signed. Then, tactical purchasing takes place, including ordering, expediting, follow-up and evaluation (i.e. settling claims, setting up supplier rating and ranking, keeping product). Although the process of Van Weele (2010) covers main activities that indeed happen in packaging line purchasing practice, it didn't illustrate the continuity that should be embedded in practice. Capgemini (2011) depicted a supplier relationship management model that follows the same concept as Van Weele (2010). The strategic purchasing is shown in the strategic sourcing cycle, and tactical purchasing is shown in procurement order cycle.

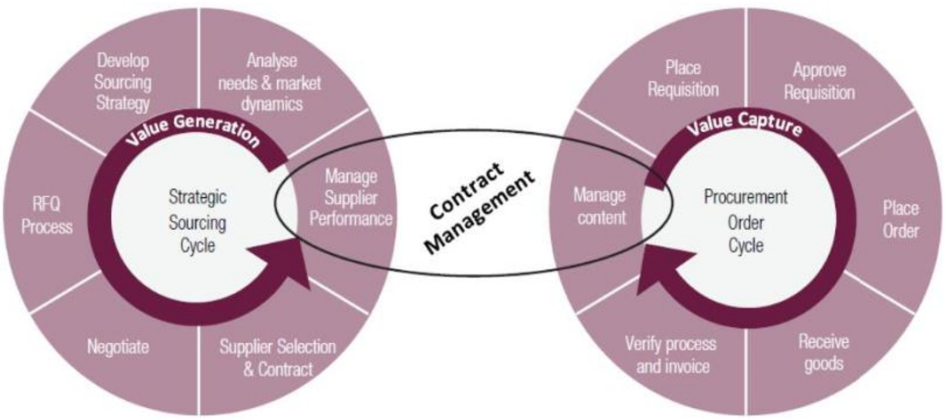

Figure 2. Purchasing and SRM model (Capgemini, 2011)

2.2. Supplier selection and evaluation

As a percentage of revenue, purchasing expenditures averaged 63% in manufacturing (Ellram, 1996) and firms are increasingly looking for ways to choose more collaborative suppliers with whom they can establish long-term business relationships (Chen, 2010). In purchasing function, supplier selection is depicted as one of the crucial processes (Ghodsypour and O'Brien, 1998; Kaufman et al., 2010). In most of the cases, supplier selection decisions are made by multiple functional stakeholders, based on multiple criteria, under the context of making constant trade-offs among the criteria and following multiple objectives. This altogether makes supplier selection a challenging and critical task.

Kim and Wagner (2012) and De Boer et al. (2001) defined that supplier selection is a decision-making process of four phases (problem definition, formulation of criteria, prequalification of suitable suppliers and final selection) to select the best supplier(s) from a prequalified pool based on predefined objectives and decision criteria.

To assist in supplier selection, De Boer et al. (2001) did an extensive review on what models are available for all four phases in the supplier selection process. TCO is one of the many decision methods recommended to be used in "final choice" stage of supplier selection process (De Boer, Labro and Morlacchi, 2001). Since TCO is the effort of quantifying all costs relevant to the purchasing process and buyers base on that to select and evaluate suppliers (Aissaoui et al., 2007; Roodhooft and Konings, 1997), TCO is expected to reduce subjectivity and in return help companies attain high quality, low cost, flexibility and resilient offerings from suppliers.

2.3. Total Cost of Ownership

Ellram (1993) mentioned that many firms who are expert at accounting the costs occurring prior to or during the purchase of a good lose track of the costs associated with the purchase and that these significant costs vary greatly by type of buy. An observation taken from one of the firms studied in Ellram (1993) implies that price of a production equipment is around 35% of the total cost over its life cycle and that costs incurred after the asset is in use account for 50% or more of the total cost.

TCO is not only a decision method, but it is also a cost method that facilitate supplier selection.

TCO is deemed as a concept that goes beyond the initial purchase price and implies costs of acquisition, usage, and maintenance of a product/ service (Ellram and Siferd, 1993). Numerous attempts have been made to define TCO. One of the first attempts is from Ellram (1995), which stated that "Total cost of ownership (TCO) is a purchasing tool and philosophy which is aimed at understanding the true cost of buying a particular good or service from a particular supplier." Later on Ellram and Siferd (1998) further specified what the true cost was and the definition went: "To evaluate a sourcing decision, all costs associated with the acquisition, use and maintenance of a product are taken into consideration.'' Wouters et al. (2005) defines TCO in a perspective that it is a combination of financial and supply management: "TCO is a cost accounting application that enables purchasing decision-makers to combine value and price in making sourcing decisions."

As one company buys multiple types of products, the question is: should there be one model that can be adapted to different types of product or for every purchase situation (standard model), or a TCO model is developed for each purchase situation with specific cost drivers (unique model)?

A standard model requires minimal modifications in terms of cost drivers included or calculations for each cost driver. Therefore, it is recommendable that the basic framework for a standard model is written and the model is embedded to a computer-based platform. Following are situations where standard models are particularly preferred: concerns are the same across purchases, desire for user-friendly model, desire to digitalize the system, desire to analyse and evaluate repetitive purchases (Ellram, 1995a).

Unique model is developed exclusively for one item or purchase situation. Generally, the motivation for unique models is the cost drivers vary significantly among purchase situations. The situations where unique models are preferable are: purchase items vary greatly, no common set of factors that captures critical concerns across purchase items, and request for flexibility in cost consideration (Ellram, 1995a).

3. Methodology

3.1. Methods of assigning costs

There are many different ways of modelling and assigning costs to build a TCO model. The two most well-discussed methods of assigning costs when building a TCO model are transaction sequence (Ellram, 1993a) and hierarchy level of activities (Degraeve, 1999).

This study follows the transaction sequence as suggested by Ellram (1993a) to build the TCO model because this approach assigns the costs appearing in chronological order of the purchasing process, which makes it easier to develop and use the TCO model. This approach is recognized in textbooks like: (Monczka et al., 2009), (Burt, et al., 2010) and also used in Ellram's following studies (Ellram, 1995ab; Ellram and Siferd, 1998).The transaction sequence is separated into three stages: pre-transaction, transaction and post-transaction.

Pre-transaction costs include costs that occur before the order placement happens. These cost components can be listed as: identifying need of purchase, investigating suppliers, qualifying and training suppliers to adapt to the firm's system and operations (Ellram, 1993b).

Transaction costs are costs related to order placement and receipt of purchased item. To be more specific, transaction cost components are not limited to price of the purchased item, but also include costs to prepare and place the order, correction of incorrect documents, delivery, inspection and tariffs/duties. Since transaction costs incur closest in time to the transaction itself, it is more widely-recognized comparing to pre-transaction and post-transaction costs (Ellram, 1993b).

Post-transaction costs take into account cost components that incur after the purchased item is owned by the firm or installed at one of the firm's properties. The point in time that these cost components occur may be soon after the purchase transaction is completed, or years later when the purchased item is in use, repaired and maintained, or disposed. There are costs that incur in a distant moment from the transaction, making it less likely to be recognized explicitly as costs associated with the purchase of the item from a supplier. Costs in this category is most frequently to be overlooked in firms. Some cost components especially suggested for capital equipment purchase are equipment downtime, cost of repair parts, cost of routine and special maintenance (Ellram 1993a).

3.2. Monetary-based or value-based valuation approach

As to the concern how the cost data be assigned to the model, or as called by Ellram (1993a) - "valuation approaches", there are two options: monetary-based and value-based.

Monetary-based approach requires actual cost data collected and allocated to the relevant cost components. This makes it easier to trace the significant cost components of an item and translation of the results from this approach is straightforward. However, the challenging aspect for this approach lies in the choosing cost components and cost drivers to be included and gathering data for each cost driver and each cost component (Ellram, 1995b). To address this challenge, the practice of ABC system can be utilized.

Although output of value-based approach is also TCO of a purchased item, one cannot trace the cost data spent on an element. Value-based approach attempts to combine quantifiable cost data and performance data, which is usually difficult to quantify. As such, value-based TCO models are more complex than monetary-based ones and probably require much more detailed explanations for each cost component.

4. Analyzing

4.1. How to design a TCO model

Having discussed several aspects related to TCO, this section will provide an 8-step procedure of how to design a TCO model. Literature on how to design a TCO model and analysis is extensive (e.g. Ellram, 1993ab; Ellram and Siferd, 1993; Degraeve and Roodhooft, 2005; Weber et al., 2009; Hanson, 2011). However, to the researcher's observation, there are no straightforward and comprehensive guideline to actually develop a TCO model. Some articles are conceptual and hence too general to be interpreted into action steps (Ellram, 1993b; Degraeve and Roodhooft, 1999 and 2000). Others focus on specific aspects of TCO designing (Ellram and Siferd, 1993; Ellram, 1995a). Nevertheless, if integrating the findings and insights from the aforementioned papers, a framework to develop and implement TCO model is realized and that is the eight-step framework from Ellram (1993b). The graph below represents the framework and the following paragraphs explains each stage in the framework.

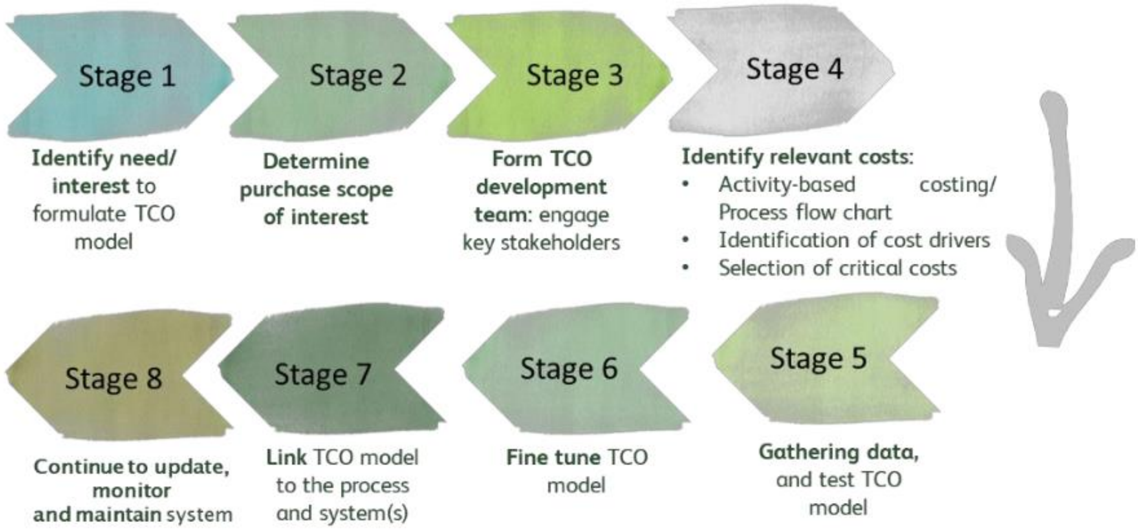

Figure 3: The eight-step framework for TCO development and implementation (Ellram, 1993b)

Stage 1: Identify need/ interest.

The motivations to develop a TCO model might derive from external pressure (customers demanding on lower prices) or internal interest (requirements from top management for an improved understanding of supplier related costs and of supply base) (Ellram, 1993b). Besides identifying the drive for TCO models, the developer should already think of potential uses/

purposes of TCO analysis, whether it be supplier selection and/or supplier performance evaluation (Weber et al., 2009). Although the interests differ among organisations, the common need is to understand the business true costs for a given buy.

Stage 2: Determine the purchase(s) of interest

In this stage, the object of TCO analysis or purchased item(s) of interest is determined. As suggested by Wouters et al. (2005), purchases with significant spend (i.e. capital production, MRO supplies) should be in first line of consideration, since they highly ensure the cost saving potential exceeds the cost of development.

Stage 3: Form a TCO Development team

Because of the strategic importance of the TCO model and analysis, generally the TCO development task is accomplished by a team, preferable a cross-functional team (Ellram, 1993ab; Wouters et al., 2005). By doing this, expertise knowledge from different functional areas and potential sources of critical TCO information are utilised. In addition, by creating multifunctional environment, the visibility and awareness of the project throughout the firm is spread.

Stage 4: Identify relevant costs and gather cost data

There are four tasks to accomplish in this stage, namely cost identification, selection of critical costs, gathering and developing cost data, and documentation.

Stage 5: Test and implement the model

When the relevant data are gathered, the team may run trials on the model. Before test run, it is recommendable to gather the team and confirm whether the current cost drivers and cost data are in proper scope. Should there be any important information left out, the team go back to stage four and gather data accordingly. On the other hand, should there be any insignificant cost components, it is removed from the model. Upon entering the data into the model, equations/ formulae may be needed and developed to interpret the available data to the target cost data. The firm may have standard formulae readily available, if so, they should be utilized. Moreover, some data are actual, others might be based on educated guess or assumptions. These information should be documented and hence, when plugging in the data to the model, following documents should be ready:

- All data sources
- Whether data is based on assumptions or actual, historical data
- Any equations used to calculate individual data elements
- Results of model calculation

Regarding the outcome of the model, not only the total cost of the capital equipment over its lifecycle is important, but also the cost per unit of output is critical for decision making.

Stage 6: Fine tune the model

In this stage, the results extracted from stage 5 are interpreted and analysed by the team. If the results do not appear to be reasonable or there still be cost components to be added, the team is advised to go back to stage 4. When the model is tested (probably) several times and the team is now confident with the results, documentation is required. Aspects of the development process and lessons learned are crucial, especially for early TCO modelling initiatives.

Stage 7: Link to other systems

In this stage, the incorporation of TCO modelling and changes to the business process are considered. Literature suggested the three systems that the TCO model should be linked are supplier monitoring system, education and training system, and computer system.

Stage 8: Continue to update, monitor and maintain system

This stage makes sure the TCO system holds its usefulness in the business continuously. There should be a mechanism developed to address users concerns and suggestions for improvement. In this stage, the firm may go back to any of the four preceding stages: identify relevant costs, test, fine tune or link to other systems for further updates.

4.2. Activity-based costing (ABC)

Following up to the task "Cost identification" in stage 4, this section further elaborates on activity-based costing. The essence of ABC follows conventional thinking that if a particular activity is performed, there will be a cost associated with that activity (Ellram and Siferd, 1993). Ellram (1995b) suggested that activity-based costing would play an important role to identify cost components and choose the most critical ones, ensuring true cost visibility. Accordingly, many following papers utilized ABC in TCO modeling as a base to identify cost components in the model (Degraeve and Roodhooft, 1999; Degraeve et al., 2005b; Weber et al., 2009).

Gosselin (2006) defined ABC as "... a two-stage procedure used to assign overhead costs to products and services produced". The 1st stage is to identify significant activities and their associated costs and the 2nd stage is to assign those costs to products and services (Gosselin, 2006).

A system built on ABC essentially comprises of three components: resources, activities and products. Resources are needed to perform activities. Activities are processes performed by machines or labor sources and consume resources to produce outputs. Hence, activities can be considered as resource transformation processes. The logic of ABC is to allocate overhead costs based on the activities' consumption of resources to deliver output. The methodology to allocate overhead costs is what ABC targets to solve.

To establish the construction of an ABC calculation or to further break down the action steps to identify costs in stage four of 8-step framework from Ellram (1993b), Kaplan and Cooper (1998) recommended four stages. The 1st stage is to "develop an activity dictionary". This stage is to identify activities performed by using resources. Relevant examples of activities are: to perform maintenance or to clean machines. Activities that consume less than 5% of resource capacity are usually ignored (Kaplan and Cooper, 1998). The 2nd stage is to "determine how much the orgnisation spends on each of its activities". Resource cost drivers associate expenses to activities performed. When bridging resource expense to activities performed, the goal is to be approximately right and not to be precisely wrong (Kaplan and Cooper, 1998). The 3rd stage is to "identify the organisation's products". This stage also goes through the analysis of whether the activities are worth doing or not. The last stage is to "select activity cost drivers that link activity costs to the organisation's products". To be more specific, this stage concerns the linkage between activities performed and cost objects (i.e. products).

4.3. Activity cost drivers

When choosing activity cost drivers, there are two foundation questions to ask: how many activities are needed, how many activity drivers are needed for each activity and what kind of activity cost drivers should be chosen?

The general rule is: the more accurate the ABC calculation, the more activity cost drivers required. When considering what activities and how many activities needed, one should take into account the impact of each activity on the total cost, or the amount of resources needed to perform that activity. If the magnitude of impact is large, more attention is needed to determine the correct activity drivers. The cost of building an ABC calculation often exceeds the benefits gained such as enabling better decision-making thanks to better understanding of the cost structure (Kaplan and Cooper, 1998, Raz and Elnathan, 1999).

To determine which activity cost drivers to choose, the following two aspects need to be considered: the information availability and the possibility of measuring data. To help with coming up with the activity cost drivers, there are three categories of cost drivers: transaction drivers, duration drivers, and intensity drivers (Kaplan and Cooper, 1998). Transaction drivers represent the number of transactions made or how often an activity is done. Duration drivers consider the length of time required to perform an activity. Intensity drivers are about the amount of resources consumed to deliver an activity.

4.4. Activity-based costing and TCO

To help with identifying and collecting critical costs for a TCO analysis, Ellram (1993ab) recommended to use activity-based costing. TCO itself is conceptually easy to understand, and activity-based costing helps cost allocation easier to be accomplished. If applying ABC, the challenge is to identify cost drivers associated with the activities. Articles statistically proved that most organisations are unsure of their capability to determine critical cost drivers for TCO estimation (Ferrin and Plank, 2002) and previous findings are also consistent with this statement (Cokins, 1996; Innes and Mitchel, 1998). Ferrin and Plank (2002) conducted an exploratory study and came up with the categorization of identified TCO cost drivers. The example cost categories, together with cost drivers included are:

- Initial price: initial capital expenditure, and unit price;
- Life cycle: life of product, useful life and long-term usage;
- Logistics: freight and packing;
- Operations costs: operating supplies, labor savings, machine efficiency and assembly cost;
- Maintenance: labor, spare parts, repair frequency, and preventive maintenance schedule.

Furthermore, Ferrin and Plank (2002) concluded that a TCO model should base on a set of core cost drivers, together with an auxiliary set of cost drivers to customise the TCO estimation for a particular purchase situation if needed.

4.5. Capital goods purchasing

When discussing about any purchasing practice in a manufacturing company, one must take into account what the purchased item is (Xideas and Moschuris, 1998). Hofmann et al. (2012) divided the purchased items into office materials, production materials and capital equipment. Office materials are relatively low in value, short in lifetime and a vast number of suppliers is available, making the purchasing process for this item quite simple. The purchasing of production materials is a simple procedure as the required items are specifically defined, and other data entries such as order quantities, order times, unit price, and total amount are recorded and calculated precisely on IT systems. The purchasing of capital equipment, on the other hand, is much more complicated, because capital equipment is deemed as a big initial investment with long life cycle and thus, long-term decisions are made, requiring the life cycle costs analysis and considerations of maintenance and servicing. A capital equipment possesses high level of technical complexity and component machines that are greatly interlinked with one another. Therefore, only a selected number of specialized suppliers are capable of providing this highly complex item (Hofmann et al., 2012).

Similarly, Van Weele (2010) distinguished purchasing practice into purchasing direct materials, which become part of the company's value proposition (i.e. raw materials, semi manufactured goods) , and purchasing indirect materials (i.e. Maintenance, repair and operating supplies, investment goods and services). Investment goods/ capital equipment, also considered as CAPEX (Capital Expenditure), purchases usually have "project character" – hardly be done with support of one computer information system, are unique and high in value. It is defined as "products which are not consumed immediately, and whose purchasing value is depreciated during its economic life cycle" (Van Weele, 2010).

4.6. TCO in capital goods purchasing

In the survey conducted by Ferrin and Plank (2002), among all kinds of TCO model extensive and moderate user, the majority utilized TCO valuations for the purchase of capital goods. Moreover, comparing to other types of buys, capital goods are the items that are most frequently purchased with TCO valuation (Ferrin and Plank, 2002).

In Ellram (1993b), the researcher categorize products purchased into four sections: component parts and materials, capital goods, MRO supply items and services. Capital goods is further split into production equipment and operating capital (personal computers, cars, copy machines, etc.). Regarding production equipment, a remark from Ellram (1993b) is that the price of the equipment accounts for 35% of the total cost over its life cycle and that costs incurred after the asset is in use are 50% or more of the total cost. According to Wouters et al. (2005) and Ellram (1995), industrial buyers of MRO supplies and services should aim to buy so as to total cost of ownership (TCO) is minimized, rather than just buying on a low price basis.

Several researches have been done relating to adoption of TCO in capital goods, however, the scope is not only on the purchasing activity, but on the whole supply chain. Moreover, limited research is conducted on suggesting which supplier selection method or criteria is appropriate for certain types of products. Wouters et al. (2005) concluded that initial application and adaption of TCO can be done best by maintenance function and for MRO products, while Ellram (1993a) stated generally that TCO should be implemented only where it is likely that the cost savings exceed the cost of modeling, or in other words, choose an item which is important for the firm in terms of money purchases and build a TCO model for it.

5. Discussion

TCO implementation

TCO implementation into the business process and operations is no less challenging than developing and analysing due to the barriers as discussed. Moreover, empirical research suggested that less than 2% of the surveyed firms believed that they succeeded in implementing TCO valuation to strategic sourcing, and nearly 60% of the firms were struggling with applying TCO logic in supply management (Ferrin and Plank, 2002). Yet, there has been no standard implementation procedure for TCO method (Ellram, 1994). Literature has indeed looked into TCO implementation and related aspects but lack the comprehensive and holistic view over TCO implementation plan. By combining findings from numerous articles, factors that are conceptually or empirically proven to be related to successful TCO adoption is brought up and discussed at length in this section.

Given the insights and benefits that TCO may offer, many organizations want to make sure that TCO approach is not only a purchasing tool, but it is also a strategic cost management tool (Ellram and Siferd, 1998). Therefore, to ensure the success implementation for TCO models, the organisation should shift from silo approach to cross-functional approach, in which a variety of relevant functions are engaged in not only developing but also implementing the model. Moreover, the empirical research from Wouters et al. (2005) suggested that it is of great importance to TCO success if the organisation follows steps in a certain order.

As briefly mentioned in stage 7 of the 8-step framework for TCO development and implementation introduced via Ellram (1993b) discusses in details of the three systems that TCO model should be embedded in.

The first system to link TCO models is the supplier monitoring system. The goal of this system is to link and deliver a consistent message to suppliers and to other functional areas within the firm about the expectations on the supplier performance and about what is valued by the firm. If that linkage is not yet available, TCO model is a good starting point (Ellram, 1993b). Moreover, the supply base monitoring and quality assurance programs are continuous processes, and since TCO analysis is intended to support these purposes, TCO modelling and analysis should be an ongoing process (Ellram, 1993b). However, empirical research proved that there is a lack of systematic and explicit link between supplier selection and evaluation using TCO (Ellram, 1993b).

The second system to link TCO models is the training and education programs. TCO is not solely a model, but it is a philosophy. Thus, to successfully adopt the model, the potential users play a crucial role in making sure the TCO analysis stay and be sustain in the business operations.. The content should equip the employees with not only awareness of TCO process existence but also user-based knowledge (e.g. when it should be used, what the interface of the model is, how to interpret results) (Ellram, 1993b). Empirical research stressed that creating awareness is not so much of a hard task to accomplish, but providing user-based knowledge is a crucial success factor.

The third is the computer system. This system would enable automation for the reporting of TCO model. The majority of the firms has no direct computer linkage between TCO data reporting and other existing reporting systems (Ellram, 1993b). There were two common responses given for this lack of automation. One is the output from computerized systems often needs adjustment. The other is that firms consider further automation is not worth the effort made since there still remains so many manual-collected data entries in the model.

Wouters et al. (2005) conducted an in-depth research on what explains successful adoption of TCO. The study showed that top management plays an integral role in leveraging adoption of cost accounting initiatives e.g. TCO initiatives by directly impacting functional management commitment and TCO analysis experience (or "the extent of experience that the buying firm has with quantifying the total cost of purchasing alternatives"). Although "lack of data sources" was mentioned as one of the most challenging barriers for TCO implementation, it is proven that TCO information adequacy doesn't directly impact success of TCO initiatives. However, purchasing managers believe that TCO information adequacy would play a role to realize TCO analysis as a part of performance review and reward (Wouters et al., 2005). Functional area management commitment and TCO analysis experience positively affect the success of TCO initiative. To elaborate further, the support that managers from functional (non-accounting) departments express for utilizing TCO initiatives in sourcing decisions will positively and significantly impact TCO initiative success. Moreover, by gaining more experience with conducting TCO analysis, the learning of implementing TCO information to sourcing decisions is improved, ensuring success of TCO initiatives.

Although TCO formula vary, the common understanding is that costs associated with acquiring, operating, maintaining and disposing the equipment are included in TCO computation. To address the problem of this study, the TCO model for the company will include these following cost categories:

- Acquisition costs
- Ongoing Production costs
- Repair & MaintRnance costs

The TCO formula to guide this project shall be written as below:

TCO = Acquisition costs + Ongoing Production costs + Repair & Maintenance costs

Depending on the specifications of the purchase situations, the choice of standard or unique TCO model is made.

6. Conclusion

Total cost of ownership is not only a tool, but also a philosophy which differs from other costing methods. It looks beyond the purchase price and is interested in investigating costs of acquisition and usage of an asset. Although TCO concept is an easy concept to understand and potentially offers multiple benefits, TCO empirical practice is limited. This is partly because the barriers that the organisation needs to address and overcome.

Given the context that the purchased item is the packaging line, whose installed base is currently hundreds of lines and there might be hundreds more to be purchased in the future, and the desire to have a user-friendly decision-making support tool, standard TCO model is chosen instead of unique model.

In terms of the valuation approach, the monetary-based is chosen rather than value-based, since one of the purposes of TCO analysis is ongoing contract management and with monetary-based TCO model, buyers can easily trace back to the actual cost data and challenge that with the suppliers for further improvements or fact-based claim management.

The most prominent limitation, and thus, recommendation is further research and upgrade for the cost estimation. Costs incur and are influenced by multiple factors that interrelate with one another in complex ways. The TCO model in this project, while extensively drilled down to the great level of details, still poses great opportunities for improvement.

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Impact of Gender on The Ewom Acceptance in Online Fashion Buying

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ABSTRACT

The study aimed to measure the impact of gender on the eWOM acceptance when buying fashion online after the covid-19 pandemic at Shopee.vn. The data in this study was collected through an online survey of 400 people who bought fashion products at Shopee.vn. EFA, CFA, SEM and MGA were used to analyze the data and test the model fit with the proposed research hypotheses. Research results show 4 groups of eWOM factors that affect online fashion purchasing decisions, including: *STC - eWOM credibility, SQT - Customer involvement, SHB - Customer expertise, CL – eWOM quality*. In addition, the study results showed that *there is a difference in the impact of gender on the relationship between eWOM factors and eWOM acceptance*. Based on the research results, some administrative implications are proposed to contribute to improving the efficiency of using eWOM as a marketing tool at Shopee.

Keywords: *Electronic word of mouth, eWOM Acceptance, Shopee, the impact of Gender.*

JEL classification code: *M3, C38*

1. Main Text

The COVID-19 pandemic severely affected the world economy in general and Vietnam in particular. With the strong spread of the disease, the governments of countries had proposed methods including implementing quarantine, imposing travel restrictions, restricting access to schools, workplaces, stadiums, theaters and shopping malls. Faced with the risk of stagnation and bankruptcy, e-commerce became an opportunity that can help businesses overcome the post-pandemic era. At the same time, consumers also changed their shopping behavior when they had to implement blockade. They started to shift to online shopping by simply downloading an app, creating an account, and making purchases. However, consumers had to face risks such as poor quality goods, delivered products were different from the pictures, so they became more strict in

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their purchase decision. After the pandemic, e-commerce has grown stronger by participation of many businesses. So what factors affect the eWOM acceptance? whether or not there is an impact of gender on the eWOM acceptance? Previous studies showed that Customer involvement, Customer expertise, eWOM quality and eWOM credibility have a certain impact on the eWOM acceptance when buying fashion online. In particular, there is an impact of gender on the relationship between eWOM factors and eWOM acceptance. Although there were a number of studies about the relationship between eWOM factors and the impact of gender in the past, there is currently no such study at Shopee. That's why we conducted the study: "Impact of gender on the eWOM acceptance in online fashion buying".

2. Hypotheses and research models

Based on the theoretical basis, the results from previous studies about the relationship between eWOM factors and the eWOM acceptance, as well as the impact of gender on the above relationship in online fashion buying with the actual situation at Shopee. The factors of eWOM include: eWOM credibility; Customer involvement; Customer expertise; eWOM quality. At the same time, the Gender factor is mentioned and proven during the analysis. The author expects that the gender factor will have a clear impact on the relationship between eWOM factors and the eWOM acceptance.

***EWOM credibility**:* In the study of Gillian Moran and Laurent Muzellec (2014), two variables that have the strongest impact on the eWOM credibility are the source and the eWOM message. Specifically, the reliable source is defined by the relationship between the sender and the receiver along with their purchasing experience. Meanwhile, the trustworthy message is built by the content and images of the product on the website. The variable "eWOM credibility" includes 6 scales: The interface on Shopee is beautiful; Images on Shopee are attractive; Shopee is a reputable e-commerce site; Products on the Shopee attract many commentators; Product information on Shopee is complete and clear; Easily find products on Shopee.

H1: eWOM credibility has a positive effect on eWOM acceptance.

***Customer involvement**:* In the study of Fan and Miao (2012), the more attention people pay to the product, the more motivation they have to learn about the product and enjoy the review from those who have experienced it. At the same time, customer involvement has the strongest and most obvious impact on eWOM credibility (Fan and Miao, 2012). The variable "Customer involvement" includes 5 scales: Time to search for information and read product comments at Shopee; Want to read more reviews about the product; Products at Shopee are the products you are interested in; Attracted to the reviews of people who have purchased products at Shopee; Attracted to the reviews of people who have similar interests.

H2 : Customer involvement has a positive effect on eWOM acceptance.

Customer expertise: According to Park and Kim (2008), customer with high knowledge will have enough information to make correct purchasing decisions. The variable "Customer expertise" includes 5 scales: Having a lot of knowledge about fashion; Have a lot of experience in online fashion buying; Have a lot of experience in searching for information; Ability to distinguish and select product evaluation information; Buying decisions are based more on their own knowledge than on information given by other consumers.

H3: Customer expertise has a positive effect on eWOM acceptance.

EWOM quality: According to Park (2007), high eWOM quality will increase persuasion and lead to eWOM acceptance because consumers tend to be concerned with the accuracy and usefulness of the source. A source that have enough useful information and right amount will attract consumers to choose to read that review. The variable "eWOM quality" includes 7 scales: Consumers are attracted to reviews; Consumers are attracted to reviews of those who have the same habits and interests; Believing the reviews of people you don't know; Believing the sender have shopping experience; Rating based on the number of star rating; There are many reviews for a product on Shopee; The more reviews, the more reliable.

H4 : eWOM quality has a positive effect on eWOM acceptance.

Based on the proposed hypotheses and combining domestic and foreign models, the author team propose the following research model:

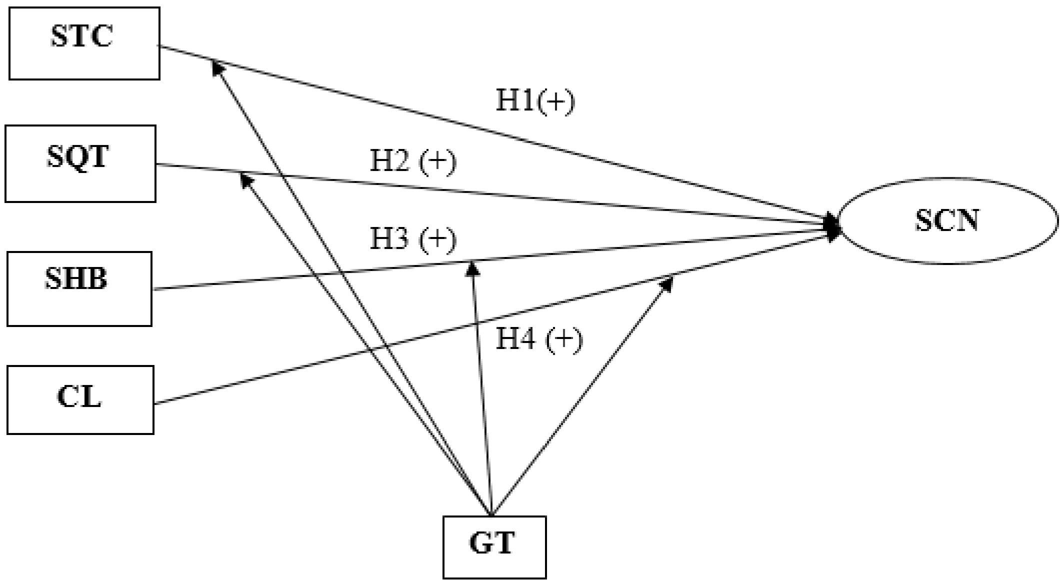

Figure 1. Proposed research model.

Source: Proposal of the author team

STC: eWOM Credibility

SQT: Consumer Involvement

SHB: Consumer Expertise

CL : eWOM quality

SCN: eWOM acceptance

GT: Gender

3. Research Method

3.1. Data collection method

Data was collected by online survey method with structured questionnaire, using convenience sampling method. The survey subjects are customers who have purchased fashion products at Shopee. For sample size, Kline (2011) proposes 10 samples for 1 observed variable. The theoretical model includes 27 observed variables, so the minimum number of sample size for the study is 250, the survey results obtained with a sample size of 400 are satisfactory.

3.2. Data analysis method

Data was analyzed using the statistical software SPSS 20.0 and AMOS 20.0. Cronbach's Alpha coefficient is used to analyze the reliability between the observed variables in each measurement scale for the research concepts (according to the standard $\alpha \geq 0.7$). Exploratory factor analysis (EFA) was used to test the convergent and discriminant validity of the concepts. Confirmatory factor analysis (CFA) was used to test the overall reliability and the fit between the observed variables and the theoretical structure. Two-step model is used: measurement model (CFA) and linear structural model (SEM) to evaluate the fit of the model with the research hypotheses. Criteria applied in CFA and SEM: estimated by the method of maximum likelihood function, the overall fit is measured by indexes with the following criteria: Chi-Square/df, CFI > 0.9 good and >0.8 acceptable; TLI >0.9 good and >0.8 acceptable; RMSEA <0.08 good and <0.1 acceptable (Byrne, 2010; Kline, 2011). MGA is used to examine the difference between male and female in the SEM model.

4. Results

4.1. Statistical data analysis

In the sample of 400 collected by the non-probability random survey method, there are 126 men and 274 women, accounting for 31.5% and 68.5% respectively. In which, the age group under 18 years old accounted for 13.5%, from 18 to 23 years old accounted for 19.8%, from 23 to 30 years old accounted for 47.3% and over 30 years old accounted for 19.5%.

4.2. Scale reliability analysis

The results of scale reliability analysis by Cronbach's Alpha coefficient presented in Table 1. The results suggest that the variables STC1, SQT3, SHB5 and SL1 do not meet the technical requirements.

Table 1. Cronbach's Alpha results.

Variables	Initial variables	Retain variables	Cronbach's Alpha
STC	STC1, STC2, STC3, STC4, STC5, STC6	STC2, STC3, STC4, STC5, STC6	0,899
SQT	SQT1, SQT2, SQT3, SQT4, SQT5	SQT1, SQT2, SQT4, SQT5	0,725
SHB	SHB1, SHB2, SHB3, SHB4, SHB5	SHB1, SHB2, SHB3, SHB4	0,839
CL	CL1, CL2, CL3, CL4, CL5, CL6, CL7	CL1, CL2, CL3, CL4, CL5, CL6, CL7	0,863
SCN	SCN1, SCN2, SCN3, SCN4	SCN1, SCN2, SCN3, SCN4	0,911

Source: Results of data analysis on SPSS

4.3. Exploratory factor analysis

The analysis is carried out in two steps: Step one, analyze each independent factor in order to better identify the contents in the step of testing the reliability of the scale. Step two, use the oblique rotation method to check the convergent and discriminant values of all the variables in the model. EFA results of all variables show that the concepts in the research model have convergent values. The observed variables were excluded because they did not meet the criteria of convergent value and discriminant value, this result have similarity with the results of reliability analysis by Cronbach's Alpha coefficient. In addition, in the process of using the oblique rotation method, the variables CL4, CL5, SQT4 are excluded because they do not meet the criteria of convergent and discriminant values. All remaining observed variables in the model have factor weights > 0.5. However, a variable has a different convergent value with the concept in the model. Specifically, the variable SQT5 focuses on the eWOM quality factor. To facilitate the analysis of the next steps, the author changes the name of SQT5 to CL8.

4.4. Confirmatory factor analysis

The results of CFA are presented in Figure 2, the results show that the critical model is suitable, the general goodness of fit indicators such as: Chi-Square/df = 4.825 (< 0.5); GFI = 0.845 (> 0.8); CFI = 0.884 (>0.8); TLI = 0.859 (>0.8); RMSEA = 0.098, these results meet the requirement. Thus, the confirmatory factor analysis results show that the structure of the theoretical model is consistent with the actual data. This result is used to test the research hypotheses by linear structural model (SEM).

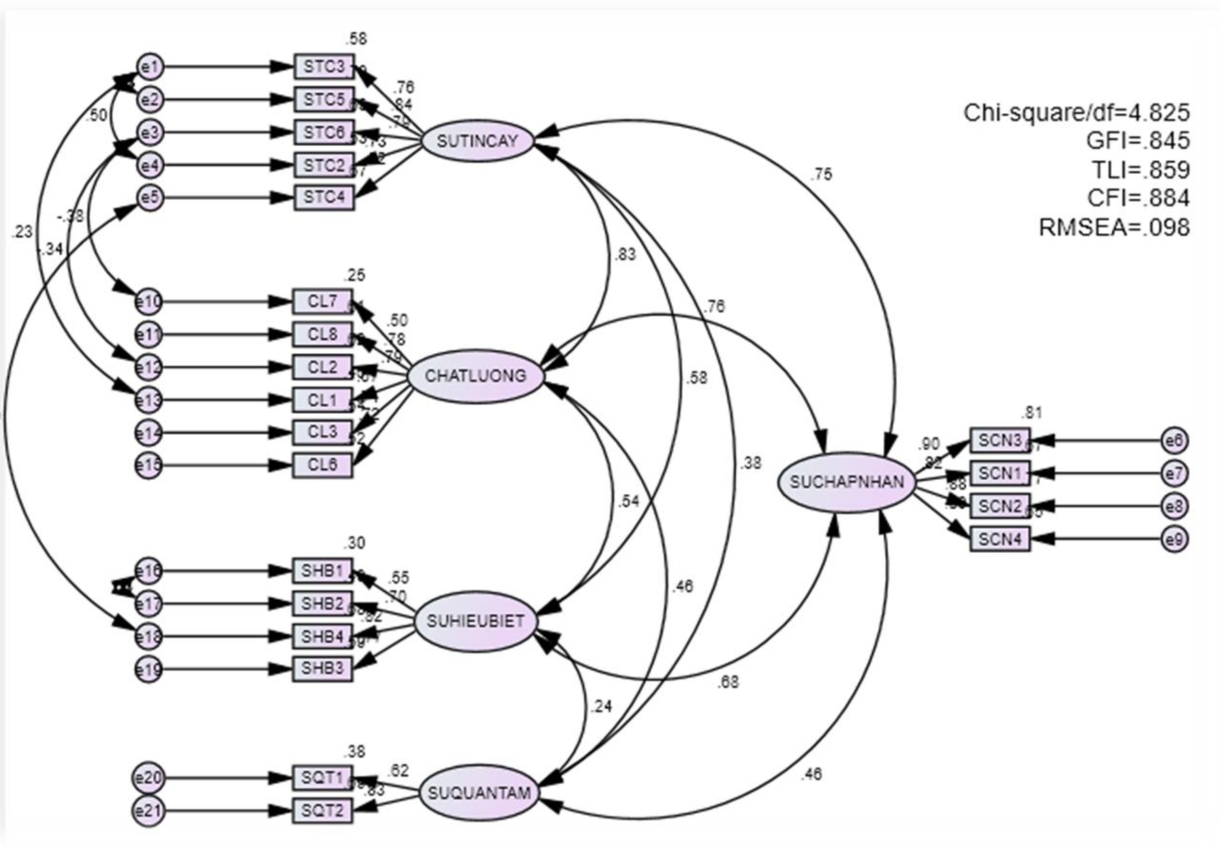

Figure 2. CFA model analysis results.

Source: Results of data analysis on AMOS

4.5. Structural equation modeling analysis

The results of SEM are presented in Figure 3. The overall goodness of fit indicators of the model meet the technical requirements: GFI = 0.845 (>0.8); CFI = 0.884; TLI = 0.859; RMSEA = 0.098, these results are satisfactory.

The results of the analysis are summarized in Table 2, the significance of the parameters:

SE (Standard Error): Standard error of the regression weights.

CR (Critical Ratio): The standard to test the statistical significance of the regression weights.

P (Probability): The corresponding probability of the standard of testing the regression weights. With the test significance level (α = 0.05; 0.1) is used to decide whether the parameters are significant in the model or not.

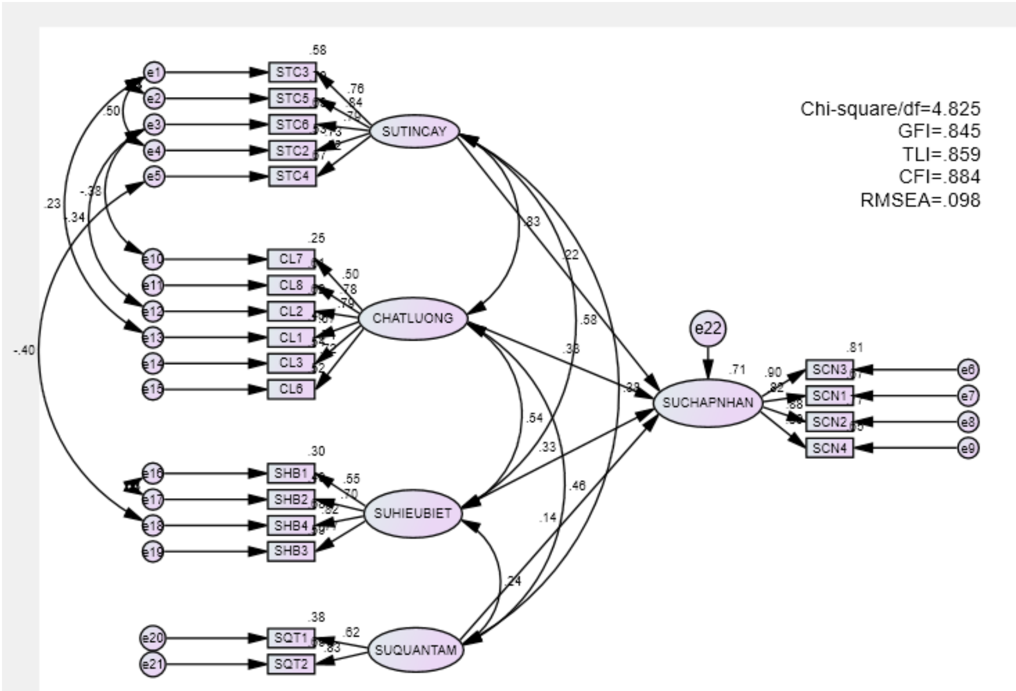

Figure 3. SEM model analysis results.

Source: Results of data analysis on AMOS

Table 2. Regression weights of theoretical relationships.

Hypothetical relationship				**Weight**	**S.E**	**C.R**	***P***
H_1	eWOM Credibility	◎	eWOM Acceptance	0,247	0,094	2,627	0,009
H_2	Customer Involvement	◎	eWOM Acceptance	0,195	0,063	3,066	0,002
H_3	Customer Expertise	◎	eWOM Acceptance	0,565	0,094	6,026	0,000
H_4	eWOM Quality	◎	eWOM Acceptance	0,646	0,174	3,706	0,000

Source: Results of data analysis on AMOS

The results of testing the hypotheses

From the estimation results presented in Table 2, it can be concluded:

EWOM Credibility (STC) has a positive influence on eWOM Acceptance (SCN), the hypothesis is accepted at 1% significance level. Regression weight (0.247) implies that eWOM Credibility increases (decreases) by one mean rating point, eWOM Acceptance increases (decreases) by 0.247 standard deviations.

Customer Involvement (SQT) has a positive influence with the eWOM Acceptance (SCN), the hypothesis is accepted at 1% significance level. Regression weight (0.195) implies that Customer Involvement increases (decreases) by one mean rating point, eWOM Acceptance increases (decreases) by 0.195 standard deviations.

Customer Expertise (SHB) has a positive influence with the eWOM Acceptance (SCN), the hypothesis is accepted at 1% significance level. Regression weight (0.565) implies that Customer Expertise increases (decreases) by one mean rating point, eWOM Acceptance increases (decreases) by 0.565 standard deviations.

EWOM Quality (CL) has a positive influence with the eWOM Acceptance (SCN), the hypothesis is accepted at 1% significance level. Regression weight (0.646) implies that eWOM Quality increases (decreases) by one mean rating point, eWOM Acceptance increases (decreases) by 0.646 standard deviations.

Other relationships in SEM

In addition to the main relationships proposed in the research model, the SEM results also show some other relationships of the observed variables.

Table 3. Correction index of other relationships.

Sub Link		**M.I**
e1 – e4	STC3 – STC2	79,460
e1 – e13	STC3 – CL1	32,020
e3 – e12	STC6 – CL2	27,893
e3 – e10	STC6 – CL7	35,338
e5 – e18	STC4 – SHB4	31,885
e16 – e17	SHB1 – SHB2	74,449

Source: Results of data analysis on AMOS

In order to increase the fit of the model, the author formed link between the pairs of observed variables with high correction index (MI) presented in Table 3. In addition, some previous studies have provided explanations for the model. According to Bronner and De Hoong (2010), reliable interface, well-designed and visually appealing interfaces that can help website attracts consumers. This relationship also shows that when the interface of the page is beautiful, consumers will pay more attention to the product review. Doh and Hwang (2009), Brooker (1981), recipient characteristics such as experience, personality, and culture will lead to differences in their tendency to believe.

4.6. Multigroup Analysis

With the expectation that the Gender factor has an impact on the relationship between eWOM factors and eWOM acceptance, based on the tested SEM model, the author continues to analyze the multigroup structure by invariant model and variability model. To test the difference in the model, two hypotheses are proposed as follows:

H0: There is no difference between the invariant model and the variability model – The Gender factor has no impact on the relationship between eWOM factors and eWOM acceptance.

H1: There is a difference between the invariant model and the variability model – The Gender factor has an impact on the relationship between eWOM factors and eWOM acceptance.

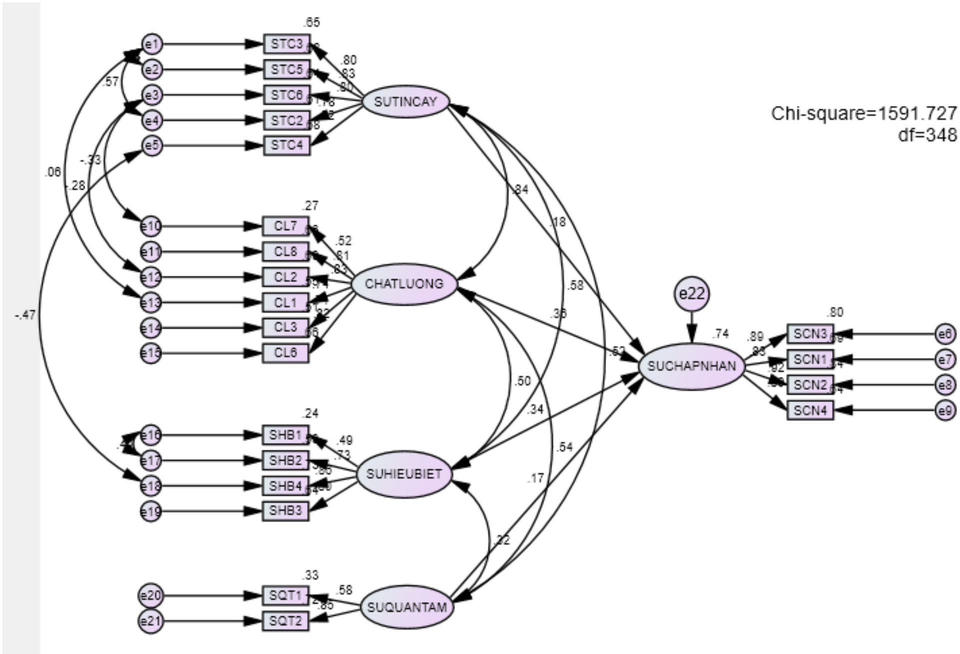

Figure 4. Invariant model in MGA.

Source: Results of data analysis on AMOS

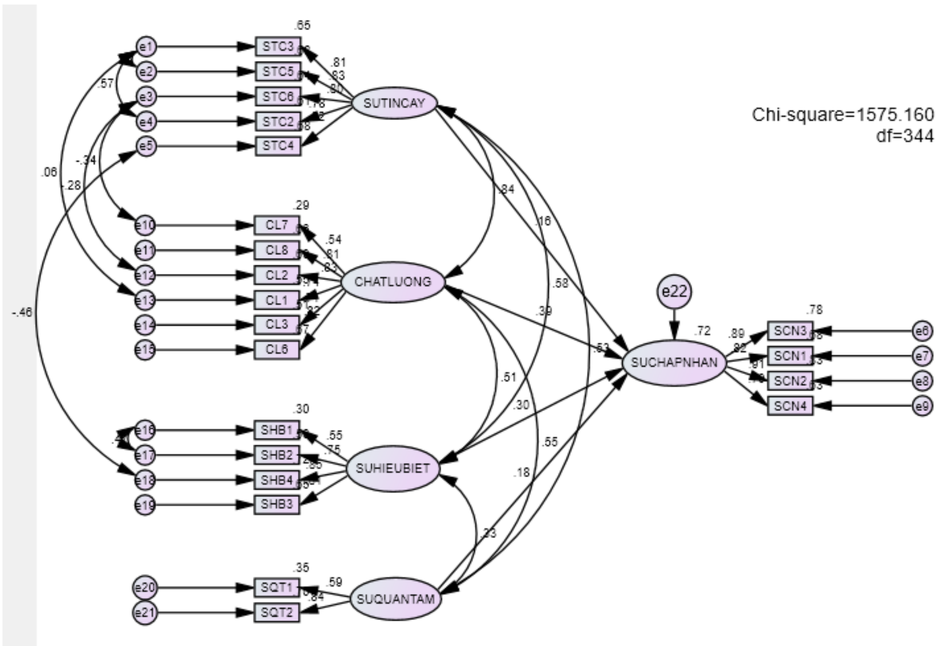

Figure 5. Variability model in MGA.

Source: Results of data analysis on AMOS

After analyzing SEM for variability model and invariant model, Chi-square values and df are obtained in each model. The author tests the difference of Chi-square, the difference data and P-value are presented in Table 4.

Table 4. SEM results of the variability model and invariant model.

	Chi-square	**Df**
Invariant	1591.727	348
Variability	1575.160	344
Difference data	16.567	4
P-value	0.00234549	

Source: Results of data analysis on AMOS

P-value is 0.00234549 < 0.05 (95% confidence level), so the hypothesis H0 is rejected. There is a difference of Chi-quare between the variability model and the invariant model. This means that there is an impact of gender on the relationship between eWOM factors and eWOM acceptance. To clarify the difference in the impact of male and female gender, the author evaluates through 3 main values:

P-value: Used to clarify the effect of Male/Female.

Standardized regression weights: Used to clarify the impact of Male is lower or higher than Female.

Squared multiple correlation: Used to clarify the impact of Male/Female on relationship between independent variable and dependent variable.

Table 5. Impact of gender

	Male		Female	
	Standardized regression weights	P-Value	Standardized regression weights	P-Value
SCN <---CL	-0.203	0.445	0.387	***
SCN <---STC	0.492	0.008	0.159	0.122
SCN <---SHB	0.686	***	0.301	***
SCN <---SQT	0.235	0.001	0.184	0.003
Squared Multiple Correlations R2	0.770		0.723	

Source: Results of data analysis on AMOS

The results in Table 5 show that male has p-value of the eWOM Quality 0.445 > 0.05, so eWOM Quality does not affect the eWOM acceptance. Meanwhile, female has p-value of eWOM Credibility 0.122 > 0.05, so eWOM Credibility has no impact on eWOM acceptance. In addition, the effects of variables on eWOM acceptance are also different when different gender:

eWOM Quality: There is an impact on eWOM Acceptance only with female and no effect on male.

eWOM Credibility: There is an impact on eWOM Acceptance only with male and no effect on female.

Customer Expertise: Male has more impact than female on eWOM acceptance. When Customer Expertise increases (decreases) by 1, eWOM acceptance of male increases (decreases) 0.686 standard deviations, eWOM acceptance of female just increases (decreased) 0.301 standard deviations.

Customer Involvement: Male has more impact than female on eWOM acceptance but not significant. When customer involvement increases (decreases) by 1, eWOM acceptance of male increases (decreases) 0.235 standard deviations and eWOM acceptance of female increases (decreases) 0.184 standard deviations.

At the same time, R2 index of male is also higher than female.

4.7. Discussion about research results

This study approaches eWOM with following factors: eWOM credibility, Customer involvement, Customer expertise, eWOM quality, eWOM acceptance and Gender factor in online fashion purchases at Shopee. The research results show that the independent variable in the research model have a relationship with the dependent variable, the intensity of the impact is relatively uniform. And gender has an impact on the relationship between eWOM factors and eWOM acceptance. In particular, the research results show that eWOM credibility, eWOM quality has an impact on eWOM acceptance, this result is similar to the research results of Fan and Miao (2013). However, in this study, Customer expertise and Customer involvement is contrary to the study of Fan and Miao. Besides, during the research process with actual data, some observed variables changed the group of factors. Specifically, SQT5 - attracted to review of those who have similar interests that has changed from Customer involvement to eWOM quality and the author renames SQT5 to CL8. Regarding the impact of gender, the author's research results show that there is a gender difference in the relationship between eWOM factors and eWOM acceptance. The result of the impact of gender is similar to the result of Fan and Miao (2012). However, the results of Fan and Miao show that eWOM credibility has an impact on eWOM acceptance for both male and female, in which, female has a higher impact than male. The results of the author's research show that female does not have the impact of eWOM credibility on eWOM acceptance. Different genders will have different concerns when buying, male will focus on the features and practicality of the product, so if product is a thing they are interested in, they tend to not care about the amount of review. For female customers, they shop by emotion. Online shopping is more popular, so female customers have a long period of time to select product. This reason can make female customers more excited and female customers will accumulate for themselves a lot of experience and knowledge in online shopping. Along with problems related to fake shops and poor-quality product in the past time, female customers tend to be defensive about product review and doubt the reliability of review.

4.8. Conclusion

From the theoretical overview, the study has proposed a theoretical model showing the impact of gender on eWOM acceptance when buying fashion online at Shopee. Online survey data from 400 consumers who purchased fashion at Shopee, using linear structural modeling and multigroup analysis to test hypotheses. The research results show that there is a difference gender. Male: eWOM credibility, Customer involvement, Customer expertise have a positive influence on eWOM Acceptance and eWOM quality has no impact on eWOM acceptance. And Female: Customer involvement, Customer expertise, eWOM quality have a positive influence on eWOM acceptance and eWOM credibility has no impact on eWOM Acceptance. At the same time, the impact of male is higher than female. This is the empirical basis for Shopee stores to realize the role of eWOM. From there, stores can come up with solutions to overcome the shortcomings of eWOM sources such as increasing the number of eWOM sources and eWOM credibility by improving services, using real images, describing in detail and completing product information, creating a program to encourage consumers to give product review, regularly monitoring eWOM sources to be able to intervene in case of bad review, fixing services to always receive positive reviews. At the same time, stores should use methods such as placing products on the right channel, advertising programs on Shopee to be able to reach customers who have a need for that item. In addition, fashion stores should clearly define the target audience. By identifying the right target audience, the store will be able to come up with more useful customer acquisition plans. Specifically, for male customers, the store can increase eWOM credibility or create content, create trends, function to help the product become a thing what male consumers are looking for. This way will help stores approach customers and have a high close rate instead of focusing on the number of eWOM sources. For female customers, fashion stores should focus on the number of eWOM sources and enrich the responses.

4.9. Limitation

The study has certain limitations. Firstly, the survey subjects and survey samples only focused on customers at Shopee, so the implications of the research will have certain limitations. Secondly, the number of survey samples is not large and the convenient sampling method is used, so the representativeness is not high.

Further research direction: Expanding more e-commerce sites in the research sample to increase the generality, using the random sampling method to increase the representativeness.

Consider adding to the research model the factors of customer characteristics to consider the impact of age, income on eWOM acceptance.

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Exploring Short-Form Videos Addiction: Understanding Influential Factors from the Perspective of The Stress-Coping Theory

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ABSTRACT

This study examined the addiction to short-form videos (SFVs) using the stress-coping theory. The results revealed that perceived enjoyment and mood regulation directly influenced SFVs addiction, highlighting the significance of pleasure and mood regulation in addictive behaviors. Escapism and social interaction indirectly impacted SFVs addiction through SFVs usage behavior, underscoring their role as coping mechanisms within the stress-coping framework. Social isolation and social anxiety were identified as stressors that positively influenced escapism. Social anxiety had a direct impact on the SFVs App used but did not directly affect social interaction. Neuroticism did not directly influence SFVs addiction. These findings enhance our understanding of SFVs addiction and emphasize the importance of factors such as perceived enjoyment, mood regulation, escapism, social anxiety, social isolation, and social interaction in addressing this issue.

Keywords: Short-form videos (SFVs), addiction, stress–coping theory, perceived enjoyment, social anxiety

1. Introduction

Using the stress-coping theory as a framework, this study aims to investigate the addictive nature of short-form videos (SFVs). I will investigate how factors such as perceived enjoyment, mood regulation, escapism, social interaction, social isolation, social anxiety, and neuroticism influence SFV addiction both directly and indirectly. We hope to develop effective interventions and strategies to address SFV addiction and promote healthier coping mechanisms by better understanding these factors. Using the stress-coping theory will provide valuable insights into the underlying processes and mechanisms involved in SFV-related addictive behaviours. This research

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adds to the existing body of knowledge on addictive behaviours by providing new perspectives on SFV addiction in the context of stress and coping.

The research gap in this area is the need to understand the influential factors that contribute to SFV addiction from the standpoint of the Stress-Coping Theory. While SFVs have grown in popularity and have been linked to addictive behaviours, there has been little comprehensive research into the underlying factors and mechanisms of SFV addiction in the context of stress and coping. Most previous research has concentrated on the addictive nature of SFVs without delving into the specific factors and processes that contribute to addiction. As a result, the purpose of this study is to bridge that gap and provide a more comprehensive understanding of SFV addiction and its influencing factors.

The primary objectives of this research are to identify the factors that influence SFV addiction, such as perceived enjoyment, mood regulation, escapism, social interaction, social isolation, social anxiety, and neuroticism. Furthermore, we intend to investigate the mediating processes of escapism and social interaction in SFV addiction, with a focus on understanding how people use SFVs to cope with stressors and seek social connections. We hope to improve our understanding of SFV addiction and the interactions between stressors, coping mechanisms, and addictive behaviours by employing the stress-coping theory. The findings of this study will be used to develop interventions and strategies to address SFV addiction, as well as to advance knowledge in this field.

The rest of this paper is structured as follows: Section 2 discusses the theoretical foundations and hypotheses, including the stress-coping theory, social isolation, social anxiety, neuroticism, escapism, social interaction, perceived enjoyment, mood regulation, and SFVs addiction. Section 3 presents the research model and hypotheses. Sections 4, 5, and 6 cover the research methodology, results, and discussion. Finally, Section 7 concludes with limitations and future research directions.

2. Theoretical foundations

2.1. Stress-coping theory with addiction state

The stress-coping theory offers a comprehensive framework for comprehending how individuals evaluate and manage stress [1], [2]. Coping strategies are employed to manage stress that exceeds an individual's threshold [1]. The theory emphasizes the role of cognitive appraisals and adaptive coping responses [1], [2].

SFVs addiction can be explained through the lens of the stress-coping theory. According to the theory, addiction-like behaviors can arise when individuals face significant stressors, have ineffective coping strategies, and engage regularly in potentially addictive activities [3]. SFVs, although providing temporary relief, may not address the root causes of stress and can have negative long-term effects.

The addictive nature of SFVs, their accessibility, and immediate gratification can contribute to excessive behavior and addiction. Individuals may turn to these videos as a means of stress avoidance, leading to maladaptive coping. It is important to consider cognitive evaluations and situational factors in understanding addiction. Perceived behavioral control, influenced by app quality (usefulness, trustworthiness, and interactivity), plays a role in coping behavior [4]. The stress-coping theory sheds light on social media and mobile app addiction, specifically SFVs addiction. It highlights the interaction between stressors, coping mechanisms, and addictive behaviors, offering insights into how individuals may resort to maladaptive coping strategies and the potential consequences of such behaviors.

2.2. *Social Isolation, social anxiety and neuroticism*

Social isolation refers to a state of disconnection from society, characterized by feelings of loneliness and limited social support [5], [6], [7]. Social anxiety involves persistent fear of social situations and worries about being judged or humiliated [8]. Neuroticism is a personality trait marked by emotional instability and a tendency to experience anxiety and sadness [9], [10], [7].

When considering SFVs (SFV) addiction, social isolation, social anxiety, and neuroticism can act as state stressors. The stress-coping theory suggests that stressors exceeding an individual's coping abilities can lead to stress [1], [7]. SFV addiction, along with social isolation, social anxiety, and neuroticism, can intensify stress, contributing to mental distress, feelings of loneliness, and social challenges.

SFVs may serve as a coping mechanism for individuals experiencing loneliness [11] or seeking to avoid face-to-face interactions and reduce anxiety [12]. Additionally, SFVs may be more addictive for neurotic individuals who rely on them to regulate their mood and feel connected [13], [14]. The stress-coping theory suggests that social isolation, social anxiety, and neuroticism can contribute to SFV addiction by amplifying stress levels. SFVs may be used as maladaptive coping mechanisms to alleviate negative emotions and seek social connection.

2.3. *Mediating process and escapism, social interaction*

Escapism refers to the psychological tendency or behavior of seeking distraction or relief from the difficulties, pressures, or realities of everyday life through engaging in activities that provide a sense of detachment and absorptionIt involves cognitive narrowing, concrete thinking, distorted time perceptions, cognitive rigidity, and a flow state of mind [15], [16], [17]. Escapism can manifest in various forms, such as engaging in entertainment, hobbies, or immersive experiences that offer an escape from self-awareness or real-life challenges. Social interaction refers to the process of individuals engaging with one another, involving communication, exchange of information, and mutual influence [18], [19].

According to [20], social interaction and escapism play important roles in stress management and contribute to the development of addiction, particularly problem video game use. According to the stress-coping theory, people who are stressed may turn to using a lot to distract themselves from their problems, leading to excessive use behaviour and addiction-like symptoms. Furthermore, excessive use has been linked to negative affective states such as depression, loneliness, and social anxiety, making people more likely to seek escape and social interaction through excessive use.

It encompasses various social activities, including interpersonal communication, social networking, and forming relationships with others. Social interaction is a fundamental aspect of human behavior and plays a significant role in shaping individuals' social experiences and psychological well-being. In the stress-coping theory, the mediating process or coping state can be represented by factors such as escapism and social interaction. These factors serve as mechanisms through which individuals manage and cope with stressors. Escapism provides individuals with a means to temporarily disengage from stressors and negative emotions, allowing for diversion and relaxation [21]. Social interaction, on the other hand, offers individuals opportunities for social support, connection, and emotional regulation, which can help alleviate stress and promote well-being [22], [12]. In the context of SFV Apps (SFVAs), the use of these apps can be seen as a manifestation of coping in the stress-coping theory. Individuals may turn to SFVAs as a means to escape from stressors, negative emotions, or real-life difficulties [11]. Additionally, SFVAs can offer a platform for social interactions, where users can connect with others, engage in virtual communities, and experience a sense of belonging [13], [14]. Escapism and social interaction are two factors that play a crucial role in the coping process within the stress-coping theory. These factors can be influential in driving individuals to use SFVAs as a coping mechanism to manage stress and regulate emotions.

2.4. Perceived enjoyment, mood regulation and SFVs Addiction

Perceived enjoyment refers to the subjective experience of positive and enjoyable feelings associated with activities like using smartphones or engaging with SFVs [23], [24]. It represents the intrinsic pleasure derived from the activity and plays a role in forming habits and addictive behaviors.

Mood regulation involves using behaviors or activities, such as smartphone use or SFVs, to manage or alleviate negative emotions [23], [25]. It serves as a way to cope with dysphoric moods and seek relief from negative affect. Mood regulation is relevant to smartphone addiction by providing an avenue to escape from negative emotions [23].

SFVs Addiction refers to excessive and compulsive use of SFV Apps, leading to negative consequences and interference with daily life [23], [22]. It shares similarities with other addictive behaviors, characterized by heightened importance placed on SFVs, using them to modify mood, experiencing conflicts related to their use, and exhibiting tolerance, withdrawal, and relapse effects.

Reinforcement reward (Reinforcement mechanism) highlights the role of pleasure/enjoyment and relief of negative emotions in the development of addiction, including smartphone addiction and SFVs Addiction [26], [27]. These rewarding experiences reinforce and drive addictive behaviors, as individuals seek the positive effects and use the activities as a means to cope with negative emotions.

Perceived enjoyment, mood regulation, and SFVs Addiction together contribute to the reinforcement reward (Reinforcement mechanism) model. This model suggests that the pleasurable experiences derived from SFVs, coupled with the relief of negative emotions achieved through engagement, reinforce addictive behaviors [23], [28]. These factors are part of the reinforcing mechanism underlying addiction state.

[29] Lu establish a connection between Smartphone Addiction and Short-Form Video Addiction, noting their shared characteristics and addictive behaviors, including excessive use, preoccupation, craving, and negative consequences [30], [31]. Smartphone addiction involves compulsive smartphone use, negatively impacting various life aspects [30]. Conversely, short-form video addiction refers to excessive use of short video applications, affecting physical and mental health, as well as daily life [31].

Both addictions have common features contributing to their addictive nature, such as consuming digital content on mobile devices for immediate gratification, novelty, and entertainment

[32]. Short-form video apps offer immersive and engaging content that can lead to addictive behaviors [33].

Underlying mechanisms for addiction are similar in both contexts, including user-generated content perception, boredom in daily life, and immersive experiences [34], [35]. User-generated content in short-form videos provides stimulating and novel experiences, fostering addiction [33]. Boredom drives individuals to seek engaging activities through smartphones and short-form videos [36], [37].

Both addictions negatively impact physical and mental health, relationships, and work performance [14], [38]. Excessive use of smartphones and short-form video apps is associated with social isolation, decreased productivity, sleep disturbances, anxiety, and depression [30], [31].

Additionally, within the stress-coping theory, perceived enjoyment, mood regulation, and SFVs Addiction can be seen as outcomes resulting from stressors and coping processes.

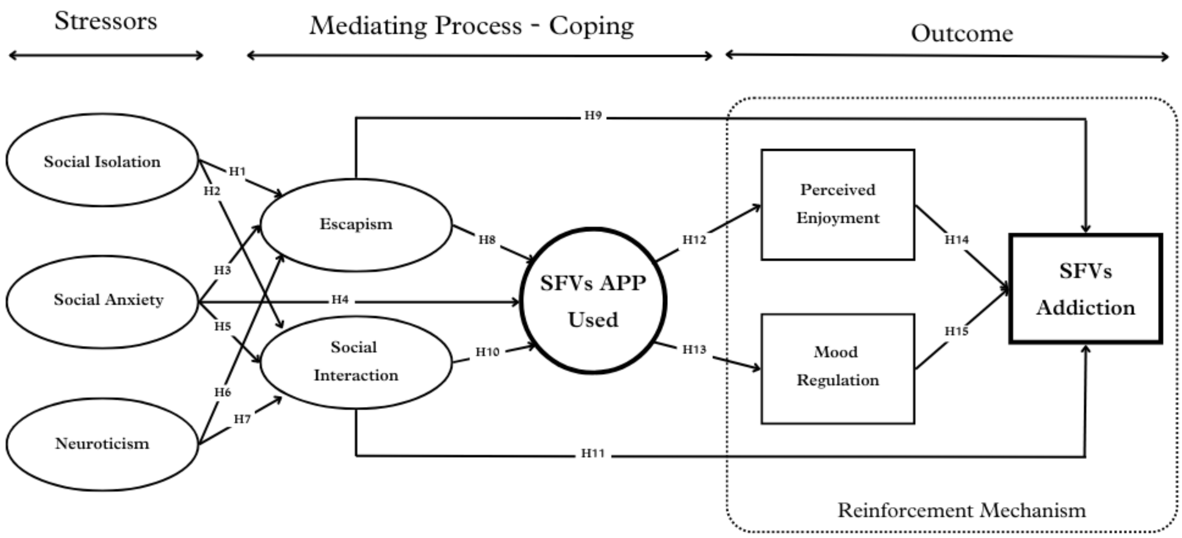

Fig 1. Proposed research model of SFVs Addiction State

Source: Based on [23], [39], [7], [20]

3. Research model and hypothesis

In this study, we investigated the factors contributing to SFVs addiction by combining stress-coping theory and reinforcement mechanisms. Our research model, depicted in Fig 1, illustrates the relationships among the variables. The hypotheses tested in this study are as follows:

3.1. The stage from sressors to coping

Individuals who encounter social isolation are more inclined to engage in escapism as a means of coping [40], [16]. Moreover, it has been suggested by [41] that individuals who experience social isolation may demonstrate a proclivity to utilise online platforms, particularly social networking sites (SNSs), as a mechanism for establishing social connections and mitigating their feelings of loneliness. The findings of this research offer support for the hypothesis that social isolation is associated with an increased tendency towards engaging in escapism. It can be inferred that there is empirical support for the notion that individuals experiencing social isolation tend to demonstrate a heightened inclination towards seeking social interaction and establishing connections [41].

Furthermore, the use of online platforms, specifically social networking sites (SNSs), has been found to effectively fulfil individuals' socialisation needs, especially when face-to-face interactions are limited [42]. The findings of this research offer empirical support for the proposition that social isolation exerts a favourable influence on social interaction.

Hypothesis 1: Social Isolation positively affects Escapism.

Hypothesis 2: Social Isolation positively affects Social Interaction.

Individuals with social anxiety may turn to online platforms, including SNSs, as a means of escape from real-world social situations [43]. Socially anxious individuals may perceive online interactions as less threatening and more controllable, which may encourage them to engage in escapism behaviors [44]. These findings support the hypothesis that social anxiety positively affects escapism. Although social anxiety is often associated with avoidance of social interactions, it has been observed that individuals with social anxiety may utilize online platforms to engage in social interactions without the same level of anxiety experienced in face-to-face interactions [45]. Online communication can provide a sense of safety and control, allowing socially anxious individuals to overcome their fears and engage in social interactions [46]. These findings support the hypothesis that social anxiety positively affects social interaction.

Hypothesis 3: Social Anxiety positively affects Escapism.

Hypothesis 4: Social Anxiety positively affects Social Interaction.

Individuals with social anxiety may turn to short-form video apps as a way to alleviate their social anxiety and engage in low-risk social interactions [12]. SFVs provide a platform for self-expression and social connection, which may appeal to individuals with social anxiety. These findings support the hypothesis that social anxiety positively affects the use of SFVs apps.

Hypothesis 5: Social Anxiety positively affects SFVs APP Used.

Online addiction is consistently associated with neuroticism [13], [14], and high levels of neuroticism are linked to escapism in online addiction [9]. Neurotic individuals use online platforms to find emotional stability and cope with stress [9]. They may engage in online escapism to avoid negative thoughts and emotions, given the connection between neuroticism, anxiety, and depression [10].

However, the moderating role of neuroticism in the relationship between attachment and escapism has not been sufficiently studied [13], [14]. It is likely that neuroticism positively moderates this relationship, as highly neurotic individuals are sensitive to social and technological factors online, which can contribute to escapism and addiction [47]. Furthermore, neuroticism is associated with social media addiction [13], [14]. Neurotic individuals have a greater need for social interaction and use social media to fulfill that need and regulate their mood [9]. They rely on social media to cope with loneliness and emotional distress, as neuroticism is linked to anxiety and depression [10].

More research is needed to explore the moderating effects of neuroticism on the relationship between social characteristics and interpersonal attachment in online addiction [13], [14]. Neuroticism likely positively moderates this association, as neurotic individuals are sensitive to social cues and have a greater need for social interaction, leading to increased engagement in online social activities and a higher risk of addiction [48]. Neuroticism positively influences escapism and social interaction in the context of online addiction. Neurotic individuals are more likely to use online platforms to escape negative emotions, seek relief from stress, and fulfill their social needs.

Hypothesis 6: Neuroticism positively affects Escapism.

Hypothesis 7: Neuroticism positively affects Social Interaction.

3.2. The coping-to-outcome stage integrates the lens of reinforcement mechanisms.

The concept of escapism is closely related to seeking enjoyment and distraction from reality. Short-form video apps, with their entertaining and engaging content, offer users an opportunity to escape from their daily lives [39]. It is reasonable to assume that individuals who engage in escapism would be more likely to use SFVs apps as a means of fulfilling their desire for entertainment and distraction. These findings support the hypothesis that escapism positively affects the use of SFVs apps.

Given that escapism involves seeking emotional relief and distraction from negative emotions or stressors, it is plausible to suggest that individuals who engage in escapism are more prone to developing addiction-like behaviors towards SFVs apps [39]. Escapism may create a reliance on SFVs apps as a means of escaping negative emotions, leading to excessive and compulsive usage. These findings support the hypothesis that escapism positively affects SFVs addiction.

Hypothesis 8: Escapism positively affects SFVs APP Used.

Hypothesis 9: Escapism positively affects SFVs Addiction.

Social interaction plays a crucial role in the use of SFVs apps, as these platforms often emphasize user engagement, interaction, and sharing of content [49]. Users are motivated to connect with others, share their own videos, and engage with the content created by others. Therefore, it is reasonable to propose that individuals who value social interaction would be more likely to use SFVs apps as a means of satisfying their socialization needs. These findings support the hypothesis that social interaction positively affects the use of SFVs apps.

The positive association between social interaction and SFVs addiction can be explained by the social reinforcement and validation individuals receive through their interactions on these platforms [39]. Engaging with others, receiving feedback, and experiencing a sense of belonging within the SFVs community may lead to a compulsive need for continued social interaction, resulting in addiction-like behaviors. These findings support the hypothesis that social interaction positively affects SFVs addiction.

Hypothesis 10: Social Interaction positively affects SFVs Used.

Hypothesis 11: Social Interaction positively affects SFVs Addiction.

There is solid evidence supporting the notion that the utilization of SFVs APP positively influences Perceived Enjoyment. This conclusion is backed by research findings that highlight the crucial roles of Information Quality and System Quality in enhancing users' overall enjoyment [50]. Value-Added Function is positively associated with perceived enjoyment [23]. Additionally, Value-added services offered by mobile instant messaging platforms, such as music, games, and avatar shows, bring considerable enjoyment to users [51]. Moreover, the implementation of value-added search mechanisms in web-based stores enhances the shopping experience and contributes to increased enjoyment and fulfillment for users [52]. The utilization of smartphones can foster a sense of playfulness, suggesting a potential positive impact on regulating mood [53]. Social media platforms are commonly perceived as facilitating the regulation and enhancement of emotions [33]. Smartphones serve as attachment objects that can provide soothing effects and alleviate anxiety, indicating that smartphone usage, including the use of SFVs APP, may contribute to mood regulation [54].

Hypothesis 12: SFVs APP Used positively affects Perceived Enjoyment.

Hypothesis 13: SFVs APP Used positively affects Mood Regulation.

There is a positive association between Perceived Enjoyment and smartphone addiction. This implies that individuals who perceive higher levels of enjoyment from smartphone usage are more likely to exhibit addictive behaviors related to their smartphone usage [23]. Perceived Enjoyment not only facilitates the formation of habits but also contributes to smartphone addiction. Additionally, there is a positive association between Perceived Enjoyment and smartphone addiction, further emphasizing the role of enjoyment in fostering addictive behaviors related to smartphone usage [24], [55]. Moreover, the enjoyment derived from social media triggers psychological processes of positive reinforcement, thereby contributing to addictive behaviors. These research findings suggest that Perceived Enjoyment has a positive relationship with SFVs addiction [28]. These findings suggest that Perceived Enjoyment is positively related to SFVs Addiction. The positive influence of Mood Regulation on SFVs Addiction is supported by the following research evidence. There is a positive association between mood regulation and smartphone addiction, suggesting that individuals who experience mood regulation while using a smartphone are more likely to exhibit a higher level of addiction [55]. The regulation of mood during smartphone use has a significant impact on addiction behavior. Moreover, the desire to regulate or alter one's mood can result in an excessive reliance on smartphones, which in turn contributes to the development of addiction [56], [25].

Hypothesis 14: Perceived Enjoyment positively affects SFVs Addiction.

Hypothesis 15: Mood Regulation positively affects SFVs Addiction.

4. Research methodology

4.1. Questionnaire design and construct measurement

The questionnaire utilized in this study consists of nine latent variables: Social Isolation (SIS), Social Anxiety (SI), Neuroticism (NEU), Social Interaction (SIN), Escapism (ES), SFVs APP Used (USE), Perceived Enjoyment (PE), Mood Regulation (MR), and SFVs Addiction (ADD). Each item in the questionnaire was measured using a seven-point Likert scale, ranging from "1 = very disagree" to "5 = very agree." The respondents in this study were Vietnamese, and to ensure consistency between the English and Vietnamese versions of the questionnaire, the back-translation method was employed.

To establish the content and face validity of the adopted instrument, an expert review and a pre-test were conducted. During the expert review stage, three experts in the field of information systems examined the questionnaire for content validity. They carefully reviewed the scale items and provided feedback on the formulation and content of the items, ensuring their relevance and appropriateness for the study [57]. Subsequently, a pre-test involving 10 users of short-form video apps was conducted [58]. These participants were asked to identify any items that were unclear or ambiguous and provide feedback on the wording and ordering of the items. Based on the suggestions provided by the experts and the pre-test participants, the original questionnaire was refined.

Table 1. Research constructs and measurements

Stress-coping Theory State	Construct	Measurement items	References
Stressor	Social Isolation (SIS)	I lack companionship.	[7]
		I feel left out.	
		I feel isolated from others.	
	Social Anxiety (SA)	I feel anxious when interacting with strangers.	[7]
		I feel nervous when interacting with people I do know very well.	
		I feel uneasy while making new friends.	
		I feel nervous when I have to talk with others about myself.	
	Neuroticism (NEU)	I see myself as someone who is depressed, blue.	[7]
		I see myself as someone who is not good at relaxing or handling stress.	
		I see myself as someone who can be tense.	
Coping	Escapism (ES)	I want to do something to escape from reality.	[39]
		I want to do something to forget about troubles.	
		I want to do something to avoid loneliness.	
		I want to do something to relax.	
	Social Interaction (SIN)	I watch short videos on the app to get updates on people I know.	[39]
		I watch short videos on the app to learn about things that are happening around me.	
		I watch short videos on the app to connect with people who share similar interests.	
	SFVs App Use (USE)	Check: I regularly check apps multiple times a day specifically for the purpose of watching short videos.	[7]
		Time: Each day, a substantial amount of my time is dedicated to watching short videos.	[59]
		Using this particular short video app has seamlessly integrated into my daily routine, becoming an indispensable part of it.	
Outcome	Perceived Enjoyment (PE)	Watching SFVs is fun and interesting.	[23]
		When watching SFVs, I don't realize the time elapsed.	[60]

	Engaging with short videos, such as commenting, liking, duetting, and more, brings me joy and amusement.	
Mood Regulation (MR)	I have watched SFVs to uplift my spirits when I was feeling down.	[23]
	I have watched SFVs to find solace during moments of sadness.	
	I have watched SFVs as a way to temporarily forget my worries.	
SFVs Addiction (ADD)	I struggle to concentrate on my studies or work and often lose sleep due to excessive use of this short-form video app.	[7]
	My family and friends believe that I dedicate an excessive amount of time to this short-form video app.	[23]
	In moments when I am not watching SFVs, I frequently experience restlessness and agitation.	

It is important to note that the individuals who participated in the pre-test were excluded from the subsequent main study. The finalized measurement items for the nine constructs can be found in Table 1.

4.2. Data collection

We conducted a survey from June 20th, 2023, to June 30th, 2023, to collect data from users of popular short-form video apps in Vietnam, including Facebook Reels, YouTube Shorts, and TikTok. The survey was distributed through social media sharing and requests for assistance, making it a quick, convenient, and cost-effective method. A total of 307 questionnaires were received, out of which 290 valid questionnaires were identified after removing those with repetitive or missing responses.

The sample size used in the study was determined based on the requirements for Exploratory Factor Analysis (EFA) and multivariate regression. For EFA, the minimum sample size is recommended to be at least 5 times the total number of observed variables [61], [62]. In this study, with 9 factors and 29 observed variables, the minimum required sample size is 145. For multivariate regression analysis, the minimum sample size is calculated using the formula of n = 50 + 8m [63], where m is the number of independent variables. With 3 independent variables in this study, the minimum required sample size is 74. To ensure reliability, it is preferable to satisfy both formulas and have an excess of samples rather than a lack. In this study, the sample size of 290 exceeds the minimum requirements, making it appropriate for the analysis.

The study involved 290 Vietnamese citizens, with a slightly higher representation of females (54.8%) compared to males (45.2%). The majority of participants belonged to the young adult age group (18-30 years old), accounting for 34.5% of the sample. Notably, younger individuals below 18 years old also contributed to the sample, comprising 29% of the responses. The age groups of 31-40 years old and 41 years old and above represented 18.6% and 17.9% of the sample, respectively.

In terms of education, the sample showed a relatively balanced distribution across various levels. The vocational group represented 16.9% of the sample, while secondary, undergraduate, and postgraduate education levels had comparable rates, accounting for approximately 28.6%, 27.6%, and 26.9% of the responses, respectively.

Table 2. Sample sociodemographic profile

Measure	Item	Frequency (N=290)	Percentage (%)
Gender	Male	131	45.2
	Female	159	54.8
Age group	Below 18	84	29
	18 - 30	100	34.5
	31 - 40	54	18.6
	41 or above	52	17.9
Education level	Secondary	78	26.9
	Vocational	49	16.9
	Undergraduate	83	28.6
	Postgraduate	80	27.6
Employment status	Business people	30	10.3
	Student	101	34.8
	Freelancer	99	34.1
	Office worker	60	20.7

Among the participants, business people accounted for 10.3%, students represented the largest segment at 34.8%, freelancers constituted 34.1%, and office workers made up 20.7% of the sample. These diverse groups provided valuable perspectives on short-form video app usage in Vietnam.

4.3. Reliability and validity analyses

To assess internal consistency, Cronbach's α was calculated using SPSS 20.0. All α values exceeded 0.7, indicating high reliability [64]. Confirmatory factor analysis was then performed using AMOS 24.0 to establish convergent validity of the constructs. The results, presented in Table 3, showed that the composite reliability (CR) values for all constructs were above 0.7, the average variance extracted (AVE) values were higher than 0.5, and the standardized factor loadings surpassed 0.6. These findings demonstrate satisfactory convergent validity [65].

Table 3. Measurement items and loadings

Constructs	Item	Loading	Cronbach's α	AVE	CR
Social Isolation	SIS1	.769	.814	0.595	0.815
	SIS2	.752			
	SIS3	.710			
Social Anxiety	SA1	.874	.892	0.676	0.892
	SA2	.861			

	SA3	.843			
	SA4	.866			
Neuroticism	NE1	.683	.754	0.508	0.756
	NE2	.681			
	NE3	.650			
Escapism	ES1	.914	.921	0.746	0.920
	ES2	.883			
	ES3	.917			
	ES4	.876			
Social Interaction	SIN1	.718	.803	0.575	0.802
	SIN2	.739			
	SIN3	.735			
SFVs APP Used	U1	.731	.811	0.586	0.810
	U2	.750			
	U3	.741			
Perceived Enjoymen	PE1	.765	.826	0.622	0.831
	PE2	.796			
	PE3	.720			
Mood Regulation	MR1	.756	.840	0.638	0.841
	MR2	.809			
	MR3	.768			
SFVs Addiction	ADD1	.696	.766	0.522	0.766
	ADD2	.675			
	ADD3	.686			

In our analysis, we also assessed the Maximum Shared Variance (MSV) between variables to examine their discriminant validity. The MSV values were found to be consistently smaller than the Average Variance Extracted (AVE) values for all variables. This indicates a reliable level of differentiation between the variables. Furthermore, we compared the square root of the AVE values for each variable (highlighted in bold in Table 4) with the correlation coefficients of other variables. The results demonstrated that the AVE values were higher, reinforcing the distinctiveness of the variables [64].

Table 4. Discriminant validity

Variable	AVE	MSV	ES	SA	MR	PE	SIN	SIS	USE	NEU	ADD
ES	0.746	0.233	**0.863**								
SA	0.676	0.098	0.214***	**0.822**							
MR	0.638	0.422	0.086	0.242***	**0.799**						
PE	0.622	0.188	0.066	0.313***	0.320***	**0.788**					
SIN	0.575	0.255	0.482***	0.189**	0.118	0.100	**0.758**				
SIS	0.595	0.174	0.385***	0.268***	0.195**	0.202**	0.402***	**0.771**			
USE	0.586	0.255	0.377***	0.293***	0.414***	0.147*	0.505***	0.417***	**0.766**		
NEU	0.508	0.188	0.068	0.028	0.191*	0.433***	0.154*	0.119	0.168*	**0.713**	
ADD	0.522	0.422	0.056	0.144*	0.650***	0.367***	0.136†	0.164*	0.344***	0.369***	**0.722**

Note: Bold values are the square root of AVE.

Table 5. Fit indices of the structural model

Fitting index	**χ2 /df**	**GFI**	**CFI**	**RMESA**
Recommended value	<0.3	>0.90	>0.90	< 0.08
Measurement Value	2.521	0.830	0.886	0.073

5. Data analysis and results

5.1. Structural model test

We used AMOS 24.0 to assess the fitness of our research model. The results of the model fitting indices are presented in Table 5, and all indices surpass the recommended values, indicating a positive goodness of fit. The structural models are visualized in Fig. 2. The obtained fit indices indicate an acceptable model fitness: the $\chi2$/df (chi-square normalized by degrees of freedom) value is 2.521, which is below the threshold of 3. This falls within an acceptable range, as CMIN/df is expected to be less than or equal to 2, and in some cases, slightly above 3 [66]. It is generally accepted that a CMIN/df value should be less than 5 when the sample size is greater than 200, or less than 3 when the sample size is less than 200 [67]. The goodness-of-fit index (GFI) is 0.830, slightly below the recommended threshold of 0.9. However, it is still considered acceptable when the sample size exceeds 200. Similarly, the comparative fit index (CFI) is 0.886, and the root mean square error of approximation (RMSEA) is 0.073, both of which fall within acceptable ranges for this study.

Based on the results presented in Table 6, the p-values associated with the hypotheses range from 0.000 to 0.518, using a significance level of 5%. The majority of the hypotheses proposed in the research model are supported, as their p-values are below the significance threshold. These tables offer detailed results regarding the testing of the hypothesis model, which are summarized in Table 6.

Table 6. Results of hypotheses testing

	Estimate	S.E.	C.R.	P	Hypothesis	Result
ES <--- SA	.172	.076	2.265	0.024	H3	Supported
SIN <--- SA	.106	.070	1.525	0.127	H5	Rejected
ES <--- SIS	.447	.076	5.889	***	H1	Supported
SIN <--- SIS	.408	.072	5.637	***	H2	Supported
ES <--- NEU	.0 63	.097	.646	0.518	H6	Rejected
SIN <--- NEU	.168	.089	1.892	0.059	H7	Rejected
USE <--- SA	.176	.055	3.222	0.001	H4	Supported
USE <--- ES	.111	.041	2.698	0.007	H8	Supported
USE <--- SIN	.325	.060	5.440	***	H10	Supported
PE <--- USE	.193	.074	2.617	0.009	H12	Supported
MR <--- USE	.536	.095	5.618	***	H13	Supported
ADD <--- PE	.199	.063	3.144	0.002	H14	Supported
ADD <--- MR	.465	.063	7.402	***	H15	Supported
ADD <--- SIN	.057	.054	1.064	0.287	H11	Rejected
ADD <--- ES	-.029	.040	-.733	0.464	H9	Rejected

Upon examining the results in Table 6, it is evident that hypotheses H1, H2, H3, H4, H8, H10, H12, H13, H14, and H15 have p-values less than 0.05, indicating that these relationships are statistically significant. Therefore, out of the 15 hypotheses proposed in the research model, 10 hypotheses are supported, while the remaining hypotheses are rejected. The results of the structural models are visualized in Fig. 2.

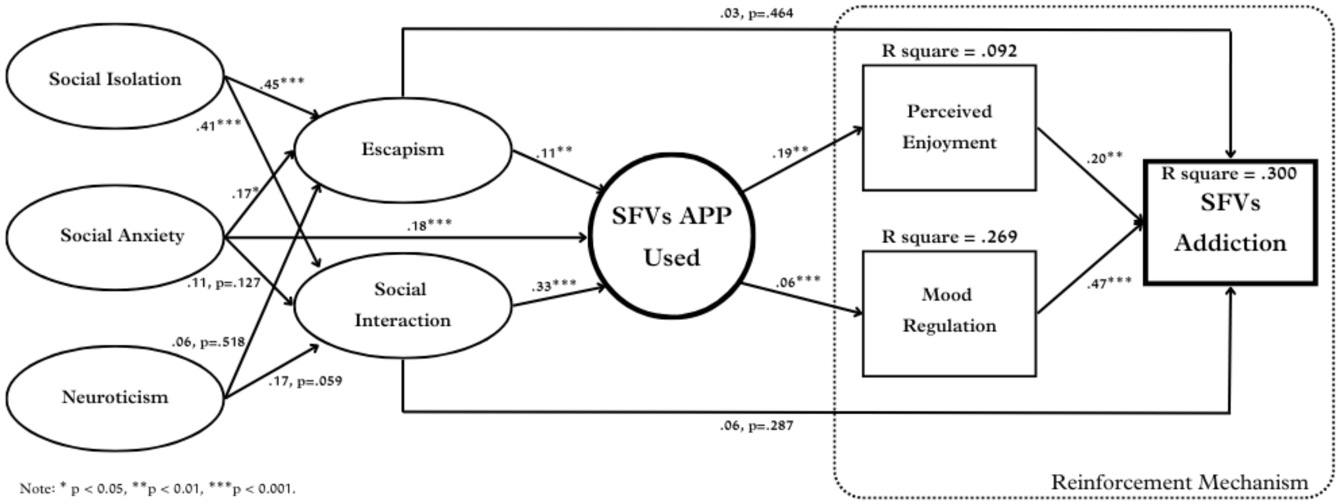

*Fig. 2. Model results. Note: * $p < 0.05$, **$p < 0.01$, ***$p < 0.001$*

5.2. Bootstrap test

To validate our model, we conducted a bootstrap test, which is a resampling technique that uses the original sample as a template to create multiple resamples.

Table 7. Bootstrap test in SEM model

Parameter			SE	SE-SE	Mean	Bias	SE-Bias	Critical Ratios
ES	<---	SIS	.073	.002	.379	-.003	.002	-1.50
ES	<---	SA	.068	.002	.135	.002	.002	1
SIN	<---	SIS	.084	.002	.415	-.005	.003	-1.67
SIN	<---	SA	.076	.002	.100	.001	.002	0.50
ES	<---	NEU	.071	.002	.042	.000	.002	0.00
SIN	<---	NEU	.071	.002	.134	.001	.002	0.50
USE	<---	SA	.070	.002	.204	.000	.002	0.00
USE	<---	ES	.069	.002	.167	-.002	.002	-1
USE	<---	SIN	.090	.002	.403	-.003	.003	-1
PE	<---	USE	.078	.002	.185	.001	.002	0.50
MR	<---	USE	.074	.002	.408	.002	.002	1
ADD	<---	USE	.095	.002	.093	.002	.003	0.67

ADD	<---	ES	.069	.002	-.057	.001	.002	0.50
ADD	<---	SIN	.092	.002	.023	-.008	.003	-2.67
ADD	<---	PE	.077	.002	.201	.000	.002	0.00
ADD	<---	MR	.077	.002	.560	-.003	.002	-1.50

The critical ratios calculated from the bootstrap test were all less than 1.96, implying that the corresponding p-values were greater than 5%. Therefore, we conclude that the non-zero deviations observed in the model do not have statistical significance at a 95% confidence level. As a result, we can confidently trust the quality of the estimated model based on the analyses conducted in the preceding steps.

6. Discussion

This study aimed to investigate the addiction to SFVs using the stress-coping theory as a framework. The findings revealed several important insights regarding the factors that directly and indirectly influence SFVs addiction and their implications within the stress-coping context. Firstly, the results indicated that Perceived Enjoyment and Mood Regulation were the only factors that had a direct impact on SFVs addiction. This suggests that individuals who perceive SFVs as enjoyable and engage in watching them for mood regulation purposes are more likely to develop addictive tendencies towards SFVs. These findings align with previous studies that have highlighted the role of enjoyment and mood enhancement in addictive behaviors [23], [60].

The cluster of factors comprising SFVs addiction, Perceived Enjoyment, and Mood Regulation formed a group of state outcome factors within the stress-coping theory. This suggests that SFVs addiction, as well as the enjoyment and mood regulation associated with SFVs, can be seen as outcomes or consequences of stress-coping processes. This finding provides empirical evidence supporting the notion that addictive behaviors, including SFVs addiction, can serve as coping mechanisms in response to stress [23].

Escapism and Social Interaction were found to have an indirect influence on SFVs addiction through the behavior of using SFVs. However, these factors did not have a direct impact on SFVs addiction. This implies that individuals who engage in SFVs to escape from reality or to fulfill their social interaction needs are more likely to develop addictive patterns of SFVs usage. These findings support the notion that coping strategies, such as escapism, can play a significant role in addictive behaviors [39].

Furthermore, the study also identified Social Isolation and Social Anxiety as stressor factors that directly and positively influenced Escapism. This implies that individuals experiencing social isolation or social anxiety may be more inclined to seek escape through SFVs. This finding aligns with previous research highlighting the relationship between social factors and escapism as a coping mechanism [7], [39].

Contrary to initial predictions, Social Anxiety did not directly influence Social Interaction but had a direct impact on SFVs APP Used. This suggests that individuals with social anxiety may not engage in SFVs as a means of social interaction but rather use SFVs as a way to cope with their anxiety. These findings provide valuable insights into the complex interplay between social factors, anxiety, and SFVs addiction [7].

On the other hand, the factor Neuroticism did not align with the study's model, as it did not have a direct influence on any factors and did not impact the state of SFVs addiction. This implies that neuroticism may not play a significant role in the development of SFVs addiction, contrasting with previous research linking neuroticism to various addictive behaviors. Further investigation may be required to understand the relationship between neuroticism and SFVs addiction more comprehensively.

This study contributes to the understanding of SFVs addiction by applying the stress-coping theory. The findings emphasize the importance of perceived enjoyment and mood regulation as direct factors influencing SFVs addiction. Additionally, the study highlights the role of escapism and social interaction as indirect factors, mediated by other variables, in shaping SFVs addiction. These findings have implications for the development of interventions and strategies aimed at addressing SFVs addiction and promoting healthier coping mechanisms. In conclusion, this study provides valuable insights into the factors influencing SFVs addiction and their associations within the stress-coping framework. The findings highlight the role of perceived enjoyment, mood regulation, escapism, and social interaction in the development of SFVs addiction. These results contribute to the existing literature on addictive behaviors and inform future research and interventions aimed at understanding and addressing SFVs addiction more comprehensively.

7. Limitation

The use of self-report measures introduces the potential for response biases and social desirability effects. Participants may provide answers they believe align with societal expectations rather than their true experiences, affecting the accuracy of the data. Secondly, the sample utilized may not fully represent the wider population, thus limiting the generalizability of the findings. Including participants from diverse demographic backgrounds would enhance the validity and applicability of the results. Lastly, while the model explained a significant portion (30%) of the variance in short-form video app addiction, there remains unexplained variance. Introducing additional variables to the model could enhance its explanatory power and provide a more comprehensive understanding of SFVs addiction. Future research should address these limitations to strengthen the reliability and generalizability of the findings.

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The Impact of Digital Marketing Tools on Firm Performance: A Study in Danang City, Vietnam

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ABSTRACT

This study investigates the impact of Digital Marketing tools on Firm Performance of SMEs in Da Nang city. We collected 159 questionnaires through an online survey to evaluate and validate the proposed theoretical model, using partial least squares – structural equation modelling (PLS-SEM). Our results indicate that the most important Digital Marketing tools impact on firm performance are online advertising, social media marketing, and content marketing. The results present useful insight to understand the effects of the Digital Marketing tools in the Danang company context.

Keywords: Digital marketing tools; firm performance; online advertising; social media marketing; content marketing.

1. Introduction

In the current market context, Digital Marketing is one of the most effective and rapidly developing marketing tools in the era of Industry 4.0. It is becoming one of the essential tools for businesses to develop, from large companies to small and medium-sized enterprises (SMEs). Worldwide, many studies have shown that investing in digital marketing can play an important role in enhancing the business efficiency of enterprises, especially SMEs (Zahay et al., 2018). However, there are still not many complete and detailed studies on the impact of Digital Marketing tools on the firm performance of SMEs in Da Nang.

According to the study by Philip Kotler and Gary Armstrong (2013), "Marketing determines the fate of a business and contributes to creating value for customers, enterprises, and society". In addition, according to the study by Grewal et al. (2009), the importance of managing customer experience in the purchasing process to improve business efficiency is also emphasized. In the

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current economic context, Digital Marketing is considered an effective means of reaching customers and saving costs compared to traditional media. Studies by Nuseir et al. (2020) and Kawira et al. (2019) also show that Digital Marketing helps increase customer reach, enhance brand, create professionalism and friendliness with customers, thereby increasing sales and profitability. This is also demonstrated in a study by Goh et al. (2013), which shows that creating community content on social media platforms can help increase customer interaction and sales of businesses.

In Vietnam, according to statistics from the General Statistics Office (2021), SMEs account for 98% of the total number of businesses in the country and contribute 40% of GDP. However, difficulties in capital, human resources, technology, finance, management, competition, and product marketing are still significant challenges for SMEs in Vietnam. Especially in the context of the post-COVID-19 pandemic, SMEs are facing new challenges in maintaining business operations and development. This shows the urgency of studying the impact of Digital Marketing tools on the firm performance of SMEs.

Websites such as Statista, eMarketer, and HubSpot also provide statistics and data on the use of digital marketing in businesses. According to Statista, in 2021, the amount of money spent on digital marketing in Vietnam was around 424 million USD and is predicted to continue increasing in the future. eMarketer also predicts that online advertising spending will increase to 455.3 billion USD by 2023. Meanwhile, a report by Datareportal shows that businesses that have implemented digital marketing can increase new customers by up to 24%, improve relationships with existing customers by up to 83%, and increase sales by up to 42%. These figures demonstrate the potential and importance of digital marketing in the marketing strategy of businesses, especially SMEs. Overall, the findings suggest that digital marketing can have a positive impact on the performance of SMEs both in Vietnam and other parts of the world. However, more research is needed to fully understand the mechanisms through which digital marketing affects SMEs and to explore potential limitations of these effects.

With the above comments, in this paper, we investigate the impact of Digital Marketing tools on the Performance of Small and Medium Enterprises (SMEs) in Danang. In this study, we use the TOE framework (Tornatzky & Fleischer, 1990) and the DOI theory of innovation (Rogers et al., 2019) as the theoretical background for our proposal research model. These model are two complementary theories, and these two theories are most commonly used in explaining the application of innovation at the organizational level (Oliveira et al., 2014). The factors TOE considers are similar to the innovation characteristics outlined in the DOI theory. Therefore, using elements of the TOE framework to support and reinforce the DOI theory is a widely used approach (Oliveira et al., 2014). Based on these finding, it not only helps local businesses improve their business efficiency but also contributes to the economic development of the locality and the country as a whole. By researching and analyzing the impact of digital marketing tools, I hope that this topic will contribute significantly to identifying effective marketing strategies for SMEs in Danang, helping to strengthen their competitiveness and achieve better business results.

This article is organized as follows: Section 2 is Literature review and hypothesis development; Section 3 is research methodology; Section 4 is the results; Section 5 is Discussion and Conclusion.

2. Literature review

2.1. Digital Marketing and Digital Marketing tools

Digital marketing

Digital marketing has become an increasingly critical aspect of modern business strategy, particularly for small and medium-sized enterprises (SMEs). Digital marketing can be defined as the use of digital technologies and platforms to promote products or services and engage with customers (Chaffey and Ellis-Chadwick, 2019). According to Chaffey and Ellis-Chadwick (2019), digital marketing includes a range of tactics and channels, such as social media, search engine marketing, content marketing, and online advertising.

The importance of digital marketing for SMEs lies in its ability to reach a wider audience at a lower cost than traditional marketing methods. By utilizing digital channels and tactics, SMEs can level the playing field and compete with larger companies on a more equal footing. Moreover, digital marketing can help SMEs to establish and build their brand reputation, increase customer engagement, and drive profitable customer action (Babin and Zikmund, 2019).

Digital marketing tools

Regarding digital marketing tools, Social media is one of the most popular and widely-used digital marketing tools. It provides SMEs with an opportunity to connect with customers on various platforms, such as Facebook, Twitter, Instagram, and LinkedIn. It helps to enhance brand and content across social media channels to increase brand awareness, generate traffic, and reach potential customers. According to Kapoor and Vij (2020), social media marketing can increase brand awareness and customer engagement, leading to improved sales and profitability. For example, research has shown that companies with a strong social media presence tend to have higher customer loyalty and are more likely to retain customers than those without one (Hanna ehant al, 2011).

Search engine marketing (SEM) is another essential digital marketing tool that involves the use of paid advertising to increase visibility and drive traffic to a company's website. SEM includes search engine optimization (SEO) and pay-per-click (PPC) advertising (Vaibhava Desai, 2019), both of which are effective in increasing website traffic and generating leads. Search engine optimization is the process of improving your website to rank higher in search results and attract more useful traffic. Channels include your website, blog, and infographics. PPC is an online advertising model where you pay a publisher each time a customer clicks on your ad and is directed to your website. Google AdWords is one of the most popular PPC platforms, allowing you to pay for top positions on Google's search engine results page. Other channels to use PPC include Facebook Ads, Twitter Ads, and LinkedIn Sponsored Messages. Research has found that SEM can significantly improve conversion rates and ROI for SMEs (Lee and Park, 2021).

Content marketing is a strategy that involves the creation and sharing of valuable, relevant, and consistent content with the aim of attracting and retaining a clearly-defined audience and ultimately driving profitable customer action (Kotler et al, 2019). Content marketing can take various forms, such as blog posts, videos, infographics, and whitepapers (Vaibhava Desai, 2019). Studies have shown that content marketing can improve brand reputation and customer loyalty, as well as generate leads and sales (Cui et al, 2019).

Online advertising refers to the use of online channels to promote products or services, such as display ads, social media ads, and email marketing. Online advertising is effective in reaching a large audience and targeting specific demographics, resulting in increased brand awareness and customer acquisition. For example, research has shown that email marketing can be an effective way to reach customers and drive conversions, with an average ROI of 38:1 (Cui et al, 2019).

2.2. Firm performance

Firm performance is a widely studied concept in the fields of business management, finance, and accounting, and it is viewed from various perspectives and dimensions in practice. There were significant changes in management approaches and the level of competition among firms. Harrison and Freeman (1999) emphasized that firm performance depends on its ability to create value for customers. The trained and skilled labor force helps firms keep up with market challenges and enhances organizational performance. Harrison and Freeman (1999) confirmed that an effective firm satisfies the needs of stakeholders. These diverse perspectives highlight the multidimensional nature of firm performance and its relationship to the benefits of various stakeholders, from customers to employees within the firm.

In the early 21st century, there have been significant changes in the application of information technology in production and management, rapid globalization, and the challenges of global climate change. The social responsibility of businesses has received more attention. Sandberg (2003) defines firm performance as the contribution of a firm to employment and continuous innovation throughout its formation, survival, and growth. Thus, firm performance is a complex and multifaceted concept that is examined from different angles and dimensions in research and practice, taking into account factors such as efficiency, resource utilization, customer value creation, employee satisfaction, stakeholder satisfaction, social contributions, and sustainability.

In general, firm performance can be understood as a set of financial and non-financial indicators that provide information about the level of achievement of goals and outcomes, closely linked to the benefits of stakeholders involved in the business operations.

2.3. Digital marketing tools and Firm performance

Over the past decade, digital marketing has become an essential tool for businesses to reach their target audience and improve their overall performance. Several studies have investigated the relationship between digital marketing and business performance, as summarized below.

One of the earliest studies on the subject was conducted by Omondi (2017) in Nairobi, Kenya. The study found that digital marketing, particularly email marketing and social media marketing, had a significant impact on the sales growth of small and medium-sized enterprises (SMEs). The study also identified a lack of digital media knowledge and suitable techniques as key challenges for SMEs in adopting digital marketing. Dang, Phan, and Nguyen's (2019) study in Ho Chi Minh City highlighted the importance of digital marketing in enhancing business performance for SMEs in Vietnam. However, the study is limited by its small sample size and lack of exploration of specific digital marketing strategies used by SMEs. Lee and Park (2021) conducted a survey of 235 SMEs in South Korea to examine the effects of digital marketing on online and offline performance. The study found that digital marketing had a positive influence on both online and offline performance, with product types playing a moderating role in the relationship. However, the study was limited by its relatively focus solely on social media marketing.

In conclusion, these studies provide valuable insights into the relationship between digital marketing and business performance. While there is a growing body of literature on the subject, further research is needed to fully understand the impact of digital marketing on business performance and to identify the most effective digital marketing strategies for different types of businesses.

2.4. Developing research hypotheses

The relationship between Online advertising and Firm performance

Firstly, examining the influence of online advertising on SME performance from a customer engagement perspective, Mehralian (2022) highlights its significant role. The study emphasizes that online advertising empowers SMEs to strengthen brand awareness, interact with customers, and cultivate lasting relationships. By employing engaging content, personalized advertisements, and interactive campaigns, SMEs can captivate their target audience, resulting in heightened customer engagement, loyalty, and ultimately, enhanced firm performance. Mehralian's research sheds light on the pivotal role of online advertising in fostering meaningful customer connections and driving positive business outcomes for SMEs.

Regarding the cost-effectiveness and flexibility of online advertising for SMEs, Semerádová (2019) explores its implications. The study emphasizes that digital marketing tools offer SMEs the advantage of precisely targeting specific customer segments, optimizing advertising budgets, and tracking campaign performance in real-time. With the ability to analyze data and make informed decisions, SMEs can allocate resources efficiently and adapt their marketing strategies accordingly. Semerádová's research suggests that by harnessing the potential of online advertising, SMEs can achieve higher returns on investment and improved firm performance.

Drawing from the research studies discussed above, it is reasonable to posit that online advertising has an effect on firm performance. Hence, the research hypothesis can be stated as follows:

H1: Online advertising positively affects firm performance

a) **The relationship between Social media marketing and Firm performance**

Within the realm of digital marketing, social media marketing has emerged as a powerful tool with the potential to significantly impact firm performance. Tajvidi (2021) explores the profound influence of social media marketing strategies on businesses. The study highlights how social media platforms provide businesses with the means to engage directly with their target audience, build brand awareness, and cultivate customer relationships. Tajvidi's research findings underscore the positive effects of social media marketing, including increased customer engagement, improved brand perception, and ultimately, enhanced firm performance.

In the context of small and medium-sized enterprises (SMEs), Parveen (2015) delves into the relationship between social media marketing and firm performance. The study emphasizes the role of social media in enabling SMEs to effectively promote their products or services, connect with customers, and gain a competitive edge. Parveen's research findings suggest that through strategic utilization of social media marketing tactics, SMEs can achieve improved performance outcomes such as increased sales, enhanced customer satisfaction, and strengthened brand loyalty.

Turning to the hospitality industry, Lau (2017) investigates the efficacy of social media marketing in enhancing firm performance. The study sheds light on how social media platforms offer hospitality businesses a direct avenue to engage with customers, share personalized content, and receive real-time feedback. Lau's research findings indicate that through social media marketing, hospitality businesses can augment their brand reputation, attract a larger customer base, and ultimately, achieve better financial performance.

Taking into account the research studies mentioned earlier, it is reasonable to propose that social media marketing contributes positively to firm performance. Therefore, the research hypothesis can be formulated as follows:

H2: Social media marketing positively affects firm performance

b) **The relationship between Search engine marketing and Firm performance**

Yang et al. (2015) explore the relationship between search engine marketing (SEM), financing ability, and firm performance in the context of e-commerce. The research highlights the role of SEM in enhancing a firm's visibility and attracting targeted traffic through search engine platforms. The findings suggest that effective implementation of SEM strategies can positively impact firm performance in terms of increased website traffic, customer acquisition, and financial outcomes. By utilizing search engine optimization (SEO) techniques and paid search advertising, businesses can improve their online presence, attract potential customers, and ultimately, achieve better financial results (Rancati, Gordini, and Capatina (2016)).

Considering the insights from the aforementioned studies, it is justifiable to propose that search engine marketing (SEM) has a positive impact on firm performance. Hence, the research hypothesis can be formulated as follows:

H3: Search engine marketing positively affects firm performance

c) **The relationship between Content marketing and Firm performance**

Rancati and Gordini (2014) delve into the theoretical aspects and empirical evidence surrounding content marketing metrics. The study provides insights into the effectiveness of content marketing strategies in driving firm performance. The findings suggest that well-executed content marketing initiatives can lead to increased brand visibility, customer engagement, and overall business success. In their exploration of content marketing within luxury firms, Rancati, Gordini, and Capatina (2016) shed light on the conceptualization and measurement of content marketing's impact. The study emphasizes the role of content marketing in creating meaningful connections with luxury consumers, fostering brand loyalty, and ultimately driving firm performance. The research highlights the importance of tailored content strategies that align with the unique characteristics and values of luxury brands.

Geng et al. (2020) focus on content marketing in the context of e-commerce platforms in the internet celebrity economy. The study investigates the role of content marketing in driving consumer engagement and purchase behavior. The findings suggest that effective content marketing campaigns, coupled with the influence of internet celebrities, can significantly impact firm performance by attracting and retaining customers in the e-commerce landscape.

From the aforementioned studies, it is reasonable to propose that content marketing positively affects firm performance. Therefore, the research hypothesis is formulated as follows:

H4: Content marketing positively affects firm performance

Thus, the proposed research model is constructed after the working process, consisting of 5 independent variables, including Online Advertising, Social Media Marketing, Search Engine Marketing, and Content Marketing.

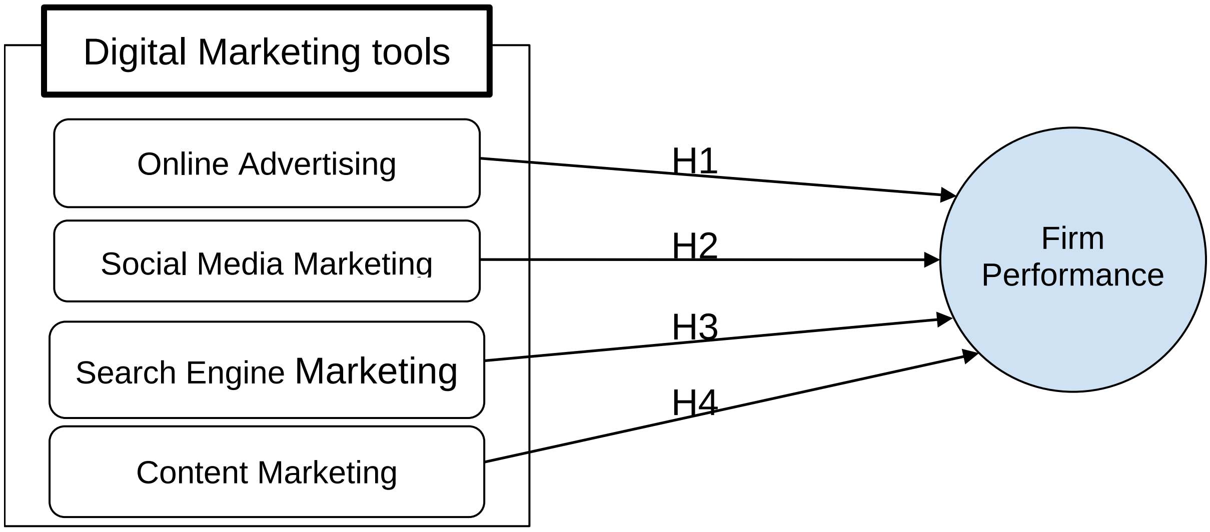

Fig. 1. Research model

Source: Author's own construction

3. Research Methodology

3.1. Dependent variables measurement

As mentioned in Chapter 1, in this study, the author will utilize some indicators the Balanced Scorecard (BSC) (Kaplan et al, 1992) to measure the firm performance of small and medium-sized enterprises (SMEs) in Da Nang. The BSC is a management tool that provides a comprehensive framework for evaluating organizational performance from multiple perspectives. It goes beyond traditional financial metrics and incorporates key non-financial indicators, allowing a more holistic assessment of a firm's overall performance. The BSC comprises four main dimensions: financial, customer, internal processes, and learning and growth. By adopting the BSC, the study aims to capture a more nuanced understanding of the impact of digital marketing tools on various aspects of firm performance, enabling a comprehensive evaluation of SMEs in Da Nang. The financial performance index is estimated form C.-H. Wang et al., 2010.

3.2. Independent variables measurement

As mentioned in Chapter 1, the research topic focuses on "The impact of Digital Marketing on the firm performance of SMEs in Da Nang." The independent variables in this study encompass four key tools of Digital Marketing: Social Media Marketing, Online Advertising, Search Engine Marketing (SEM), and Content Marketing. In the following sections, we will divide into a comprehensive exploration of these influential factors and the metrics used to measure their profound effects on the performance of small and medium-sized enterprises (SMEs) in Da Nang. Specifically, the study will measure the implementation efforts of digital marketing campaigns through these tools by SMEs in Da Nang. Social Media Marketing is following Pourkhani et al (2019); Lau (2017). Online Advertising is following Semerádová (2019). Search Engine Optimization is following Bhandari et al (2018); Yang et al (2015). Content Marketing is following Gabbianelli et al (2018); Rancati et al (2014), Geng et al (2020), Tajvidi et al (2021).

3.3. Sampling, data collection, and data processing

Sampling is a crucial process in research that directly affects the scientific value of research findings. To ensure the generalizability of the research results on the impact of Digital Marketing on businesses in Da Nang City, the target population was defined as all businesses in the city, excluding foreign-invested enterprises. The research utilizes a structured questionnaire to collect quantitative data from managers and professionals on their businesses' adoption of digital marketing tools and firm performance, with three sections covering general business information, digital marketing tool utilization, and performance evaluation using a 5-point Likert scale. The author has implemented a rigorous and comprehensive data processing procedure, which includes various steps such as data cleaning, reliability assessment of the measurement scale, and structural equation modeling (SEM) analysis for hypothesis testing.

In order to collect the data, we conducted the survey using an online questionnaire built with Google Forms. These questionnaires were distributed to appropriate participants based on the target population of the study. A batch of 200 e-mails including a link to the survey was sent to the CEOs, owners, Chief Marketing Officer, Marketing Manager, Finance Manager, or chairpersons of the board of SMEs. The survey was conducted from April 2023 to May 2023. A total of 200 survey questionnaires were distributed, and 172 responses were received, resulting in a response rate of 86%. After eliminating inappropriate samples, a total of 159 valid responses were obtained. The valid survey responses were entered into Microsoft Excel 2010 and then imported into Smart PLS 3 software for quantitative analysis.

4. Reasearch Result

4.1. Descriptive statistics

The author utilized two parameters, frequency and percentage, to conduct descriptive statistics of the research sample. After distributing the survey questionnaires using the indirect survey method through Google Forms, the author obtained 159 valid survey responses. The statistical analysis of the data was performed using SPSS 20 software, and the specific results are as follows:

Table 1. Descriptive statistics

		Frequency	Percentage (%)
Type of business	Private enterprise	101	0.635
	Limited liability company	23	0.145
	Joint Stock Company	35	0.220
Industry	Retail	15	0.094
	Healthcare	9	0.057

	Technology	10	0.063
	Education	11	0.069
	Tourism and hospitality	72	0.453
	Finance	13	0.082
	Manufacturing	14	0.088
	Others	15	0.094
Years of operation	Less than 1 year	5	0.031
	1-5 years	129	0.811
	5-10 years	23	0.145
	More than 10 years	2	0.013
Size of business	Small (less than 100 employees)	116	0.730
	Medium (100-200 employees)	43	0.270
Annual Revenue	Less than 100 billion VND	124	0.780
	100-300 billion VND	35	0.220
TOTAL		159	100

Source: Author's own construction

Private enterprises account for the majority of the sample at 63.5%, followed by Joint Stock Companies at 22%, and limited liability companies at 14.5%. The majority of SMEs in Da Nang operate in the tourism and hospitality sector, representing 45.3%. Retail comes next with 9.4%, followed by manufacturing and others, each comprising 9.3%. The finance industry is represented by 8.2%, while technology and education contribute 6.3% each. Healthcare accounts for 5.7%. These findings shed light on the industry landscape of SMEs in Da Nang, indicating the prominent presence of businesses in the tourism and hospitality sector, along with diverse representation in other industries.

Out of 159 SMEs in Da Nang, 3.1% have been operating for less than 1 year, 81.1% for 1-5 years, 14.5% for 5-10 years, and only 1.2% for more than 10 years.. These findings suggest a dynamic environment with a significant number of relatively new businesses in Da Nang, along with some established entities that have been operating for a longer period. Out of 159 SMEs in Da Nang, 73% are small-sized enterprises with less than 100 employees, 27% are medium-sized with 100-200 employees. This highlights the prevalence of small-scale entrepreneurship in the region and suggests a need to focus on fostering the growth and development of SMEs to stimulate the local economy. Out of 159 businesses surveyed in Da Nang, 78% reported an annual revenue of less than 100 billion VND, 22% reported an annual revenue ranging from 100 billion to 300 billion VND. This suggests that most businesses in Da Nang have modest revenue levels, highlighting the predominance of SMEs and the need to support their growth and development to enhance their financial performance and contribute to the local economy.

4.2. Scale reliability and validity

Internal consistency is evaluated using two indicators: Cronbach's Alpha and composite reliability. These indicators should range from 0.6 to 0.9 to ensure internal consistency (Hair et al., 2016).

Convergent validity is assessed through the outer loading and average variance extracted (AVE). The model demonstrates convergent validity when the outer loading is ≥ 0.7 and AVE is ≥ 0.5 (Hair et al., 2016)

Table 2. Internal consistency

VARIABLE	Cronbach's Alpha	Composite Reliability	AVE
ADV	0.891	0.920	0.698
CON	0.828	0.878	0.589
FP	0.930	0.941	0.617
SEM	0.915	0.937	0.751
SMM	0.841	0.888	0.614

Source: Author's own construction

Table 3. Outer Loading

VARIABLE	ADV	CON	FP	SEM	SMM
ADV1	0.774				
ADV2	0.841				
ADV3	0.860				
ADV4	0.870				
ADV5	0.828				
CON2		0.770			
CON3		0.764			
CON4		0.724			
CON5		0.799			
CON6		0.779			
FP1			0.850		
FP10			0.765		
FP2			0.772		
FP3			0.861		
FP4			0.762		
FP5			0.643		
FP6			0.704		
FP7			0.846		

FP8			0.894		
FP9			0.723		
SEM1				0.890	
SEM2				0.929	
SEM4				0.860	
SEM5				0.705	
SEM6				0.928	
SMM2					0.804
SMM3					0.843
SMM4					0.797
SMM5					0.767
SMM6					0.698

Source: Author's own construction

According to the data in Table 2, the measurement levels of the research variables, as indicated by the Cronbach's Alpha coefficients, are all greater than 0.6. Additionally, the CR values are all greater than 0.7, and the AVE values are greater than 0.5. Therefore, it can be concluded that the measurement model is reliable and the interview results align well with the actual data.

In Table 3, it can be observed that the observed variables with outer loadings greater than or equal to 0.7 meet the requirement for convergence of measurement (highlighted in green). However, the observed variables with outer loadings ranging from 0.4 to 0.7, including FP5 and SMM6, are considered for evaluating their impact on the overall reliability by considering content-related factors. The analysis of excluding these observed variables does not increase the composite reliability value and requires further consideration. The author retains all the observed variables mentioned above to proceed with further evaluations.

4.3. Discriminant validity

In this part, we conduct the Heterotrait-monotrait ratio of correlations (HTMT) following Hair et al., (2016). The results are presented in Table 4.

Table 4. Heterotrait-monotrait ratio of correlations (HTMT)

VARIABLE	ADV	CON	FP	SEM	SMM
ADV					
CON	0.661				
FP	**0.864**	0.674			
SEM	0.574	0.480	0.552		
SMM	0.835	0.697	0.800	0.603	

Source: Author's own construction

Based on the data from Table 4, it can be observed that the HTMT values of all the variables under study are smaller than 0.9. Therefore, it can be concluded that all the criteria for evaluating the model are met, providing evidence for reliability and validity.

4.4. Collinearity assessment

Collinearity is evaluated using the Variance Inflation Factor (VIF). According to Hair et al., (2016), a VIF exceeding 5 indicates the presence of multicollinearity. The results of the analysis presented in Table 5 show that the VIF values of all observed variables are smaller than 5. Therefore, no multicollinearity issue is found in this model.

Table 5. Variance inflation factor (VIF)

VARIABLE	ADV	CON	FP	SEM	SMM
ADV			2.379		
CON			1.729		
FP					
SEM			1.530		
SMM			2.457		

Source: Author's own construction

4.5. Coefficients of determination (R^2)

Normally, the coefficient of determination (R^2) is used to evaluate the structural model (Hair et al., 2016). This coefficient is a measure of model prediction and is calculated as the square of the correlation between the predicted value and the value of the specific endogenous variable. The coefficient represents the combined effect of exogenous latent variables on the endogenous latent variable. The results of the R^2 coefficient of the model are presented in Table 6.

Table 6. Coefficients of determination (R^2)

VARIABLE	R Square	R Square Adjusted
FP	0.701	0.693

Source: Author's own construction

The results of the predictive accuracy of the model (R^2) presented in Table 6 show that the adjusted R^2 value for FP is 0.693. This means that the variables in the model, such as Online Advertising, Social Media Marketing, Search Engine Marketing, and Content Marketing, explain 69.3% of the variation in Firm Performance.

4.6. Bootstrap Hypothesis test

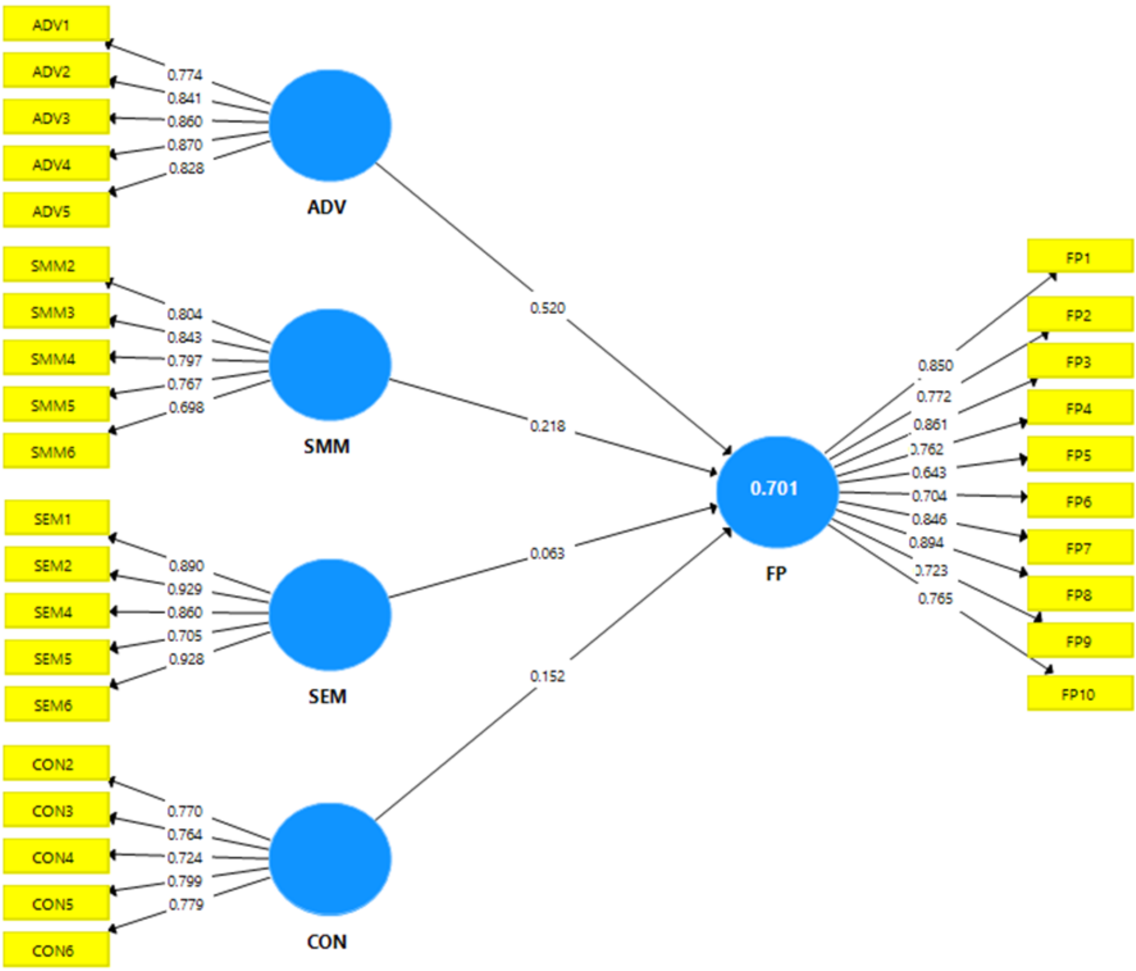

Fig. 1. Structural model path coefficient

Source: Author's construction

Table 7. Bootstrap test

Hypothesis	Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values	Result
H1	**ADV → FP**	0.520	0.524	0.081	6.456	0.000	Accept
H2	**SMM → FP**	0.218	0.218	0.079	2.760	0.006	Accept
H3	**SEM → FP**	0.063	0.065	0.058	1.097	**0.273**	**Rejected**
H4	**CON → FP**	0.152	0.151	0.056	2.706	0.007	Accept

Source: Author's own construction

Table 7 presents the estimation results using the "bootstrap" method for the structural model with direct effects. The results indicate that out of the four hypotheses tested, three hypotheses (H1, H2, and H4) are accepted at a significance level of 1% due to the p-value < 0.01. Hypothesis H3 is rejected as its p-value is 0.273 > 0.1. Therefore, there is not enough evidence to conclude the impact of Search Engine Marketing on Firm Performance. This results can be explained by that the greatest barriers to adopting digital marketing tools are lack of resources; mainly lack of knowledge and time

(Sayre et al., 2012). In particular, lack of knowledge of different digital channels and also of the new norms governing digital tools were perceived as formidable obstacles. In addition, Gilmore et al. (2007) reveal that another sizable barrier to adoption of digital tools was their perceived usefulness. This reults is consistent with Gilmore et al., (2007) that many SMEs do not use the full potential of the new digital tools and hence are not fully exploiting the opportunities they can bring.

The research findings have demonstrated the correlations between different Digital Marketing tools and firm performance. Firstly, Hypothesis H1 has been supported, indicating that Online Advertising has the strongest impact on firm performance with an original sample of 0.520. This implies that as businesses increase their utilization of Online Advertising, their firm performance also improves.

Similarly, Hypothesis H2 has been confirmed, highlighting the significant influence of Social Media Marketing on firm performance. With an original sample of 0.218, it is evident that businesses that actively engage in Social Media Marketing experience higher levels of firm performance.

Furthermore, Hypothesis H4 has been accepted, indicating that Content Marketing plays a relatively lesser role in impacting firm performance, as reflected by an original sample of 0.152. Nevertheless, it is important to note that Content Marketing still contributes positively to firm performance, meaning that businesses that prioritize and invest in Content Marketing are more likely to see improvements in their overall performance.

5. Discussion and implication

5.1. Discussion

Online advertising: Online advertising has emerged as a powerful tool for SMEs in Da Nang, driving their firm performance to new heights. These businesses have recognized the importance of running targeted online advertising campaigns to promote their products or services. By specifically tailoring their advertisements to specific demographics or customer segments, SMEs have been able to reach the right audience, resulting in increased brand exposure and customer engagement. Moreover, SMEs in Da Nang place significant emphasis on monitoring and analyzing the performance of their online advertising campaigns. The results are consistent with Saura et al. (2017). This data-driven approach allows businesses to make informed decisions, optimize their strategies, and allocate resources effectively. By utilizing various online advertising channels, such as display ads, social media ads, and search engine advertising, SMEs can maximize their reach and attract potential customers.

Social media marketing: Social media marketing plays a significant role in the firm performance of SMEs in Da Nang. These businesses actively maintain a presence on various social media platforms and regularly post engaging and relevant content to capture the attention of their target audience. The results are supported by Jiménez-Jiménez & Sanz-Valle (2011). By establishing an interactive and engaging online presence, SMEs in Da Nang can build a strong brand image, foster customer loyalty, and drive customer conversions. SMEs in Da Nang actively respond to customer inquiries and comments on social media, showcasing their commitment to customer satisfaction. By promptly addressing customer concerns and providing exceptional customer service, these businesses enhance their reputation and establish a positive brand image. Social media advertising campaigns also play a crucial role in promoting products or services, further amplifying the impact of social media marketing on firm performance.

Search engine marketing: SMEs in Da Nang also utilize search engine marketing (SEM) as part of their digital marketing strategies. This result is consistent with Saura et al. (2017). Thus, SEM involves techniques such as search engine optimization (SEO) and search engine advertising to enhance a website's visibility in search engine results. Although the research findings do not provide sufficient evidence to conclude that SEM directly impacts firm performance, it is important to note that SMEs in Da Nang actively engage in SEM practices to improve their online presence and attract organic traffic.

SMEs conduct keyword research to identify relevant and high-performing keywords for their SEM campaigns. They continuously monitor and optimize their SEM campaigns based on performance metrics, such as click-through rates and conversion rates. Utilizing landing pages specifically designed for SEM campaigns and employing remarketing techniques are also common practices among SMEs in Da Nang. Staying updated on industry trends and best practices in SEM is crucial for businesses to ensure the effectiveness of their campaigns.

Content marketing: Content marketing has proven to be an effective digital marketing tool for SMEs in Da Nang, contributing to their overall firm performance. This result is consistent with Saura et al. (2017). These businesses consistently produce high-quality and valuable content to cater to the needs and preferences of their target audience. By conducting thorough audience research, SMEs gain insights into their customers' interests and pain points, enabling them to develop relevant and engaging content.

5.2. Implication

To enhance firm performance, managers and business owners of SMEs in Da Nang should implement the following measures: Embracing a Data-Driven Approach: SMEs in Da Nang should prioritize collecting and analyzing data from their digital marketing campaigns. By understanding the performance metrics and insights, businesses can make informed decisions, optimize their strategies, and allocate resources effectively. Utilizing tools and technologies that provide accurate data analytics will enable SMEs to refine their marketing efforts and achieve better results.

Tailoring Marketing Efforts to Targeted Audiences: To maximize the impact of digital marketing, SMEs should focus on understanding their target audience in Da Nang. Conducting thorough market research and audience analysis will help businesses identify customer preferences, pain points, and behavioral patterns. By tailoring their content, advertising, and messaging to specific demographics and customer segments, SMEs can enhance customer engagement and increase conversion rates.

Integrating Multiple Digital Marketing Channels: SMEs in Da Nang should adopt a multi-channel approach to leverage the full potential of digital marketing. Utilizing online advertising, social media marketing, search engine marketing, and content marketing in synergy will expand reach and attract diverse customer segments. Integrating these channels allows SMEs to create a consistent brand presence, engage with customers at different touchpoints, and increase brand visibility across various platforms.

5.3. Limitations of the research

There are some limitation of this reseach, including (1) single Location Focus: The research primarily focused on SMEs in Da Nang, which may limit the generalizability of the findings to SMEs in other regions or cities. The specific characteristics and dynamics of the Da Nang business environment may not be representative of SMEs in different contexts, thus restricting the broader applicability of the research. (2) Potential Bias: As a student researcher, there may be limitations in terms of experience and expertise compared to seasoned researchers or industry professionals. This could potentially introduce bias or limitations in the research design, data collection, or analysis methods. (3) Lack of Control Variables: The research focused on specific variables related to digital marketing tools and firm performance. However, other external factors or control variables that could influence firm performance, such as industry-specific factors, macroeconomic conditions, or organizational characteristics, were not considered. The absence of control variables may limit the ability to isolate the precise effects of digital marketing tools on firm performance.

5.4. Future Research Directions

Conducting longitudinal studies over an extended period would provide a more comprehensive understanding of the factors influencing firm performance in SMEs. This would allow for the examination of trends, changes, and the impact of external factors on performance over time. Expanding the sample size to include a larger number of SMEs would enhance the reliability and generalizability of the findings. A larger sample would provide a more representative picture of the SME landscape in Da Nang and allow for subgroup analyses based on industry, size, or other relevant factors. Conducting comparative studies across different cities or regions would enable a better understanding of the contextual factors influencing firm performance in SMEs. Comparisons between different business environments and economic conditions would provide valuable insights into the unique challenges and opportunities faced by SMEs in different locations.

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The Customer Experience (CX) Maturity and Recommendations on Enhancing CX through Digital Transformation: A Case Study of Dai Hy Hospitality

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ABSTRACT

In order to survive and develop in the digital era, businesses are forced to promote digital transformation, in which it is necessary to apply customer-oriented technologies, personalize the experience of each customer to build suitable products and services. Moreover, digital transformation can be considered as a basis to create significant customer experience improvement. Therefore, this research was conducted to identify: (1) The stage of customer experience maturity of Dai Hy Hospitality, (2) The trends in customers' needs and expectations about digital transformation strongly integrated into customer experience, which is provided by event firms; (3) Recommendations on enhancing customer experience through strongly applying digital transformation. Dai Hy Hospitality (including Dai Hy Garden and Dai Hy Palace) is investigated thoroughly in this study. CX maturity model, CX metrics (i.e. NPS, CSAT) and Exploratory Factor Analysis with data collected mainly from survey, interview and desk research were used in this study, from which recommendations on enhancing customer experience through strongly applying digital transformation for Dai Hy Hospitality and event companies in Ho Chi Minh City as follow: (1) Building suitable customer experience strategy together with consistent experience management platform and regularly tracking the performance against the defined goals; (2) Improving digital customer experience by focusing on predictive CX platforms.

Keywords: Customer experience; Digital transformation; Event field; Event organizer; Dai Hy Hospitality.

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1. Introduction

In the last few years, digital transformation has become critical that firms must adopt to react to today's digital economy. Organizations from every industries are using it in order to create competitive advantage. The changes may be observed in the hospitality sector, which is a broad category of fields within the service industry that included food and beverage service, event, theme parks, travel agency, tourism, hotels, restaurants and bars.

The event field is a service that has a great impact on the socio-economic activities. This is a type of business that has experienced impressive growth in Vietnam in recent years, although it is still considered a narrow business in the market. According to statistics (Do, 2020), the market share for events and conferences in Ho Chi Minh City has reached more than 1,900 billion VND, spread evenly among high-end to mid-range hotels and restaurants; wedding and conference centers. In Vietnam, the event industry is undergoing a transformation as event organizing companies appear more and more densely, especially in big cities.

The white paper "Reimagining business events through Covid-19 and beyond" (UFI, 2021) emphasizes 3 core factors for event field to develop effectively, including: business models, customers experience, human resources and skills. Additionally, customer experience (CX) is also one of the five pillars that evaluate the state of digital maturity of an organization. The assessment of the state of CX maturity of an organization/enterprise will help orient the digital transformation in business (Digital Business) optimally according to the current conditions and characteristics of a business.

The Digital Maturity Model (DMM) has 5 pillars to be evaluated as follows:

Fig. 1. Digital Maturity Model (DMM)

Source: Deloitte (2018)

Therefore, studying about the maturity level of the customers pillar as well as understanding the overall picture of the current state of customer experience in the event field will help firms in this industry overcome the difficulties during the post-pandemic era and also in the new era of Industrial revolution 4.0, which will contribute significantly to the development of the event field in particular and the economy in general.

In this study, Dai Hy Hospitality is chosen as the main research subject, which has 2 centers named Dai Hy Palace in District 6 and Dai Hy Garden in Binh Tan District. It is always proud to be one of the Banquet Convention Centers in Ho Chi Minh City that is trusted and chosen by many customers in 14 years in the field of event industry. In 2018, Dai Hy Hospitality set an early goal of providing excellent customer experience and was one of the early adopters of customer experience in event industry in Ho Chi Minh City. After the covid pandemic, the organization also considered this a vital issue in business operations.

Therefore, this research focuses on the topic " The customer experience (CX) maturity and recommendations on enhancing CX through digital transformation: A Case Study of Dai Hy Hospitality”.

The main contents in this research are as follows:

- The stage of customer experience maturity and level of CX competencies of Dai Hy Hospitality.
- The trends in customers’ needs and expectations about digital transformation strongly integrated into customer experience, which is provided by event organizers.
- Recommendations on enhancing customer experience through strongly applying digital transformation for Dai Hy Hospitality and event companies in Ho Chi Minh City.

2. Literature review

2.1. Customer experience (CX)

McKinsey & Company (2022) says that “Customer Experience (CX) is the perception that customers have of an organization- one that is formed based on interactions across all touchpoints, people, and technology over time”. The four components of CX are brand, product, price, and service. Basically, CX refers to everything an organization does to deliver superior experiences, value, and growth for its customers. Moreover, what and how products and services are provided by a business to its customers is very crucial. In a digital world, where customers review and share their experiences with a company in public forums, it has become vital for companies to connect with customers across their journeys at an emotional level. It refers to Digital Customer Experience- elements of the experience that happen online or with the support of digital and analytics. This can facilitate interactions that are holistic, predictive, prioritized, and focused on value.

2.2. Digital transformation in improving CX

Digital transformation is a process of change in the model, structure, process and function of a organization adopting digital technologies in order to improve the business performance (Hess et al., 2015). It can bring about a lot of benefits to the firm such as process improvement; value proposition enhancement for customers; competitive advantage creation; better customer service quality; better customer engagement; and improve customer experience (Westerman & Bonnet, 2015; Davenport, 2013). One of the most important motivations for firms to adopt digital transformation is improvement in customer experience (Setia et al., 2013).

In a survey (Kruschwitz et al., 2013) with the participation of 1,559 executives and managers in a wide ranges of different industries and from different countries, when being asked about the benefits of digital transformation benefits, about 44% chose customer experience improvement; 30% chose operational improvement and 26% remaining chose business model changes. Therefore, the most prominent impact of digital transformation was improving customer experience (Kruschwitz et al., 2014). This survey also pointed out some specific reasons that impede digital transformation in the firms with the most five significant ones including: (1) No sense of urgency; (2) Not enough funding; (3) Limitation of IT systems; (4) Unclear roles and responsibilities; (5) Lack of vision.

We can say that digital transformation is the foundation for creating breakthrough experiences to reach the highest level in the customer experience pyramid (Gartner, 2018) in the era of industrial revolution 4.0 for the following reasons:

- Firstly, as consumers become more tech-savvy, they expect more from digital experiences. Whether shopping online or shopping at brick-and-mortar stores, consumers still expect some digital interactions.

- Secondly, digital transformation is an inevitable trend of the world. If business stay away from digital transformation, they will soon become obsolete, and it will be difficult to create a breakthrough experience.

- Lastly, the application of digital technology helps firms to easily collect customer data on a large scale and in real time so the data is more valuable. Firms can rely on this data to analyze customer behavior, forecast new trends, thereby creating trend-catching experiences that make customers excited.

Sahu, Deng & Mollah (2018) investigated the essential factors of digital transformation for improving the customer experience and pointed out that there are four dimensions: (1) analytics dimension; (2) business dimension; (3) customer dimension and (4) digital dimension that significantly affect the successful implementation of digital transformation for improving customer experience.

It is a complex process to integrate digital transformation into the goal of improving customer experience. It includes updating changes in customers' behaviors, understanding and analysing customers' information and data (Westerman & Bonnet, 2015); building strategies for customer experience improvements (Mithas et al., 2013); optimizing customer processes and improving customer value proposition (Berman, 2012); redesigning process of customer engagement (Lemon & Verhoef, 2016); expanding customer interaction channels (Wrigley et al., 2015) through technologies integration and business model enhancing (Nwankpa and Roumani, 2016).

2.3. CX Maturity Model

Qualtrics XM Institute (2020) introduces five stages of customer experience maturity including Investigate, Initiate, Mobilize, Scale and Embed and 6 competencies (Lead, Realize, Activate, Enlighten, Respond, and Disrupt). In stage 1, the organizations do not focus on CX as a strategic opportunity. In stage 2, leaders investigate how CX can help their organization and kick off isolated pockets of CX activities. An ad-hoc or part-time team is usually formed, often drawing from existing employees in other roles, to head up the company's effort to take coordinated actions to educate executives, define the initial strategy, and formalize Voice of Customer efforts. In stage 3, the organization taps into full-time CX staffs who distribute insights and drive experience improvements. This is a powerful stage where the organization begins to see results by finding and fixing pain points, sharing insights, involving employees in closing the loop, and defining what good CX looks like for the entire organization. In stage 4, the organization systematically uses insights to identify and improve experiences and invests in engaging the entire workforce in CX. They should also deeply integrate CX into HR processes to reinforce good CX behaviors in all employees. In stage

5, CX skills are ingrained across the organization and it is able to rapidly adapt to shifts in the marketplace. Mature CX programs enable an organization to continuously learn, propagate insights, and rapidly adapt to the needs and expectations of all relevant stakeholders.

The "customer" pillar in the DMM refers to the assessment of the customer experience delivered by an organization. Some aspects that need to be assessed including:

- An organization that have provided excellent experience for its customers when they have been searching for information about the organization; using its products and services; and experiencing its post-purchase services.
- A clear plan along with an internal organizational and governance system (mechanism and policy) that are established throughout and consistently to jointly build and improve skills; and promote motivation in improving the customer experience of the entire business.
- Organizations effectively use data to analyze useful information about customers and respond promptly and appropriately to feedback from customers.
- Always update and innovate to bring the best experience for customers.

2.4. CX Index

Based on a survey of 2000 CX professionals of Hotjar - one of the famous consulting company in CX, the best customer experience metrics to track are (Hotjar, 2018):

- Customer Satisfaction Score (CSAT)
- Customer Effort Score (CES)
- Net Promoter Score® (NPS)
- Customer churn and retention
- First Response Time (FRT)
- Average Resolution Time (ART)
- Customer Lifetime Value (LTV)

Moreover, according to Survey of Customer Satisfaction Metric to check 2022 of Retently: NPS, CSAT, and CES are the most commonly used customer satisfaction metrics. This is mostly due to the fact that they are rather straightforward, simple in their implementation and very easy to be understood by all staff categories as compared to complex indexes. They are easy-to-administer, contain a single question, easy-to-commute, and have a lot of benchmark reports available for comparison.

Qualtrics XM Institute (n.d.) gives a guide of how to optimize your customer satisfaction surveys to gain some useful insights. CSAT, or customer satisfaction score, is a commonly used metric that indicates how satisfied customers are with a company's products or services. It is measured through customer feedback and expressed as a percentage (100% would be fantastic – 0% would be terrible). This is one type of customer experience survey and can be used to gauge customers' needs, understand problems with your products and/or services, or segment customers by score. They often use rating scales to measure changes over time, and gain a deeper understanding of whether or not the company is meeting the customer's expectations. In CSAT surveys usually involve asking customers to choose their level of satisfaction based on a linear scale, such as one to five or one to ten. A Likert Scale question provides customers with options for their response from one extreme to another. For example: 1 point (Very dissatisfied); 2 points (Moderately dissatisfied); 3 points (Neither satisfied nor dissatisfied); 4 points (Moderately satisfied); 5 points (Very satisfied).

Ryu et al. (2012) proposed an integrated model that examines the impact of three elements of food-service quality dimensions including physical environment, food, and service on restaurant image, customer perceived value, customer satisfaction, and behavioral intentions. Choi & Chu (2001) identified service staff quality, room quality and value were found to be the most influential factors delighting customers. Kim & Perdue (2013) suggested to consider the effect of cognitive (brand name, price and service and food quality), affective (entertaining and comfortable feeling) and sensory attributes (overall atmosphere and room quality) on hotel choice.

3. Research method

3.1. Theoretical Model

3.1.1. Model of CX Maturity

This research will follow five stages of customer experience maturity including Investigate, Initiate, Mobilize, Scale and Embed that has been recommended by Qualtrics CX Institute with 6 competencies (Lead, Realize, Activate, Enlighten, Respond, and Disrupt).

Maturity level is evaluated as follow:

- 06 to 14: Stage 1: Investigate
- 15 to 18: Stage 2: Initiate
- 19 to 22: Stage 3: Mobilize
- 23 to 26: Stage 4: Scale
- 27 to 30: Stage 5: Embed

XM Competencies (average scores):

- Less than 2.60: Very Weak
- 2.60 to 3.29: Weak
- 3.30 to 3.89: Adequate
- 3.90 to 4.49: Strong
- 4.50 to 5.00: Very Strong

3.1.2. Customer experience evaluation

a) **Customer experience metrics**

There are two metrics that are used in this research to evaluate the current state of customer experience of some event organizers in Ho Chi Minh city. These event organizers can be big restaurants, wedding centers and convention centers which often organize and serve food for different events and weddings for individuals, families and firms.

Net Promoter Score (NPS): measure customer loyalty based on the question: "How likely are you to recommend [Business/brand X/product Y/service Z] to friends, relatives or colleagues? In this research, we use the question: "Will you recommend this event organizer to your relatives and friends?".

NPS index ranges from -100 to 100 and the closer the NPS is to -100, it means there are more detractors than promoters and if the NPS is -100, there are no promoters at all. Promoters are normally very loyal and enthusiastic. They are willing to share positive reviews about your product and service online or to relatives and friends. Meanwhile, detractors are unlikely to come back and also prevent others from using your products and service.

NPS (%) = % Promoters (who answer Yes) – % Detractor (who answer No)

NPS score should be classified as follow: (-100 – 0) - needs improvement; (1 – 29) - Good; (30 – 70 - Great; (71 – 100) - Excellent

Customer satisfaction (CSAT): measures customer satisfaction based on one question: 'How would you rate your overall satisfaction with the [goods/services] you received?' Respondents used a rating scale. Rates range from 1 (very unsatisfied) to 5 (very satisfied). In this research, CSAT score should be classified as follow:

(1) CSAT scores between 0% to 40% (0-2 points) - Seems like a majority of your customers are unsatisfied with their experience;

(2) CSAT scores between 40% to 60% (2-3 points) - This is a decent score with some room for improvement;

(3) CSAT scores from 60% to 80% (3-4 points)- These scores are good and standard for many industries;

(4) CSAT scores above 80% (4-5 points) - most of your customers are highly satisfied with their experience.

In this research, CSAT are examined according aspects that have been mentioned in research of Ryu et al. (2012), Choi & Chu (2001), Kim & Perdue (2013) including:

- Physical environment: Event space; Event table
- Food: Event table
- Service: Event schedule planning; Additional services; Staffs.
- Price

b) **Model of Exploratory Factor Analysis - EFA**

The study employs the EFA Model to identify the most significant aspects that promote customer satisfaction. The outcomes of this research will lead to recommendations on major issues to be examined to increase customer experiences.

Model of Exploratory Factor Analysis or EFA, is used to contract a set of k observed variables into F (with F < k) of more significant factors but still containing most of the information content of the original variable.

Some criteria in EFA including:

- KMO (Kaiser-Meyer-Olkin) is an index used to consider the appropriateness of factor analysis. The value of KMO must reach a value of 0.5 or more (0.5 ≤ KMO ≤ 1) which is a sufficient condition for factor analysis to be appropriate.

- Bartlett's test of sphericity is used to see if the observed variables in the analysis are correlated with each other or not. It should be noted that the necessary condition to apply factor analysis is that the observed variables reflecting different aspects of the same factor must be correlated with each other. Therefore, if the test shows no statistical significance, then factor analysis should not be applied to the variables under consideration.

•Eigenvalue is a commonly used criterion to determine the number of factors in EFA analysis. With this criterion, only factors with Eigenvalue > 1 are kept in the analytical model.

• Total Variance Explained ≥ 50% shows that the EFA model is suitable. Considering the variation as 100%, this value shows how much % of the extracted factors are condensed and how many % of the observed variables are lost.

• Factor Loading, also known as factor weight, represents the correlation relationship between the observed variable and the factor. The higher the factor loading coefficient, the greater the correlation between that observed variable and the factor and vice versa. According to Hair (2019), load factor from 0.5 is a good quality observation variable, the minimum should be 0.3.

In this research, factors affecting satisfaction of customers at Dai Hy Hospitality are listed as below:

Table 1. Factors affecting customer satisfaction level

No.	Group	CODE	Factors
1	**Event space**	**KG1**	Overall event center image
2		**KG2**	Event lobby hall
3		**KG3**	Lobby decoration concept
4		**KG4**	Stage
5		**KG5**	Stage backdrop
6		**KG6**	Car parking area
7	**Event table**	**BT1**	Menu
8		**BT2**	Food quality
9		**BT3**	Hygiene and safety
10		**BT4**	Food decoration
11		**BT5**	Table arrangement
12	**Price**	**CP1**	Suitable with quality
13		**CP2**	Payment method
14		**CP3**	Discounts/Promotion
15	**Event schedule planning**	**CT1**	Consulting service
16		**CT2**	Event serving
17		**CT3**	Ability to deal with unexpected problems
18		**CT4**	Organizing event as agreement and as customer's expectation
19	**Additional services**	**DV**	Meet-and-greet service

20	**Staffs**	**NV1**	Consulting staffs
21		**NV2**	Serving staffs

3.2. Data collection

This research uses qualitative method with:

- Secret customers: acting as a person who has demand for wedding and want to make reservations at the centers, observing the landscape outside and inside the centers, collecting documents: photos, brochures, v.v. about the services of different event organizers in Ho Chi Minh city. Famous event organizers that are observed and NPS index is calculated for: Diamond Palace, Dai Hy Palace, Dai Hy Garden , Diamond Place, Nam Bo, Thinh Phuoc, Fenix Palace, Hoang Vu, Nhat Lan, Kim Cuong, Tan Tao.
- Survey: the questionnaire has been sent to 2 types of customers including customers did use service at Dai Hy Hospitality and people who has never used service at Dai Hy Hospitality. Total numbers is 360 customers. Dai Hy Hospitality is the main research subject used for the CSAT evaluation; EFA and CX Maturity Model.
- In-depth interview: (1) interviews conducted with the event centers' owners and managers - 10 people; (2) interviews conducted with the digital transformation experts and consultants – 6 people (3) wedding planners - 3 people.
- Desk research: Research about significant trends in terms of digital transformation in improving CX in event industry has been done, from which recommendations are proposed to event organizers.

4. Results and Discussion

4.1. CX Maturity Model

Table 2. CX Maturity Model - Summary

Overall Total Point					
Dai Hy Garden	Maturity Stage	Dai Hy Palace	Maturity Stage	Dai Hy Hospitality	Maturity Stage
18	Initiate	20.17	Mobilize	19.08	Mobilize

**Detail results of CX Maturity Model is shown in Appendix A*

Overall total point of Dai Hy Hospitality is 19.08, meaning it has been in stage 3 - Mobilize.

Dai Hy Garden is in the stage 2 meaning that isolated pockets of CX activities are being kicked off. An ad-hoc or part-time team is usually formed in this stage. They are often drawn from existing employees in other roles, to head up the company's effort to take coordinated actions to educate executives, define the initial strategy, and formalize Voice of Customer efforts.

Dai Hy Palace is in the stage 3 meaning that once executives view CX as a strategic priority, then it taps into full-time CX staff who distribute insights and drive experience improvements. This is a powerful stage where the organization begins to see results by finding and fixing pain points, sharing insights, involving employees in closing the loop, and defining what good CX looks like forthe entire organization.

Dai Hy Garden has lower marks compared to Dai Hy Palace in terms of almost all competencies, except for the same marks at two places in terms of competency "Enlighten".

The competencies that have low marks at both places are "Maintain a clear and shared vision for customer experience efforts"; "Maintain governance structures that provide appropriate decision-making, alignment, accountability, and conflict resolution for your efforts"; "Create mechanisms to build and enhance key CX skills across the organization"; "Combine customer experience data and operational data to generate actionable insights".

Some competencies that both centers reach mark 4 out of 5 are "Prioritize your CX activities based on a well defined set of metrics"; "Ensure employees have the training and motivation to adopt customer-centric behaviors"; "Capture appropriate signals from targeted customers at the appropriate times"; "Apply human-centric design approaches to the improvement of customer experiences".

4.2. NPS index

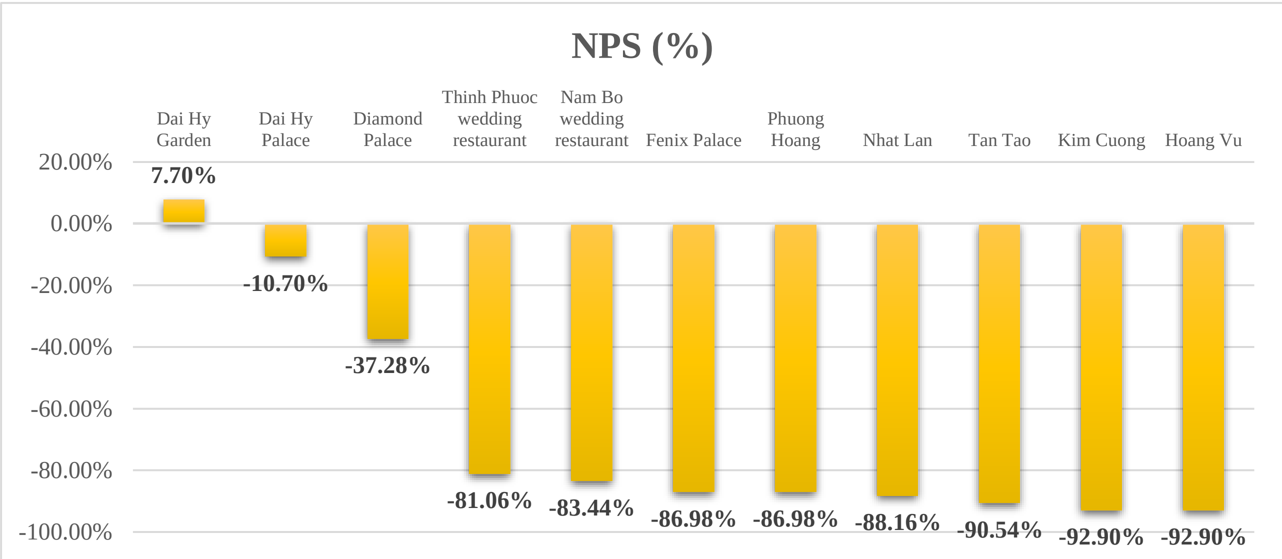

Fig. 2. NPS index of some event organizers in HCMC

Regarding NPS index, most of the event organizers receive very low score for the evaluation of customer loyalty. Among top three for NPS index including Dai Hy Garden, Dai Hy Palace and Diamond Palace, only Dai Hy garden got NPS greater than 0. The creator of NPS, Bain & Company suggests that a score of greater than 0 is good as there are more promoters than detractors. For the other event organizers, there is a need to move in the direction of turning the detractors into promoters by adopting digital transformation.

Looking at customer ratings of NPS by industry 2022 (Fig. 3), there is no industry out of 22 industries with NPS index higher than 30 to reach level "Great". It seems very difficult for a firm, especially for a service provider, who is more likely to interact directly with customers and to modify its service according to customers' expectation to get a high NPS index.

4.3. CSAT evaluation

4.3.1. Respondents characteristics for CSAT evaluation

The characteristics of respondents participating in the survey of CSAT for Dai Hy Garden and Dai Hy Palace are illustrated as below:

(a) **(b)**

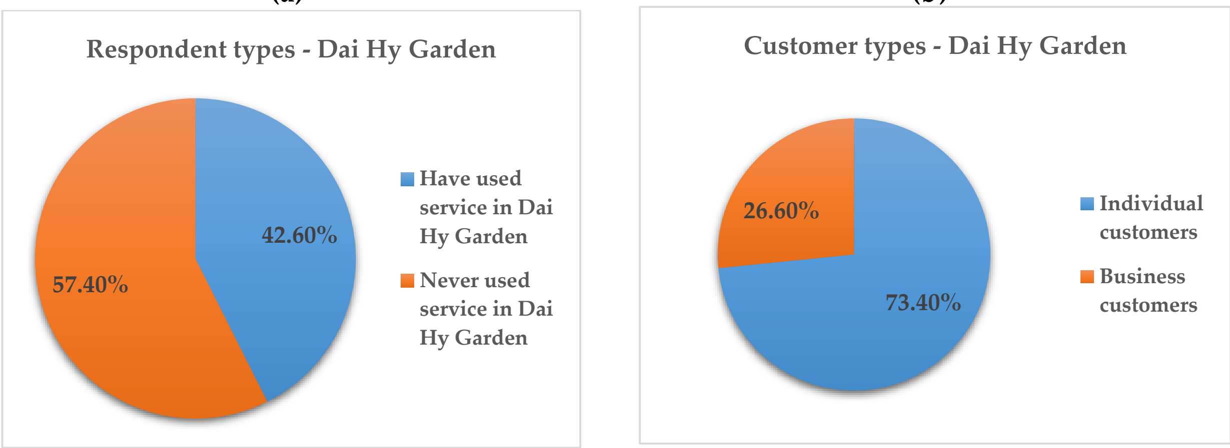

Fig. 3. (a) Respondent types - Dai Hy Garden; (b) Customer types - Dai Hy Garden.

(a) **(b)**

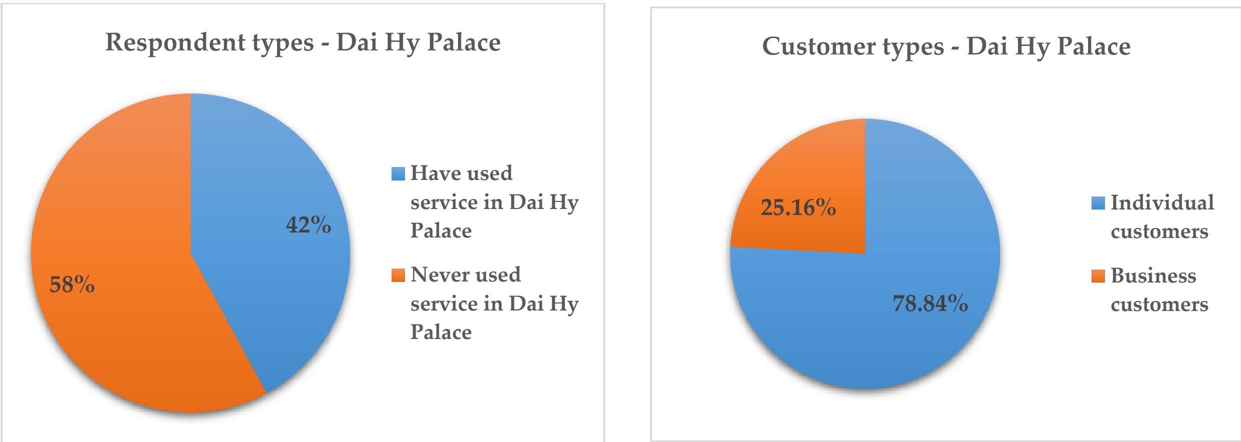

Fig. 4. (a) Respondent types - Dai Hy Palace; (b) Customer types - Dai Hy Palace.

It can be seen that Dai Hy Garden and Dai Hy Palace got around 45% of respondents that have used services at these two places and most of their customers are individual customers who have demand to organize an event or party.

It is also shown in Fig. 6, about half of the events organizing by these two places are wedding events and only 15% of the events are conferences or business events. Wedding event is known as a once-in-a-lifetime event so the customers are more likely to be very picky and expect more from the event organizer. The event is strictly required to occur as planned and expected and any unexpected situations must be immediately and delicately resolved. Another 50% of the events organized by Dai Hy Garden and Dai Hy Palace are other events, mostly booked by individual customers, such as birthday party; wedding anniversary; v.v.

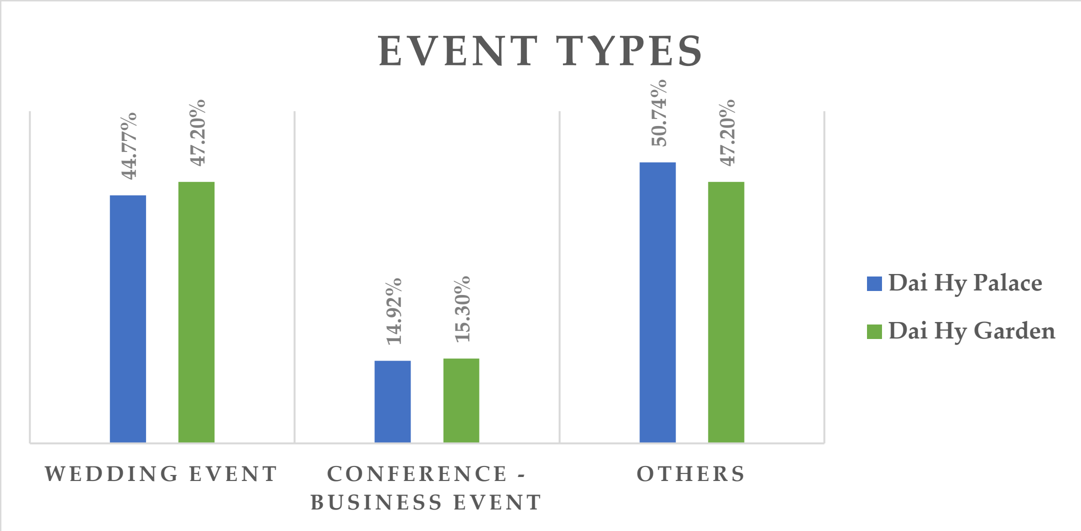

Fig. 5. Event types

4.3.2. CSAT index

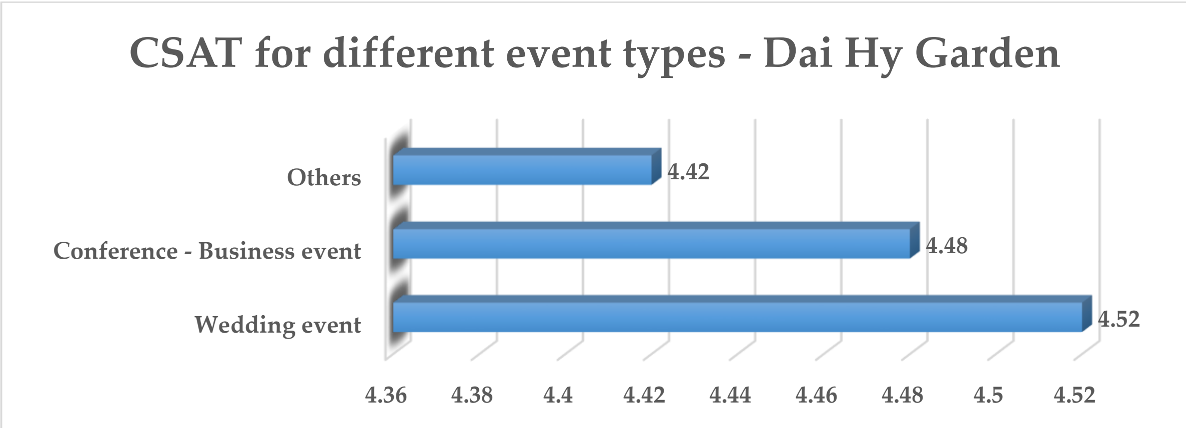

Fig. 6. CSAT for different event types - Dai Hy Garden

Regarding Dai Hy Garden, respondents rated an average of 4.52 out of 5 for wedding event (including 4.65 for food hygiene and safety; 4.62 for food menu; 4.47 for general decoration; 4.53 for staff's attitude when interacting with customers; and 4.35 for table and reception lounge arrangement). Meanwhile, other events like birthday party, anniversary ,v.v. received a rate of 4.48 (including 4.59 for staff's attitude when interacting with customers; 4.5 for food hygiene and safety; 4.41 for food menu; 4.49 for organizing as customer's expectation; 4.47 for general decoration; 4.41 for reception lounge arrangement). The least used service is conference-business events got a rate of 4.42.

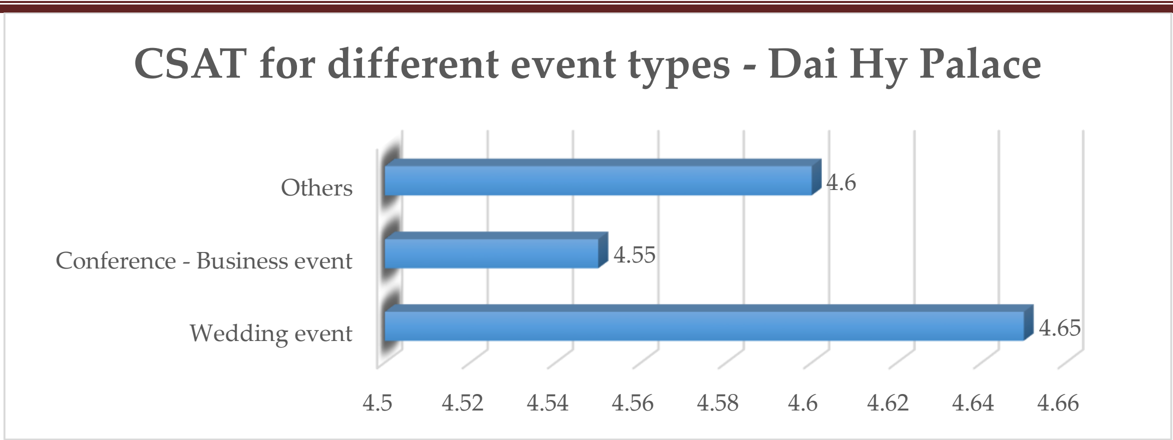

Fig. 7. CSAT for different event types - Dai Hy Palace

Regarding Dai Hy Palace, respondents rated an average of 4.65 out of 5 for wedding event (including 4.73 for food hygiene and safety; 4.7 for food menu; 4.7 for organizing as customer's expectation; 4.57 for decoration and 4.53 for table and reception lounge arrangement). Meanwhile, other events like birthday party, anniversary v.v. received a rate of 4.55 (including 4.76 for food menu; 4.5 for staff's attitude when interacting with customers; 4.5 for staffs' management and organization skill; 4.59 for the general decoration; 4.41 for organizing as customer's expectation). The least used service is conference-business events got a rate of 4.6.

4.3.3. EFA Model to identify important factors affect CSAT

From the EFA results, the important factors affecting CSAT at Dai Hy Palace including: (1) Stage backdrop; (2) Car parking area; (3) Menu; (4) Price suitable with quality; (5) Event serving; (6) Meet-and-greet service; (7) Serving staffs.

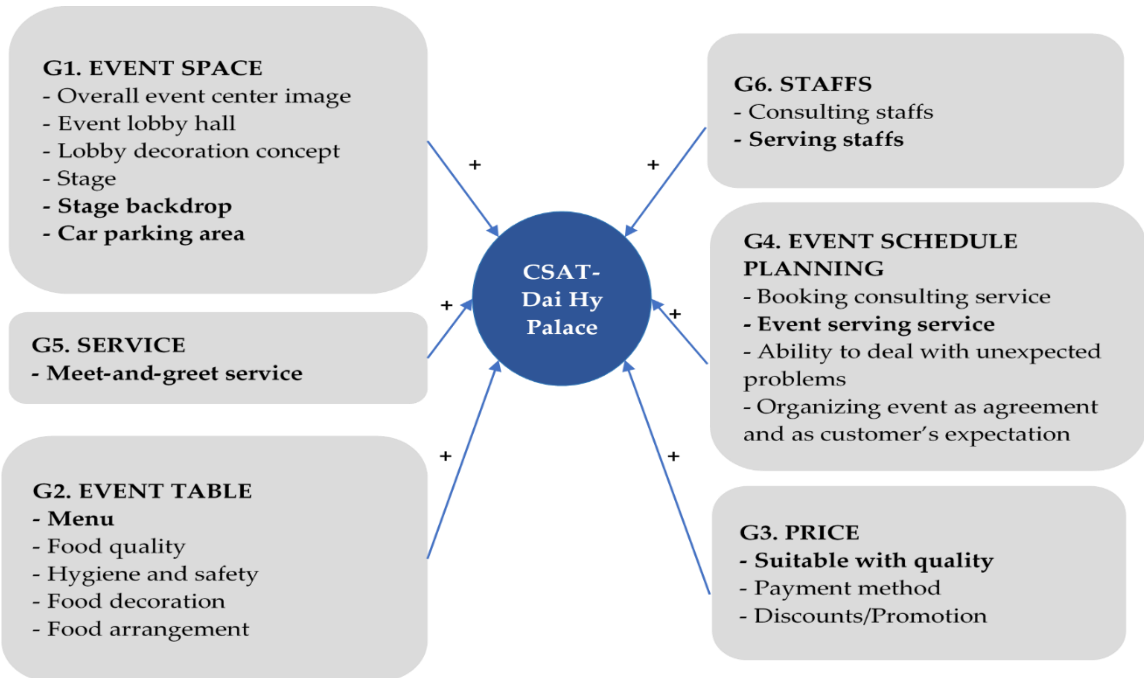

Fig. 8. EFA result for CSAT at Dai Hy Palace

From the EFA results, the important factors affecting CSAT at Dai Hy Garden including: (1) Meet-and-greet service; (2) Price suitable with quality; (3) Consulting service; (4) MC for event.

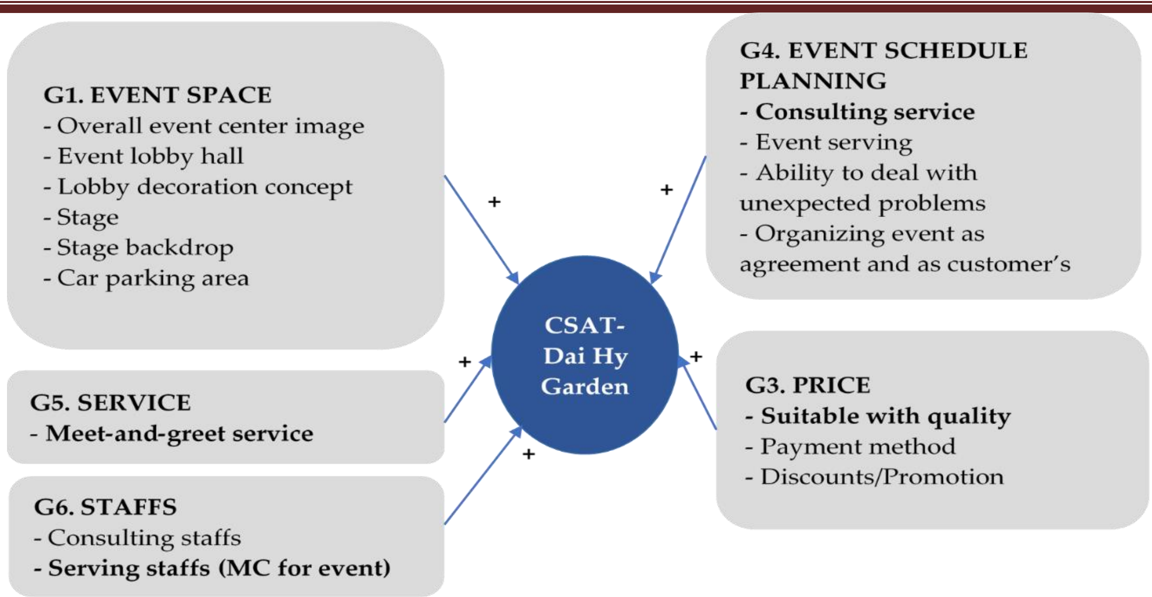

Fig. 9. EFA result for CSAT at Dai Hy Garden

4.3.4. Testing the reliability of the EFA Model

Based on the results obtained from the EFA (appendix B), it can be seen that the data is completely suitable for factor analysis:

- KMO = 0.867 which is greater than 0.5
- Sig. (Bartlett's Test) = 0.000 < 0.05 shows that the observed variables are correlated with each other in the population.
- All 6 factors for EFA have eigenvalue greater than 1 so the current used 6 factor groups summarizing 21 observed variables are suitable.
- Rotation Sums of Squared Loadings (Cumulative %) = 70,141% > 50%. It means that 70,141% of the variation of the data is explained by 6 factors.
- Factor Loading of all observed variables are greater than 0.5 and there are no bad variables.

4.4. The trend in digital interaction and experience in event organizing

In-depth interviews with some event centers' owners and managers; digital transformation experts & consultants and wedding planners as well as desk research activity suggest some trends in digital interaction and experience in event organizing as follow:

Virtual and Hybrid Events

The growth of hybrid and virtual formats is evidence of the digital revolution in events. Online conferences, webinars, and other virtual events have grown in popularity, particularly during the Covid epidemic when social distancing policies have made in-person events difficult. Virtual events have made it possible for organizers to connect with guests from all over the world and provide immersive and engaging experiences thanks to advancements in streaming technology.

Nowadays, a hybrid model is very popular for many top industry events. Those who can attend in person are always welcome, and those who want to view the content online can do so for much less money (or even for free).

Data Analytics and Personalized Experience

As a result of digital transformation, event marketing and planning have also become more individualized. Event organizers can now learn about the preferences of their attendees and tailor their experiences at events using data analytics and artificial intelligence. Event organizers can make individualized marketing campaigns that resonate with their target audience and bring about better customers engagement by dissecting data from participant registration forms, social media interactions, and other sources.

As a means of supporting attendees 24/7, responding to their inquiries, and providing details about the event's schedule and logistics, chatbots are also gaining popularity. In point of fact, the desire to incorporate chatbots into our solutions is growing.

AR is also a suitable technology to personalize customer experience by allowing them to envision their event in advance when they are consulted by the sales team.

Digital transformations relate to any technological change, not just complex technological changes. Post-event survey are, in fact, still a common way to keep visitors engaged after your event.

Event Management Software

Event management is yet another crucial area where the event industry has been impacted by digital transformation. Event organizers now have access to event management software, which enables them to oversee registration, website development, and other aspects of the event. Organizers can collaborate with team members, sponsors, vendors, and vendors in real time with SaaS tools, facilitating improved communication and streamlined workflows.

Human-Centered Digital Tech Tools

It is necessary to utilize digital technology to improve the event attendee experience beyond e-tickets. Participants in the conference will receive digital tickets with a QR code for contactless check-in as well as a mobile app for orientation and customized event promotion.

Wait times decrease, the experience is enhanced, and customer security and trust are increased by smart badges and wristbands. Attendees can benefit from NFC innovations like tap-to-pay wristbands and photo booths. Both solutions offer convenience to customers while gathering user information for event management. For event check-in, cutting-edge solutions use AI with facial recognition and personalization for digital signage and mobile apps.

Digital signage and self-service kiosks are a couple of additional popular and simple to use technologies. These resources can aid visitors in locating event schedules and navigating your venue.

5. Conclusions

Dai Hy Garden is in the 2nd stage of CX maturity model while Dai Hy Palace has moved into stage 3 so both centers should move forward and have appropriate plan and actions to move into higher stage level of the CX maturity pyramid.

NPS index of Dai Hy Garden and Dai Hy Palace are both high compared to other event centers in Ho Chi Minh City so recommendations are proposed by basing mainly on the current state of customer experience at these two event organizers.

CSAT index of Dai Hy Garden and Dai Hy Palace is 4.52 and 4.65 respectively which can be improved with the recommendation in the next part.

The table below shows a summary of EFA model results for Dai Hy Hospitality and some customers' characteristics specifically for Dai Hy Palace and Dai Hy Garden:

Table 3. Research results – Summary for Dai Hy Hospitality

	Dai Hy Palace	**Dai Hy Garden**
Customers type (income level)	Targeted customers: • Higher-middle income • Competition in this market is high	Targeted customers: • Lower-middle income
Important factors affecting customer satisfaction	• Stage backdrop • Car parking area • Menu • Price suitable with quality • Event serving service • Meet-and-greet service • Serving staffs	• Meet-and-greet service; • Price suitable with quality • Booking consulting service; • MC for event

6. Recommendations on enhancing customer experience through strongly applying digital transformation

With stage 3 of CX maturity, over 4.5 CSAT points, and a greater NPS than its rivals, Dai Hy Hospitality needs to improve its CX through ground-breaking ideas. In addition, the growth of hybrid and virtual formats is an evidence for the digital revolution in events. Therefore, it should have a plan to follow the trend of Digital Customer Experience.

Recommendations on enhancing customer experience through strongly applying digital transformation for Dai Hy Hospitality and event companies in Ho Chi Minh City as follow: (1) solutions to increase the maturity level of customer experience; (2) solutions to increase NPS and CSAT.

6.1. Solutions to increase the maturity level of customer experience

The following digital transformation actions must be carried out for Dai Hy Hospitality in order for it to reach Stage 4 of maturity.

- Building suitable customer experience strategy together with consistent experience management platform and regularly track the performance against the defined goals.

- Improving digital customer experience by pushing on predictive CX platforms, which consist of three key elements: (i) a customer-level data lake, with customer, financial, and operational data to develop a rigorous understanding of customer experiences; (ii) predictive customer scores using analytics that track what is influencing customer satisfaction and business performance; (iii) an action and insight engine that are shared with a broad set of employees, via tools such as customer-relationship-management platforms, through an API layer

- Focusing on and taking advantage of the following software features:
  - Professionalize the brand image by creating an app and synchronizing the website for the event organizer brand.
  - Save time and make event management easier with on-site and contactless check-in by printing nameplates and scanning QR codes.
  - Analyze relevant information about customer behavior, even smarter technology AI can recognize customers' faces, track the journey to know who they have met, which products they are most interested in, which stall that they stop by for a longest time? This is beneficial for event makers and marketers in better understanding customer and consumer behavior to create a more appropriate marketing strategy for the next event.
  - Know which activities or sessions attract the most attendees by scanning a QR code before joining and getting instant feedback and reviews.

6.2. Solutions to increase NPS and CSAT

Dai Hy Hospitality should build a "professional and outstanding" image. The "professionalism" is shown synchronously from: (1) All groups of staff: event consultants, serving staffs, event managers, post-event caring staffs; (2) The event booking process, event content and design, event and after-event organization are all synchronous, fast and accurate; (3) Synchronizing customer information so that all relevant departments can quickly serve the customer's requirements and solve arising problems during the event. This process of synchronizing throughout an organization requires the application of innovative technology, suitable management platform and data analytics.

It is necessary to clearly define a marketing and communication strategy suitable for the targeted customers. For Dai Hy Palace, it is advisable to pursue a marketing plan targeting to the upper-middle-income and high-income customers and also the level of competition in this market is high. For Dai Hy Garden, it is necessary to develop a marketing plan targeting to the lower-middle-income and low-income customers.

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APPENDIX

Appendix A. CX Maturity Model - Details

No.	Content	Questions	Dai Hy Garden	Dai Hy Palace	Dai Hy Hospitality
1	**Lead**		**2.33**	**2.67**	**2.50**
	Q1	Maintain a clear and shared vision for customer experience efforts	2.00	3.00	2.50
	Q2	Track your progress against a well-defined program roadmap	3.00	3.00	3.00
	Q3	Maintain governance structures that provide appropriate decision-making, alignment, accountability, and conflict resolution for your efforts	2.00	2.00	2.00
2	**Realize**		**3.33**	**3.67**	**3.50**
	Q4	Forecast the business value of your CX efforts	3.00	4.00	3.50
	Q5	Adjust your efforts to make sure you deliver on your forecasts	3.00	3.00	3.00
	Q6	Prioritize your CX activities based on a well defined set of metrics	4.00	4.00	4.00
3	**Activate**		**3.00**	**3.33**	**3.17**
	Q7	Keep employees and partners informed about the value and progress of your efforts	3.00	3.00	3.00
	Q8	Create mechanisms to build and enhance key CX skills across the organization	2.00	3.00	2.50
	Q9	Ensure employees have the training and motivation to adopt customer-centric behaviors	4.00	4.00	4.00
4	**Enlighten**		**3.00**	**3.00**	**3.00**
	Q10	Combine customer experience data and operational data to generate actionable insights	2.00	2.00	2.00
	Q11	Capture appropriate signals from targeted customers at the appropriate times	4.00	4.00	4.00
	Q12	Analyze customer experience data and operational data to prioritize actions	3.00	3.00	3.00
	Q13	Distribute tailored insights to stakeholders that make it easy for them to take action	3.00	3.00	3.00
5	**Respond**		**3.00**	**3.50**	**3.25**

No.	Content	Questions	Dai Hy Garden	Dai Hy Palace	Dai Hy Hospitality
	Q14	Systematically follow up with customers to fix problems that are uncovered from insights	3.00	3.00	3.00
	Q15	Make ongoing improvements to operational processes based on customer experience insights	3.00	4.00	3.50
	Q16	Make strategic decisions based on customer experience insights	3.00	4.00	3.50
	Q17	Infuse customer experience insights into key operating processes and systems	3.00	3.00	3.00
6	**Disrupt**		**3.33**	**4.00**	**3.67**
	Q18	Uncover opportunities for transformative customer experiences	3.00	4.00	3.50
	Q19	Apply human-centric design approaches to the improvement of customer experiences	4.00	4.00	4.00
	Q20	Ensure new experiences are delivered consistently when they are rolled out across the organization	3.00	4.00	3.50

Appendix B. Testing the reliability of the EFA Model

B.1 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,867
Bartlett's Test of Sphericity	**Approx. Chi-Square**	2300,963
	df	465
	Sig.	,000

B.2 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10,930	35,258	35,258	10,930	35,258	35,258	6,019	19,415	19,415
2	5,154	16,627	51,885	5,154	16,627	51,885	4,071	13,132	32,548
3	1,693	5,462	57,348	1,693	5,462	57,348	3,859	12,448	44,996
4	1,411	4,553	61,900	1,411	4,553	61,900	3,676	11,857	56,854
5	1,345	4,340	66,240	1,345	4,340	66,240	2,264	7,302	64,156
6	1,209	3,901	70,141	1,209	3,901	70,141	1,855	5,985	70,141
7	,966	3,115	73,256						
8	,891	2,874	76,130						
9	,799	2,579	78,709						

10	,736	2,374	81,083						
11	,631	2,035	83,117						
12	,531	1,713	84,830						
13	,516	1,664	86,495						
14	,464	1,497	87,992						
15	,424	1,366	89,358						
16	,380	1,227	90,586						
17	,360	1,163	91,748						
18	,331	1,067	92,815						
19	,297	,957	93,772						
20	,269	,868	94,640						
21	,250	,805	95,445						
Extraction Method: Principal Component Analysis.									

B.3 Evaluated factors for reliability test of the EFA Model

Evaluated factors	Result	Comparision
KMO value	0.867	0.5 < 0.867 < 1
Sig value in Bartlett Test	0.000	0.000 < 0.05
Total Variance Explained	70,141%	70,141% > 50%
Eigenvalue	1,209	1,209 > 1

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The Effect of Social Media Marketing Activities on Customers' Willingness to Pay in the Vietnam Hospitality Industry: A Conceptual Framework

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ABSTRACT

The purpose of this study is to propose a research model of how social media marketing activities affect brand knowledge brand trust, and willingness to pay for hotel customers in Vietnam. This research results can be applied in the process of discovering the right social media marketing strategies to contribute to the long-term development of social media marketing activities for hotels in Vietnam, more specifically in Da Nang. Furthermore, this study strengthens marketing theory and social media marketing activity theory from an academic perspective and enriches research on consumer responses that hotels can serve as a reference for future research on related aspects.

Keywords: Marketing; social media marketing activities; brand knowledge; brand trust; willingness to pay; hospitality industry.

1. Introduction

After a period of being heavily affected by the Covid-19 pandemic, the global tourism industry has finally shown signs of recovery and is headed for strong development again, although the Omicron variant is causing many countries to tighten border controls. The recovery of the tourism industry, especially the international tourism segment, will be the main driving force to promote the hotel industry to be more prosperous (Fenitra, R.M. et al, 2022). Vietnam's tourism and hotel industry is also growing rapidly. From 2023 to 2027, Vietnam's hotel industry revenue is expected to grow by 7% per year and average revenue per guest is expected to reach $158 in 2027 (Statista Search Department, 2022).

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In this market phase, social media marketing activities are expected to play an important role in driving customer willingness to pay. With the rapid development and explosion of the global Internet and technology platforms; throughout the 21st century, social media has become the key to the success of many companies, industries, organizations, and individuals. The rise of social media has created a whole new era for companies and brands, forcing them to look for new interactive ways to reach and engage customers (Gallaugher and Ransbotham, 2010; Kozinets, de Valck, Wojnicki and Wilner, 2010).

Earlier research suggested that a positive relationship exists among the construct of the studies which focused on samples interested in social media platforms. These studies were collected from different contexts, such as students (Algharabat, 2017; Ismail, 2017; Melewar et al., 2018; Yadav and Rahman, 2017, 2018), customers of luxury fashion products (Kim and Ko, 2010, 2012), students interested in e-learning social media sites (Spackman and Larsen, 2017), customers of airline companies (Seo and Park, 2018). The findings support that social media experience is an important driver of trust. Brand knowledge and brand trust have also been mentioned by many studies in influencing customer behavior, specifically in purchase intention and willingness to pay. However, little effort has been made to incorporate SMMA as a key antecedent of behavioral outcomes as evidenced by the literature review that examined SMMA literature in the hospitality sector and found little scholarly effort to examine SMMA and behavioral outcomes (i.e. willingness to pay).

In this context of the hospitality industry, the purpose of this study is to propose a research model of how social media marketing activities affect brand knowledge, brand trust, and willingness to pay for hotel customers in Vietnam. From there, clarifying the impact of social media marketing activities on brand trust, brand knowledge, and customers' willingness to pay will help businesses come up with suitable long-term social media marketing strategies, saving time and money on testing and judgment.

2. Theoretical framework

In this study, an integrative model is substantiated using the S-O-R (Stimulus – Organism - Response) model, which was originally proposed by Mehrabian and Russell in 1974 and later revised by Jacoby in 2002. In the context of tourism, the S-O-R model has been found to be effective at clarifying the associations among stimuli, organisms, and responses, meaning the underlying mechanisms of consumer behavior. The S-O-R model posits that specific features of the environment or stimuli provoke the cognitive and emotional state-organism of consumers, which generates a behavioral response.

Recently, the S-O-R framework has been used in the context of the hospitality service industry to explain the relationship between online-service design characteristics pages, online reviews, and consumer responses in a social media context (Carlson et al., 2018; Zhao & Peng, 2019). Recent studies about social media marketing activities and tourism and hospitality fields have examined the relationship among stimuli, organisms, and responses in the context of customer equity, brand experience, customer loyalty, and customer brand equity.

According to earlier research, there is existing literature regarding the correlation between social media marketing activities and brand knowledge and trust as well as social media marketing activities and customer responses, such as their level of willingness to pay in both tourism and hospitality settings and non-tourism and hospitality settings.

The study conducted by Seo and Park (2018) explores the outcomes of social media marketing initiatives on brand knowledge and customer response in the airline sector. The research findings reveal that social media marketing endeavors in the airline industry have noteworthy impacts on brand awareness and brand image. Furthermore, the outcomes of the study indicate that brand awareness has a significant influence on commitment, while brand image significantly affects online word-of-mouth and commitment.

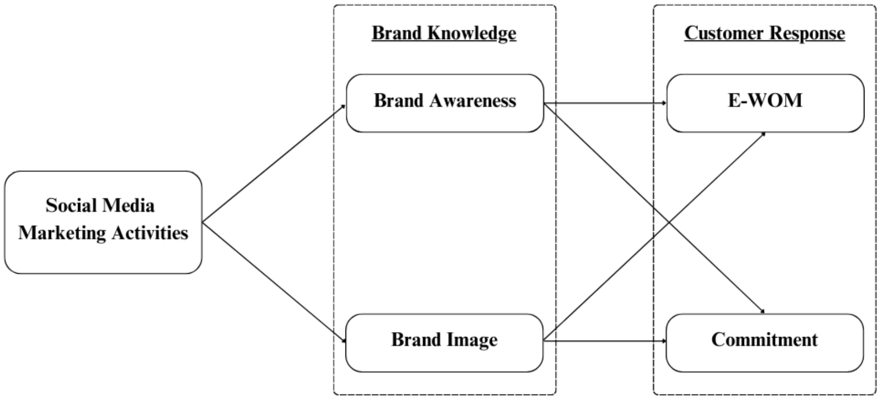

Fig. 1. Seo, E.J., & Park, J. (2018) research model

A similar study addressing brand knowledge and its mediating in the relationship between social media marketing activities and customer response came from Godey, B et al. (2016). This research explores these relationships by analyzing brands in the luxury sector (Burberry, Dior, Gucci, Hermès, and Louis Vuitton). Specifically, the study demonstrates the links between social media marketing efforts and their consequences (brand preference, price premium, and loyalty).

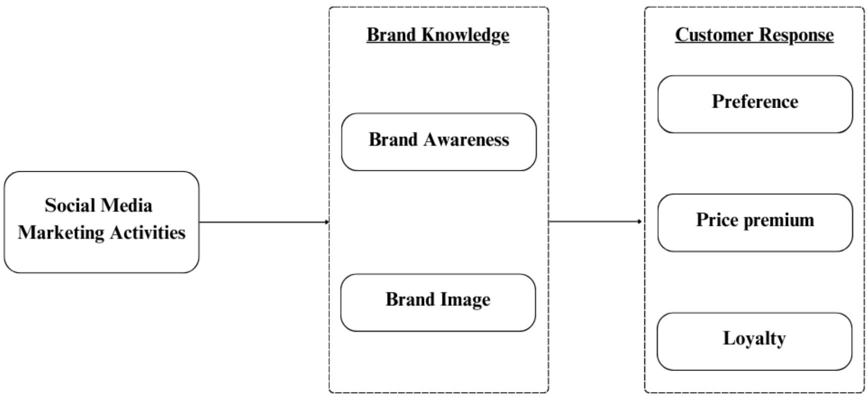

Fig. 2. Godey, B et al. (2016) research model

Concerning social media marketing activities and purchase intention in the field of tourism and hospitality, research by Ibrahim, B. (2021) stands out by empirically exploring their relationships with brand trust. finally, the mediation outcome of brand trust was partially supported.

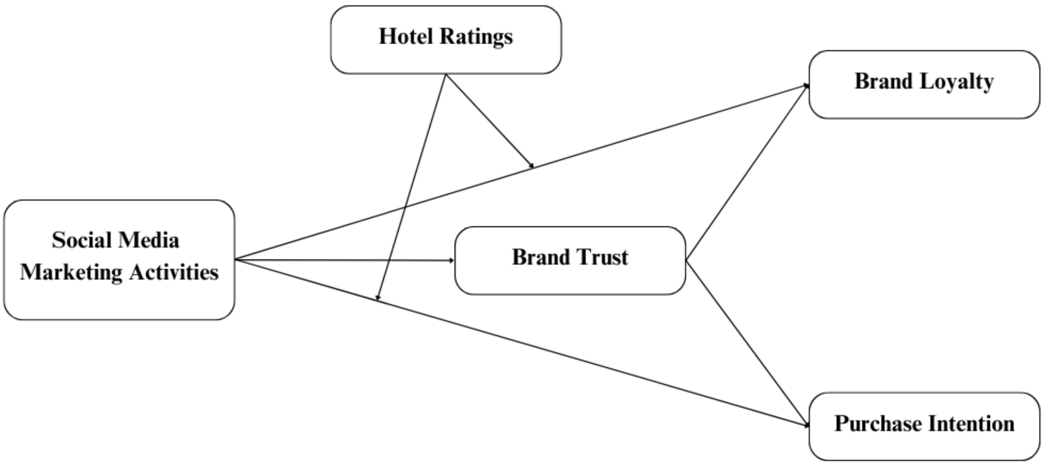

Fig. 3. Ibrahim, B. (2021) research model

Based on the S-O-R theoretical framework and previous case studies, the authors find that the S-O-R model is an effective approach to assess the impact of social media marketing activities on customer response, specifically willingness to pay in the context of social media marketing activities. proposed research scenario. Brand knowledge and brand trust have also been verified in previous research models in the same field for mediating roles in these relationships. From there, the proposed model is as follows:

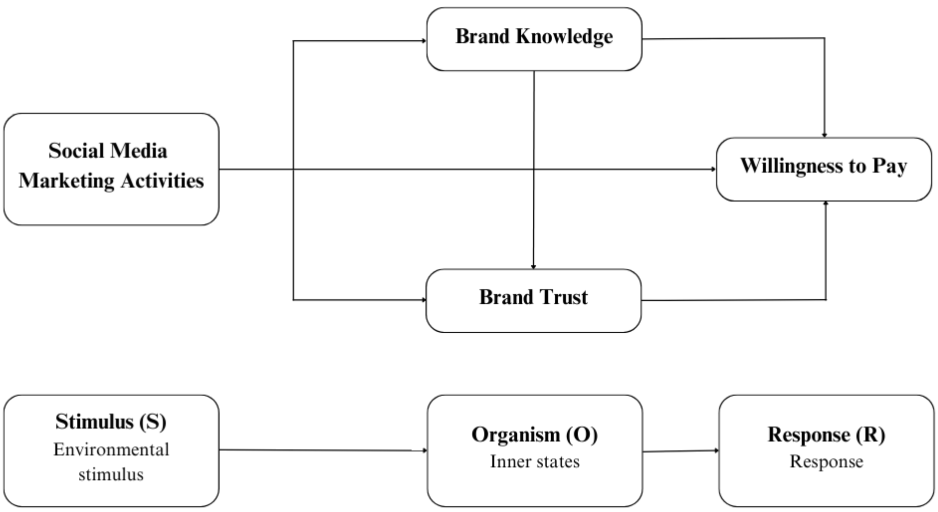

Fig. 4. Proposed model based on S-O-R framework

3. Literature review

3.1. Social media marketing activities

Social media marketing

Social media is defined as "a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content." (Kaplan and Haenlein, 2010), recognized as one of the most important communication platforms for brand information (Bowen, 2015). Nowadays, social media is considered a promising platform to carry out the promotional activities of modern businesses in order to effectively attract and engage their customers.

According to the American Marketing Association AMA (2013), social media marketing is "the practice of using social media channels to promote business products or services". The use of social media influencers often referred to as influencer marketing, is prevalent in social media marketing.

In addition, social media marketing is defined as "a broad category of advertising spending, including advertising using the social network, virtual worlds, user-generated product reviews, blogger endorsement, RSS feeds of content and social news sites, podcasts, games, and consumer-generated advertising" and "a form of online advertising that uses the cultural context of social context to meet branding and communication objectives." (Tuten, 2008).

Social media marketing helps firms enhance their marketing by delivering fresh information about brands, inventive ways to execute fundamental marketing plans, and new strategies to win essential business online dialogues (Dan, Zarella, 2009). According to Skul, D. (2008d), "Social media marketing is a popular and effective way to get the vital information needed for the success of your business".

In this study, the definition of American Marketing Association AMA (2013), which has been widely recognized and used in both academic and practical aspects, is mainly used by the author because of its concise and easy-to-understand approach.

Social media marketing activities

The concept of social media marketing activities has been widely present in social media marketing studies. The academic definition of social media marketing activities is "a subcategory of online marketing/digital marketing that supports traditional promotion approaches." (Yadav and Rahman, 2018). A recent meta-analysis article published about social media marketing activities viewed them as "promotional and relational communication tools that complement organizational marketing strategies' application by offering enhanced interactivity through online relationships between organizations and consumers" (Ibrahim et al., 2020).

The components of social media marketing have also been addressed in studies with various authors and settings (Table 1).

Table 1. Social media marketing activities components

Authors	Year	Components
Kim and Ko	2010	Entertainment, interaction, trendiness, customization, and WOM
Jo	2013	Events, information, and advertisement
Sano	2015	Interaction, trendiness, customization, and perceived risk
Lee	2017	Communication, providing information, support for daily life, promotion and selling and social response
Seo and Park	2018	Entertainment, interaction, trendiness, customization, and perceived risk
Ebrahim, R.S.	2020	Propensity, customization, and word of mouth

Source: Author's compilation

Many studies and definitions have been given about social media marketing activities and their components, but Kim and Ko's definition (2012) has been the modeling foundation of many studies, such as Algharabat, R.S. (2017), Bilgin, Y. (2018), Chen and Lin (2019). With proven popularity in studies of many fields and regions, the author used Kim and Ko's (2012) definition of five components of social media marketing activities (2012) for this study.

Entertainment in the context of social media marketing refers to the extent to which social media platforms supply users with fascinating, engaging, and hilarious material and information (Gallaugher et al. Ransbotham, 2010). Marketers use social media as a means of entertaining consumers to satisfy their enjoyment needs by sharing product photos and news (Lee and Ma, 2012), such as brand pages on Facebook with video clips, images, and stories, which can capture attention from consumers (Gummerus et al., 2012; Merrilees, 2016).

Interaction in social media marketing activities occurs when social-media users contribute their ideas to meet, interact and discuss with like-minded others about specific products or brands on social media platforms (Muntinga et al., 2011). Therefore, interaction represents the extent to which social media platforms offer opportunities for opinion exchange, two-way interactions, and information sharing (Kim and Ko, 2012; Dessart et al., 2015). Given the importance of interaction, marketers are recommended to encourage social-media users to interact on specific topics and discussions available on social media platforms (Zhu and Chen, 2015), thus incorporating the posting of information that fits the profile of their targeted social-media users and encouraging discussion and interaction to enhance a relationship between consumers and brands (Manthiou et al., 2013).

Trendiness as another component of social media marketing activities means introducing the latest/current information on products to customers (Godey et al., 2016). Trendiness refers to the extent to which a brand communicates the latest, up-to-date, and trendy information about the brand (Naaman et al., 2011). Trendy information includes updates of brand-related information, product reviews, and new ideas about brands initiated by both marketers and consumers, which is useful in building consumers' brand trust (Godey et al., 2016), and hence strengthens consumers' positive perception toward the brand (Manthiou et al., 2016).

Customization in social media marketing refers to the extent to which services are customized to satisfy consumers' personal preferences (Godey et al., 2016), such that customized services and information searches for consumers are easy to use (Kim and Ko, 2012). Previous studies reveal that the effort of customization is influential in reaching the intended audience, building trust in consumers' minds, and strengthening consumers' purchase intentions (Martin and Todorov, 2010). To achieve customization, marketers tailor marketing efforts and services as well as customized messages to create value for a specific consumer group (Chan and Guillet, 2011; Zhu and Chen, 2015).

EWOM refers to statements and comments made by potential, actual, or former customers about a product, brand, or company, which are made available to the public via social media platforms (Hennig-Thurau et al., 2004). When consumers act as brand ambassadors to spread positive EWOM on social media platforms, it is beneficial in building consumers' positive perception toward brands and strengthening their purchase intention (Esch et al., 2006; Martin and Todorov, 2010; Kudeshia and Kumar, 2017). Equally, negative EWOM can also less desirable brand-related outcomes, including weakened brand trust, detrimental effects on brand attitude, and brand equity dilution (Cheung and Lee, 2008; Lee et al., 2009; Bambauer-Sachse and Mangold, 2011).

Nowadays, enterprises must organize social media marketing activities according to different users' needs; they must understand users' needs earlier than the users themselves and learn which products users need to organize events that leave lasting impressions (Kim and Perdue, 2013). The higher transfer efficiency of social media has attracted a lot of companies aiming to increase their exposure on the Internet (Kaplan and Haenlein, 2010). As a result, more industries have attempted to profit from social media, including the tourism and hospitality industry Ibrahim, B. (2021); thus, companies have also developed corresponding marketing strategies for social media.

3.2. Brand knowledge

Keller (2003a,b) states that "brand knowledge can be defined as the personal meaning of a brand stored in the consumer's memory, i.e. all descriptive and evaluative information related to brand" (p. 586). The research also proposes that different types of information are associated with a brand and that these different types of information can be defined as several key aspects of brand knowledge, such as (1) brand awareness and (2) brand image.

Brand awareness

According to Aaker (1991), brand awareness is "the ability of a potential buyer to recognize or recall that a brand is a member of a certain product category". Keller (2009) has stated that brand awareness is about track or crowd power in consumers' memories that reflect consumers' ability to remember or recognize a brand in different conditions.

The presence of brand awareness indicates that the consumer knows the brand name, and this increases the possibility of that brand being contained in a list of potential candidates, and ultimately, the probability of that brand being selected (Keller, 1993). Therefore, it might be a key marketing component. In short, brand image is the meaning of a brand accepted through the sensory organs of consumers (Jung, 1994). Aaker (1996) has stated that brand awareness consists of four levels: brand recognition, brand recall, top-of-the-mind brand, and dominant brand.

Brand image

Keller (2009) has defined brand image as "consumer perceptions of and preferences for a brand, as reflected in various types of brand associations held in consumers' memory.". The mental image that consumers have about a brand has formed because of marketing communication, consumption experience, and social effects (Riezebos, 2003). In short, brand image is the meaning of a brand accepted through the sensory organs of consumers (Jung, 1994).

According to Keller (2013), consumers always consider brands with a strong and favorable brand image as the main choice in their decision-making process. This encourages marketers to use a variety of channels to create strong and positive brand experiences (De Vries and Carlson, 2014).

3.3. Brand trust

According to Morgan and Hunt (1994, p.5), trust can be defined as "when one party has confidence in an exchange partner's reliability and integrity." Brand trust is ''the willingness of the average consumer to rely on the ability of the brand to perform its stated function'' (Chaudhuri and Holbrook, 2001, p. 82). Lau and Lee (1999) viewed brand trust as the "willingness to rely on the brand”. Moorman et al. (1992) defined trust as “a willingness to rely on an exchange partner in whom one has confidence”. Chaudhuri and Holbrook (2001) define brand trust as a “consumer’s willingness to rely on the ability of the brand to perform its stated function”.

More specifically, according to Barber (1983), the definition of brand trust proposed reflects two distinct components: (1) brand reliability, and (2) brand intentions.

Brand reliability

Brand reliability has a competence or technical nature and is based on the consumer's belief that the brand accomplishes its value promise (Andaleeb 1992; Morgan and Hunt 1994; Doney and Cannon 1997). In other words, it concerns the perception that the brand fulfills or satisfies the consumer's needs. Therefore, brand reliability is essential for trusting a brand because the accomplishment of the value promise that the brand represents to the market leads the consumer to be confident about the occurrence of future satisfaction.

Underlying this dimension of brand trust is a sense of predictability that the brand satisfies the individual's needs in consistently positive ways. Consequently, the consumer develops a positive brand attitude that becomes central to the repurchase decision in relational exchange (Morgan and Hunt 1994). Thus, for all its value in conducting day-to-day exchanges, brand reliability is, at best, a starting point for describing brand trust.

Brand intentions

Brand intentions are based on the consumer's belief that the brand would hold the consumer's interest when unexpected problems with the consumption of the product arise. Therefore, it describes the consumer's belief that the brand's behavior is guided or motivated by favorable and positive intentions toward the consumer's welfare and interests, in the event of future problematic situations with the consumption of the product (Andaleeb 1992). Convictions of this nature are thus held and acted on in the present with the confident expectation that future events will prompt them to be correct. Thus, it is concerned with the belief that the brand is not going to take advantage of the consumer's vulnerability.

3.4. Willingness to pay

Customers' willingness to pay is likely a potential direct antecedent of purchasing behavior. According to Netemeyer et al., the willingness to pay is the amount that customers are willing to pay for a specific brand as compared to others. The study by Kim and Ko constitutes the impact of social media marketing activities on paying willingness. Leung, Bai, and Stahura empirically found that customers’ behavioral intention to buy is dependent on the customers’ attitude related to an organization’s Twitter and Facebook advertisements.

3.5. Research gap

Many scholars and researchers have analyzed the impact of social media marketing activities on brand factors such as brand equity, brand trust, brand loyalty, perceived brand awareness, and brand knowledge, thereby influencing customer responses on purchase intention, brand loyalty, or brand preference.

Kim and Ko (2012) classified the components of social media marketing activities as entertainment, interaction, trendiness, customization, and word of mouth (WOM), proving that every component of social media marketing activities positively affects customer relationships and purchase intention, with the entertainment component having the biggest influence.

Similarly, according to Ebrahim, R.S. (2020), social media marketing activities has a direct effect on brand loyalty and an indirect effect on brand equity mediated by brand trust. The study highlights the role of trust and provides guidance for measuring the effectiveness of social media marketing. However, the study found that social media marketing activities only include 3 components: propensity, customization, and word of mouth. This is different from the study of Kim and Ko (2012).

Another study demonstrated trendiness to be the most important component of social media marketing activities, which had a significant impact on brand awareness and brand image - the two components of brand knowledge, specifically for airline brands (Seo, E.J. and Park, J, 2018).

These activities promote customer experiences, which in turn affect brand equity and subsequent purchase intents and behaviors (Chen and Lin, 2019). Consumer responses to various interactions on social media are susceptible to trust, which plays an important role in delivering the impact of online activities and converting marketers' efforts to equity and loyalty (Tatar and Eren-Erdogmus, 2016; Warner-Sderholm et al., 2018). Neither Kim and Ko (2012) nor Godey et al. (2016) evaluated the influence of social media marketing activities on brand love or attempted to relate it to social media marketing activities.

Bilgin, Y. (2018) validated the influence of social media marketing activities on brand knowledge, the most visible impact being on the brand awareness component, as well as the impact on brand loyalty. Godey, B., Manthiou, A., Pederzoli, D., et al. (2016) and Khan, Z., Yang, Y., Shafi, M., and Yang, R. (2019) utilized the SOR theoretical framework to confirm the connection between social media marketing activities and consumer feedback, such as brand preference, premium pay, and loyalty. This impact is also moderated by brand knowledge.

With the changes in the competitive environment and the rapid development of information technology, social media marketing activities play an even more important role in the development of the hotel industry (Varkaris and Neuhofer, 2017). For hotels, it has had a positive impact on brand loyalty, purchase intention, and brand trust, according to Ibrahim, B. (2021).

However, based on research that has been conducted on social media marketing activities, most of these analyses study the impact on consumer feedback at the macro level. There has not been much research on the social media marketing activities of hotels, especially in Da Nang and Vietnam. In addition, there is little research on consumer responses, specifically dedicated to paying, for the hospitality industry, which has many membership programs aimed at increasing customer relationships. The relationship between SMMA and brand knowledge, brand trust, and customer responses has been studied in a few industries such as telecommunication, e-commerce, and luxury fashion, but most of the remaining studies are theoretically tested and not available in the hotel industry.

Thus, the research gap is first shown in the research context. In Vietnam and Da Nang, there have not been many studies on social media marketing activities in the hotel industry, especially on consumer responses to SMMA. The second gap is reflected in the novelty of research about customers’ willingness to pay in the hotel industry. The third gap is reflected in the context of hotels constantly promoting programs to encourage customers to spend again after the recent Covid pandemic, proving that customers' willingness to pay is an increasingly important factor in the hotel industry.

4. Hypotheses development

4.1. Social media marketing activities and brand knowledge

The contagion effect among social network users allows the brand to be widely discussed and known among many users (Kumar et al., 2007; Sharma and Verma, 2018). Tsimonis and Dimitriadis (2014) revealed that brand awareness is one of the main outcomes expected from corporate social media marketing activities. The findings pointed out by Fanion (2011) have shown that social media is an important tool in the formation and enhancement of brand awareness. Seo and Park (2018) found that social media marketing activities in the airline industry positively affect brand awareness and image.

Tsimonis and Dimitriadis (2014) state that social media is an excellent tool for interacting with existing and future consumers and developing a favorable brand image for a firm (Halligan and Shah, 2009; Fortezza and Pencarelli, 2015). According to Tatar and Erdomuş (2016), social media marketing efforts in the hotel industry affect customers' brand awareness, brand image, purchase intention, and brand loyalty.

The hypothesis tested in this direction is as follows:

H1: Social media marketing activities positively affect brand knowledge.

4.2. Social media marketing activities and brand trust

Social media marketing with different types of online marketing activities aims to convert customers into sellers and promoters who through interactions will produce, manage, and share online information (Melewar et al., 2018). Also, Tatar and Eren-Erdogmus (2016), examine the impact of social media marketing in the sector of tourism on brand trust and brand loyalty. This interaction with social media platforms creates a form of response, such as more encouraging comments, responses, and high ratings, which advances the level of brand trust (Ba and Pavlou, 2002).

Therefore, the second hypothesis is:

H2: Social media marketing activities positively affect brand trust.

4.3. The mediating role of brand knowledge and brand trust

Seo and Park (2018) used brand knowledge as a mediator between social media marketing activities and customer response. Similarly, Kim and Ko (2012) also empirically examined the influence of social media marketing activities on customer loyalty. Their empirical results showed that it affects both the customers' intention to purchase and the customer response via a mediating impact of brand awareness and brand image. Similarly, social media marketing activities support brand trust and promote purchase intention and willingness to pay, which manifests when a customer places a significant amount of trust in a brand. Moreover, trust in a brand is built on confidence in that brand. Brand trust likely influences customers' purchase intention because customers can generate trust and develop passionate links to brands.

Considering the literature mentioned above, I drew the following hypotheses:

H3: Brand knowledge mediates the relationship between social media marketing activities, and willingness to pay.

H4: Brand trust mediates the relationship between social media marketing activities, and willingness to pay.

4.4. Social media marketing activities and willingness to pay

In the online context, "paying willingness" refers to whether customers intend to buy, or are eager about buying, a product or service via an online transaction platform (Pavlou and Chai, 2002). Toor and Hussain (2017) investigated the impact of social media marketing activities on consumer willingness to spend on social media platforms in Pakistan. The findings revealed that marketers should pay attention to social media networks since they have a substantial impact on purchase intention. These encouraging findings were backed up by Gautam and Sharma (2017) and Yadav and Rahman (2017), who found that social media marketing activities impact payment willingness in India. Thus, I propose the following:

H5: Social media marketing activities positively affect willingness to pay.

4.5. Brand knowledge and brand trust

Brand image has long been recognized as an essential concept in marketing (Keller, 1998). Brand image was found to have a positive effect on brand trust (Ming et al., 2011; Eschet et al., 2006). Brand trust literature has emphasized the importance of brand knowledge and brand love as sources for satisfying consumer needs and desires (Bagozzi et al., 2016; Buil et al., 2013). Hence, there is a hypothesis to be proposed, which is:

H6: Brand knowledge positively affects brand trust.

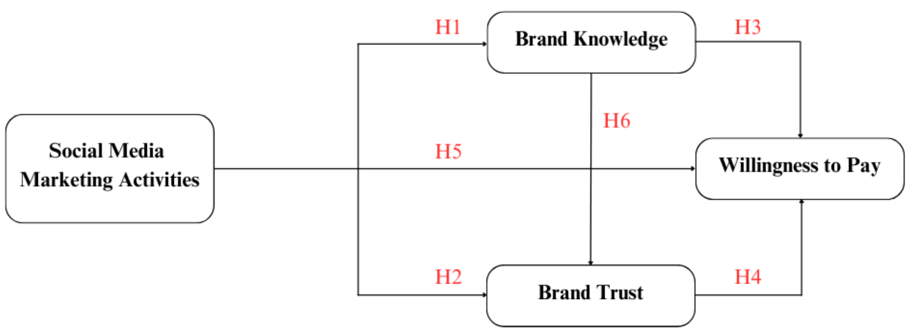

Fig. 2. Structural research model

The previous studies demonstrate the importance of social media marketing activities in the brand-building process and encourage customer willingness to pay. They also serve to emphasize the need for research on the effects of SMM on brand knowledge in various contexts. Therefore, this paper develops a new conceptual model that examines the influence of social media marketing activities on brand knowledge and brand trust also accounting for the level of customer willingness to pay, targeting in providing implications for marketers, especially in the hospitality industry in how to use social media marketing activities to promote both brand elements and customer willingness to pay. The model is expected to bring both academic and practical value, which can be used to develop many other studies related to brand elements and customer feedback, as well as the application of social media. marketing to foster these relationships in the extremely potential sector of hospitality and tourism.

5. Conclusion

The hotel sector primarily depends on tourism promotion and online information, which depends on coordination between the efforts of the business and the tourist in establishing platforms for information to facilitate the sale of the service to the tourists. During marketing activities via social media that give customers a sense of the company's activities, the positive feelings of the customers and their interaction through the communication pages need to be measured and analyzed to motivate their sense of brand knowledge, brand trust, and future willingness to pay.

This is the first step of our research. Based on this model, the research is developed based on the method of analyzing and evaluating secondary documents which are previous studies, and collecting primary data by quantitative research, which was chosen to collect and evaluate large-scale consumer-relevant data. It employed the quantitative research method by carrying out a survey in the form of an online and offline questionnaire. We will continue to do the quantitative methods and use data analysis techniques including descriptive statistics analysis, reliability validation by Cronbach’s Alpha coefficient, exploratory factor analysis, confirmatory factor analysis, and model verification by structural equation modeling to examine the hypotheses.

The results of data processing of this study are conducted with the aim of investigating and evaluating the impacts of social media marketing activities on Vietnam's hospitality industry brand knowledge, brand trust, and customers' willingness to pay. These efforts may contribute to recommendations on how a marketer in the tourism industry can effectively emphasize and implement certain social media marketing activities (i.e., entertainment, interaction, trendiness, customization, and WOM) with social media platforms.

Assessing the direct impact on willingness to pay and the long-term sustainable impact on brand knowledge and brand trust of social media marketing activities will contribute to the development of long-term social media marketing activities strategies, maximizing its positive impact on brand elements and consumer response.

The present study is in its infancy and requires a great deal of effort to perfect but has potential for expansion and development in further research. Future studies should, therefore collect data from different industries to be generalized to other industries and regions, not only in the hospitality industry in Vietnam. The nature of tourism industry customers is unique; the model of study can lead to different results and interpretations for other industries.

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Unboxing Video Attributes and User's Engagement on Tiktok

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ABSTRACT

Unboxing video provide a new and promising path for marketing strategies, especially product launch procedures. Additionally, as a form of social media video content marketing, the unboxing genre has attracted significant attention from consumers and marketers. Nevertheless, the current body of academic research on video unboxing is limited, which prevents the development of knowledge in this field and taking advantage of its essential benefits. This study explores the impact of unboxing video attributes on consumer engagement within the unboxing genre via motivational theory as a theoretical basis. Moreover, this research adopts a quantitative methodology, employing the paper questionnaire as the primary means for gathering information. The findings of a survey conducted with 402 participants using the SmartPLS 4.0 software indicate evidence to support all hypothesised connections between variables. Specifically, the attributes associated with unboxing videos (e.g., serendipity, reliability, enjoyment, and novelty) significantly impact viewers' engagement with this genre of videos. This investigation will also consider the study's theoretical and practical contributions, thus providing opportunities for future research.

Keywords: unboxing video, attributes, consumer engagement, TikTok, social media content

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Factors Affecting the Online Shopping Intention of Generation Z in Nha Trang City

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ABSTRACT

The purpose of this study is to investigate the factors influencing the online purchasing intention of consumers in Nha Trang city, with a focus on Generation Z. It measured the impact of independent variables on the online purchasing intention of Gen Z in Nha Trang. The study was conducted from February 2023 to July 2023, and the author used the Structural Equation Modeling (SEM) combining the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) as the theory framework. The sampling method was convenience sampling through both direct survey and Google Form, resulting in 436 valid samples. The research findings indicated that there are four factors influencing the online shopping intention of Gen Z: attitude, subjective norm, perceived behavioral control, and perceived risk. Among these, attitude is the most significant factor influencing the shopping intention of Gen Z in Nha Trang. Based on the research results, recommendations and implications are proposed to help businesses, online sellers, e-commerce platforms having the better understanding of Gen Z's consumption habits to attract this consumer to participate in online shopping in Nha Trang city.

Keywords: Online shopping, Gen Z, online purchasing intention, e-commerce, perceived risk

1. Introduction

Online shopping has revolutionized the marketing strategies of many sellers in recent decades. These advancements have influenced customer behavior and shaped their purchasing habits. However, the participation rate of Vietnamese consumers in online shopping remains lower compared to other countries in the region and globally [5]. Therefore, it is crucial for online retailers

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to identify the factors that influence customers' online purchasing intentions in order to attract more consumers to shop online.

The Vietnamese e-commerce market is considered to be promising and experiencing strong growth. According to the White Book of E-commerce, the compound annual growth rate (CAGR) for the period of 2016-2019 was approximately 30%, and the projected CAGR for the period of 2020-2025 is 29%, with a market size of USD 52 billion in 2025 [9]. In recent times, the COVID-19 pandemic has further accelerated the development of e-commerce activities along with changing consumer trends due to the rejuvenation of the population structure, with Generation Z becoming a significant consumer group [11]. By 2025, Generation Z is expected to contribute to one-third of the labor force in Vietnam and have a significant impact on the domestic labor market [25]. According to [8], there is a positive correlation between age and attitude, meaning that older individuals are less interested in online shopping.

The field of e-commerce has received increased attention in the province, as evidenced by Decision number 2242 of the People’s committees of provinces on August 26, 2020. This decision focuses on encouraging and supporting businesses financially to establish online sales channels. However, the results have not been optimistic as expected. According to Khanh Hoa Newspaper, the number of businesses participating in online shopping decreased from 77 in 2020 to only 37 in 2021 [6]. Nha Trang is the only first-class city in Khanh Hoa Province, known for its strength in tourism. However, the potential contribution of e-commerce cannot be ignored, as stated by [33], Khanh Hoa ranks eighth out of ten provinces with the highest e-commerce index in the country. Nevertheless, there is still a significant gap between Khanh Hoa Province and other provinces on the 80-point scale [33].

Theoretical studies conducted worldwide have identified various factors influencing online consumer intentions. However, the research findings vary due to different national contexts and the multitude of factors that contribute to a vast theoretical system. Research on online shopping behavior, in general, and online shopping behavior of Generation Z, in particular, has been an attractive topic for international researchers for a long time, with different approaches and evaluation criteria. Regarding TikTok, Muliadi discovered that over 60% of TikTok users are from Generation Z [26]. This highlights the close relationship between the nature of Generation Z and social media, which greatly influences their purchasing intentions. In Vietnam, there have been several studies related to specific segments such as fresh food, electronics, or specific e-commerce platforms like Tiki. E-commerce is a diverse and ever-changing field, requiring more research to explore niche markets and general online shopping behavior.

Furthermore, previous domestic studies have mostly focused on understanding the factors influencing online shopping intentions of customers in urban areas and high-income residential areas, overlooking the low or middle-income population, such as [22], [23] and [29]. Nowadays, e-commerce has become more familiar, and even basic food items are being sold online, attracting a large number of low- to middle-income consumers.

In summary, this research topic aims to address the aforementioned limitations by exploring online shopping intentions in general in Nha Trang city and surveying the Gen Z population with predominantly low to middle incomes. In addition, building upon previous studies, this research will integrate the theories of TAM and TPB to study online shopping intentions in Nha Trang and validate previous hypotheses in a different context. Based on the research findings, the author will provide insights into the strong impact of influencing factors on customers' online shopping intentions. Consequently, policy implications will be proposed to assist businesses in transitioning from offline to online or effectively combining both forms of business.

2. Literature review

2.1. Online shopping intention

Online shopping is a form of shopping conducted through electronic platforms such as online stores, marketplaces, company websites, or online networks. Intention refers to a customer's behavioral trend when they have a desire to purchase a specific product or service. Purchase intention is a prerequisite for the purchase decision [27].

Behavioral intention precedes actual behavior and is also a factor in predicting whether the behavior will be carried out or not [2]. In other words, user behavior is influenced by behavioral intention. Behavioral intention is assumed to include motivational factors that influence behavior, which indicate the readiness, effort, and endeavor to perform the behavior [1]. According to the TPB theory, the intention to perform a behavior is influenced by attitudes toward the behavior, subjective norms, and perceived behavioral control. The greater the determination or intention of a behavior, the higher the likelihood of carrying out that behavior.

In the scope of this research, the intention to shop online is the driving force that prompts consumers to decide to engage in online shopping, and the greater the intention to shop online, the higher the likelihood of them carrying out the shopping behavior.

2.2. Definitions and characteristics of Generation Z

Currently, there are numerous concepts regarding Generation Z, with the most popular one referring to individuals born from the mid-1990s to the early 2000s, coinciding with the development of 21st-century modern science and technology, notably the Internet and mobile phones. According to [7], Generation Z includes individuals born from 1990 onwards. In 2015, Epinion Global conducted an in-depth study on Generation Z in Vietnam with 710 responses and identified characteristics such as their aversion to going outside, the inseparability from mobile phones, and significant concern for social issues [35]. However, according to [28], Gen Z encompasses individuals born between 1995 and 2012.

Unlike previous generations, Gen Z was born into the presence of modern technology rather than gradually adapting to it. Terms like technology addiction, speed, freedom, and individualism are used to define Generation Z. According to Tracy and Fernanda (2018), the primary motivation for consumption among Gen Z is the pursuit of truth, both on an individual and community level [cited in 27]. They highly value self-expression and acting upon their own thoughts. Finally, through an analytical and pragmatic approach, they make decisions and build relationships with organizations. These behaviors influence how Generation Z perceives consumption and their relationship with brands.

Additionally, there are various opinions stating that Generation Z (also referred to as Post Millennials, the iGeneration, or the Homeland Generation) is the demographic cohort following Millennials. There is no exact starting or ending date for this group, as demographers and researchers often use different birth years, ranging from the mid-1990s to the early 2000s. In reality, social scientists have not reached a consensus on the birth years of Generation Z. Some believe it started in 1995, while others argue that it began in the late 2000s. Based on a synthesis of information from numerous sources and various studies, within the scope of this research, Generation Z can primarily be classified as individuals born between 1995 and 2007, approximately aged 16 to 28.

2.3. Hypotheses and research model.

2.3.1. The influence of perceived ease of use on perceived usefulness

Perceived ease of use significantly influences perceived usefulness according to [10]. This result has also been supported by other studies that apply the theory of TAM as the foundation for constructing proposed models, which demonstrate that perceived ease of use has a positive impact on perceived usefulness [13, 4]. Therefore, the author proposes the following hypothesis:

H1. *Perceived ease of use has a positive impact on the perceived usefulness of Generation Z*

2.3.2. The influence of perceived ease of use and perceived usefulness on attitude.

Perceived ease of use refers to the expectation of how easily a new technology can be used without much effort, which is an important factor in TAM theory [10]. Perceived usefulness is the belief that the application of new technology will improve productivity. According to [13], both perceived usefulness and ease of use have a positive impact on the attitude towards online shopping. During the pandemic, perceived usefulness is positively related to intention, especially for the tech-savvy Generation Y and Z [20]. Additionally, several other authors have also demonstrated a positive correlation between perceived usefulness, ease of use, and attitude [30, 4]. Therefore, the author proposes two hypotheses, H2 and H3, as follows:

H2: *Perceived ease of use has a positive impact on the attitude towards online shopping of Generation Z.*

H3: *Perceived usefulness has a positive impact on the attitude towards online shopping of Generation Z.*

2.3.3. The impact of subjective norms on the intention to purchase online.

Subjective norms are a component of TPB theory and have thus become a significant research focus in various related studies. During the pandemic, subjective norms have gained stronger influence and significantly affect intentions. Public information is considered an external influence, while friends and family are seen as internal sources of influence [3, 35]. In today's context, establishing social relationships has been demonstrated as a positive factor in predicting behavioral intentions. Therefore, the author posits the following hypothesis:

H4. *Subjective norms have a positive impact on the online shopping intentions of Generation Z*

2.3.4. The influence of attitude on the intention to shop online

Attitude is related to an individual's internal or implicit perceptions towards a psychological object and can have either positive or negative effects. Attitude is defined as the user's preference for the use of specific technologies and devices. In the context of online shopping, [10] states that attitude refers to the consumer's positive or negative evaluation of using the Internet to purchase goods or services from online retail websites. This attitude has been shown to have a positive impact on consumers' purchase intentions [36], and this finding is supported by numerous experimental studies [3, 16]. Based on these findings, the hypothesis is proposed by the author:

H5. *Attitude positively influences the intention to shop online among Generation Z.*

2.3.5. The influence of Perceived behavioral control on the intention to shop online

Perceived behavioral control refers to the perceived ease or difficulty of performing a behavior, as perceived by an individual [1]. If customers have strong confidence in their ability to control their behavior, their intention to engage in online shopping will be higher. The perception of difficulty or ease depends on the opportunities and resources available to each individual. According to Ajzen, this factor can have a direct impact and even predict behavior if individuals have accurate awareness of their level of control.

H6. *The impact of Perceived behavioral control on the intention to shop online among Generation Z*

2.3.6. The influence of perceived risk on the intention to shop online

Perception risk is the customer's perception of the risks, uncertainties, and potential undesirable outcomes that may occur. Customer risk perception in online shopping behavior can include concerns about products not meeting expected quality, potential theft of personal information, time and opportunity cost, risks in shipping and delivery of goods. Therefore, customers believe that online transactions entail more risks than traditional forms of commerce. Consequently, customer risk perception is confirmed to influence attitudes and online shopping behavior [13, 37]. Specifically, [16] argues that risk perception has an inverse impact on the decision to shop online. Therefore, the proposed hypothesis is as follows:

H7. *The perceived risk has a negative impact on the intention to shop online among Generation Z*

All in all, based on the aforementioned discussion, the conceptual model has been developed and shown in Figure 1.

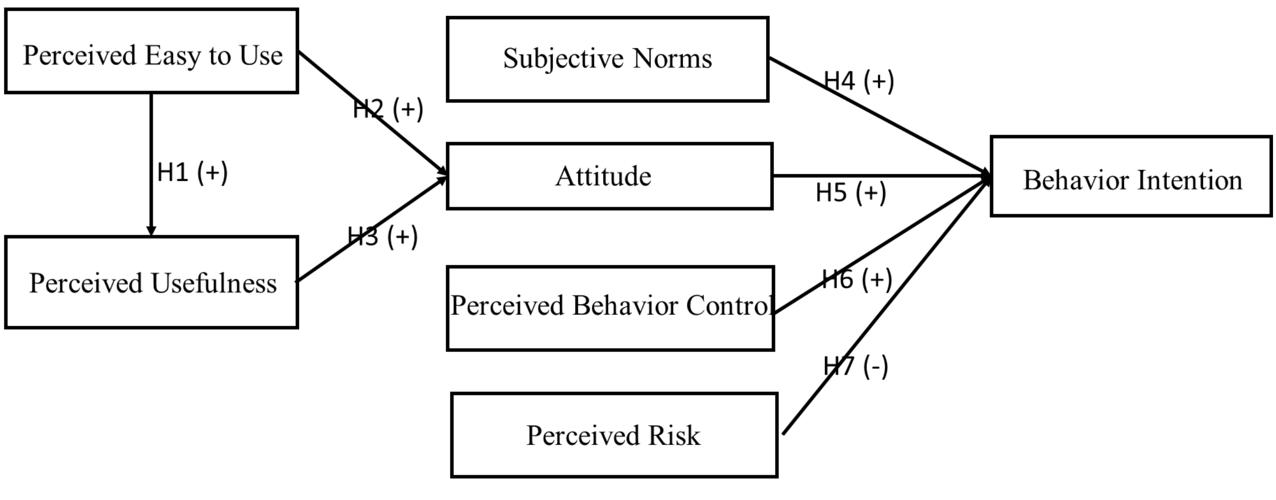

Figure 1. The Proposed Model

3. Research method

3.1. Research Data

The consumer sample selected for this study consisted of Generation Z individuals in Nha Trang city. A survey was conducted using a combination of two methods: direct survey through questionnaires and online survey using Google Form. Out of 450 survey responses collected, 436 valid responses were used for analysis. Prominent characteristics of the respondents included female gender accounting for 58%, age range from 19 to 22 accounting for 65.6%, and income below 3 million accounting for 42.3%.

3.2. Collection of responses and sample size

The proposed research model is the Structural Equation Modeling (SEM) model. Therefore, the data analysis method used in this study is Partial Least Squares Structural Equation Modeling (PLS-SEM) to evaluate variables and test hypotheses. However, this method requires a sufficiently large sample size to ensure reliability. According to [17], the minimum sample size for using Exploratory Factor Analysis (EFA) is 50, preferably 100 or more. For SEM models, the minimum sample size to ensure reliability is five times the number of observed variables or preferably ten times [21]. With 7 independent variables, 3 dependent variables, and 31 observed variables on the measurement scale based on the aforementioned sample size calculations, the author chooses the sample size calculation method according to [21], resulting in a minimum required sample size of 310 (31 x 10). Considering the sample size determination method, the author selects a sample size of 450, incorporating a margin of error, to meet the aforementioned conditions.

3.3. Measurements

The Likert scale was used to measure responses, with the following scoring: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree. The measurement scale "Perceived usefulness" was adopted from the works of [22]. The measurement items for "Perceived ease of use" were derived from the studies of [14] and [19]. Six measurement items for "Attitude" were used from the articles by [18]. The measurement items for "*Perceived behavioral control*" were employed from the studies of [8]. Seven measurement items for "Purchase intention for online shopping" were drawn from the research [12] and [34].

4. Results and discussion

4.1. The characteristics of the sample

The survey targeted individuals aged 16-28 in Nha Trang who have engaged in online shopping. The survey was conducted using a pre-prepared questionnaire. Both Google Form and paper-based surveys were utilized as survey methods. In total, 436 valid responses were collected for descriptive statistics on the online consumer behavior of Generation Z in Nha Trang. The statistical results revealed several demographic characteristics, including a female majority (62.6%), individuals aged 19-22 (57.8%), 52.3% being students, and 49.1% having an income below 3 million VND.

Table 1. The demographic survey results of GenZ in the city of Nha Trang

Variables	Frequency	Percentage (%)
(1) GENDER	**436**	**100**
• Female	273	62.6
• Male	159	36.5
• Other	4	0.9
(2) AGE	**436**	**100**

• 16 -18	93	21.3
• 19-22	252	57.8
• 23-28	91	20.9
(3) OCCUPATION	**436**	**100**
• Pupil	90	20.6
• College/University student	228	52.3
• Employed	118	27.1
(4) INCOME	**436**	**100**
• Below 3 million	214	49.1
• 3 - 5 million	126	28.9
• 5 - 10 million	70	16.1
• Above 10 million	26	0.6

(Source: Authors' survey results)

4.2. The current situation of online shopping habits of Gen Z in Nha Trang City

Among the e-commerce platforms, Shopee and TikTok were evaluated as leading platforms in terms of user retention, accounting for 68.1% and 24.7% respectively.

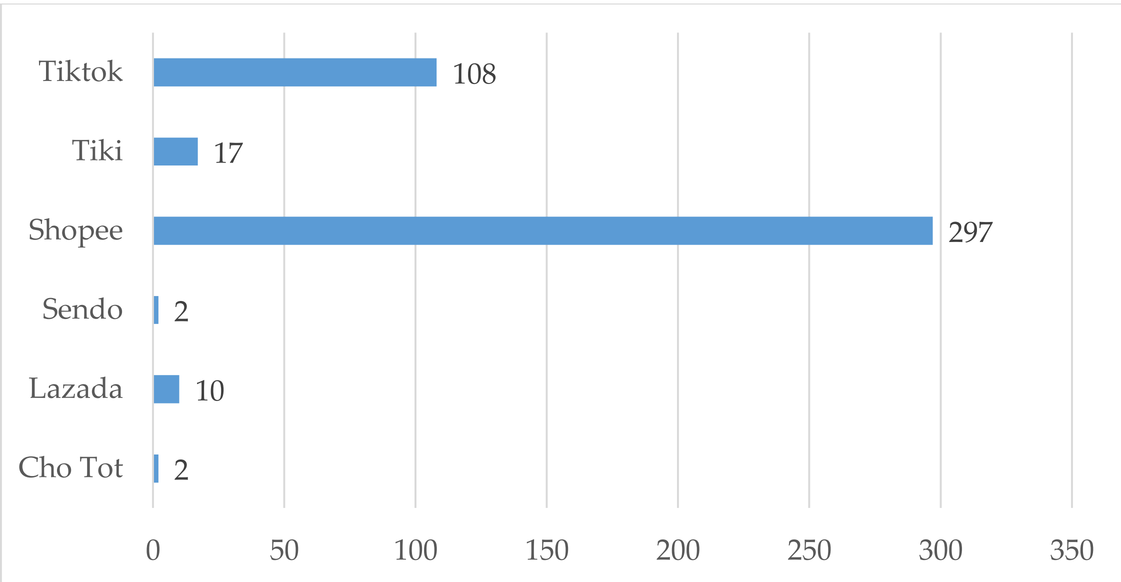

Figure 2. E-commerce channels that GenZ Nha Trang often uses

(Source: Authors' survey results)

▪ Among the 436 survey respondents, approximately 65.8% opted for online shopping to save travel time, while around 41.3% perceived the convenience of finding product information easily and considered online shopping to be relatively effortless. About 50% of GenZ in Nha Trang acknowledged that they could search for information more efficiently using the online platform, and 48,2% believed they could access a greater amount of information.

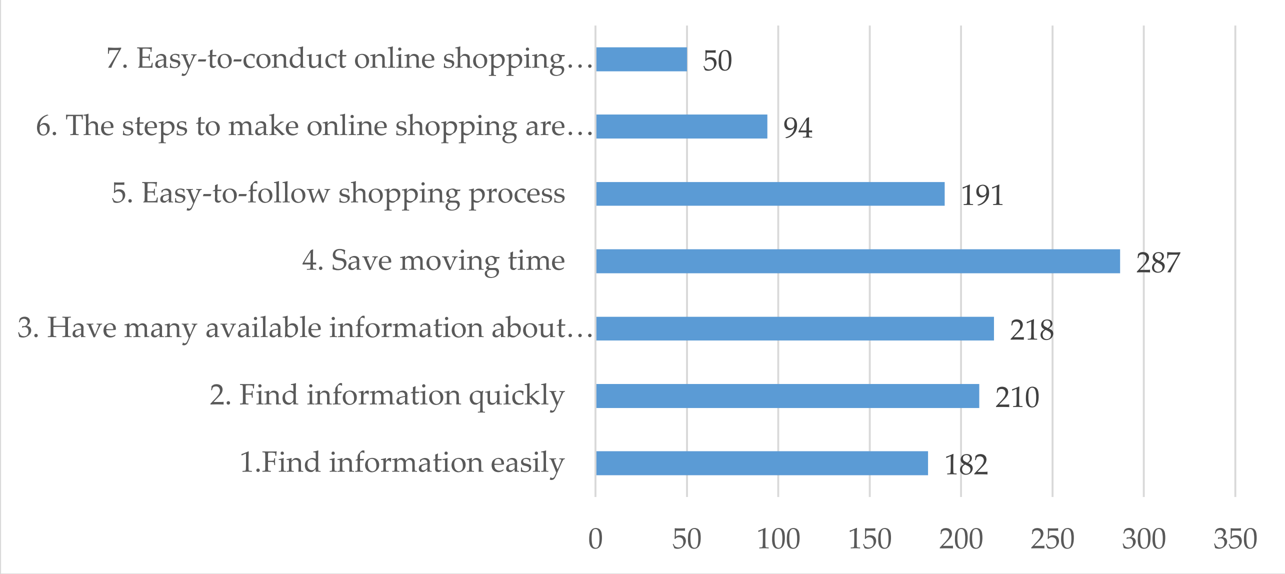

Figure 3. GenZ Nha Trang's opinion on the form of Online shopping

(Source: Authors' survey results)

The two highest selected risks when purchasing online are product quality and difficulty in returns. Approximately 72.9% agreed that they are concerned about poor product quality, while 48,4% expressed concerns about the difficulty of returning products. Consumers choose online shopping for its time-saving convenience, but when faced with quality discrepancies, GenZ individuals have to wait for returns or may not be able to return the products as initially expected. This significantly impacts their purchasing intentions.

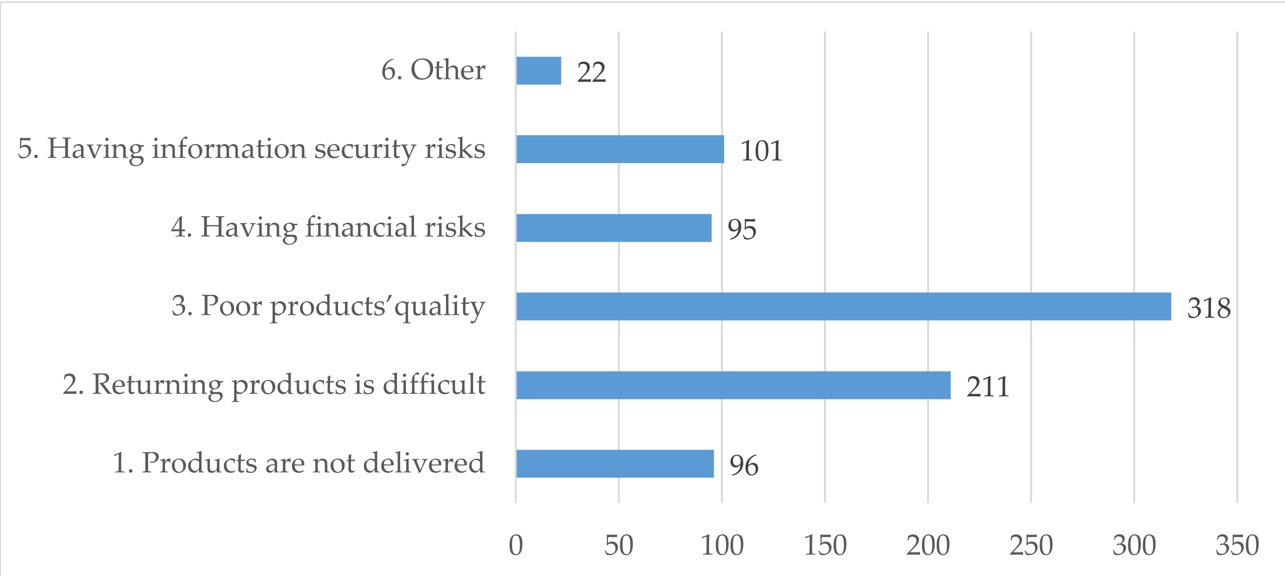

Figure 4. Perceived risk of GenZ Nha Trang when buying online

(Source: Authors' survey results)

▪ The most chosen option is to Less times, with 38.9%, followed by 30.5% who choose to shop more, and 29.6% who remain unchanged. To further understand the reasons behind the changing behavior of GenZ, the author presents the following two charts to delve deeper into the matter.

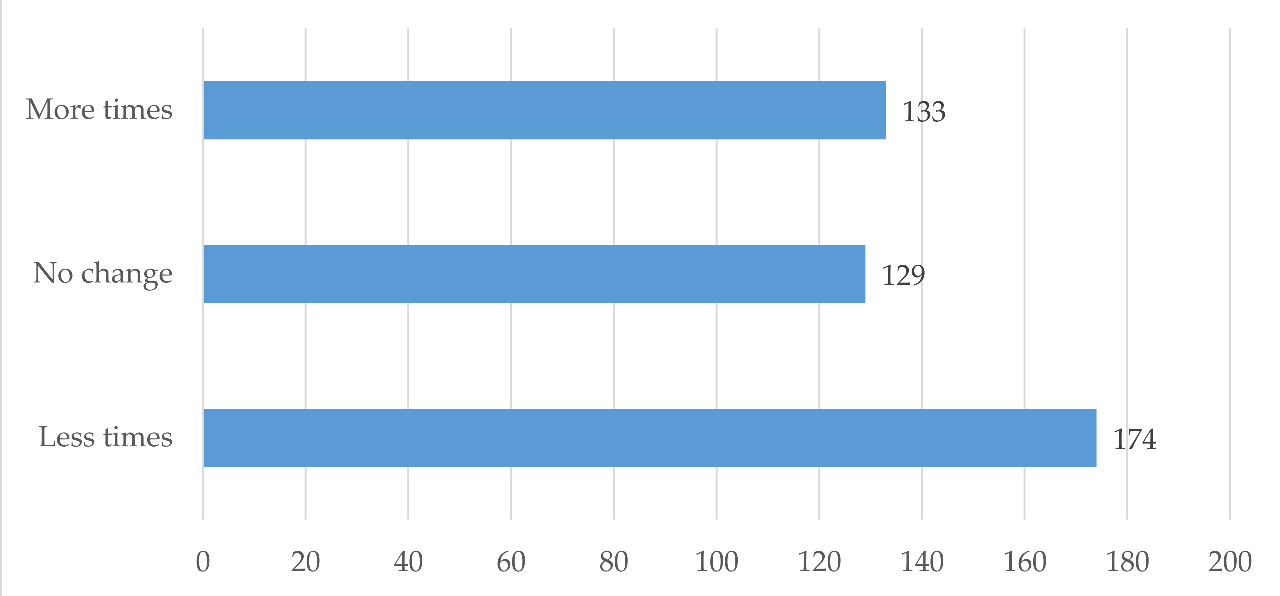

Figure 5. Status of Online Shopping before and after the COVID-19 pandemic of GenZ in Nha Trang

(Source: Authors' survey results)

Among the reasons identified for consumers shopping less online, as predicted by the author, income reduction and saving are the two most selected factors. The impact of the crisis and unemployment greatly influences purchasing decisions.

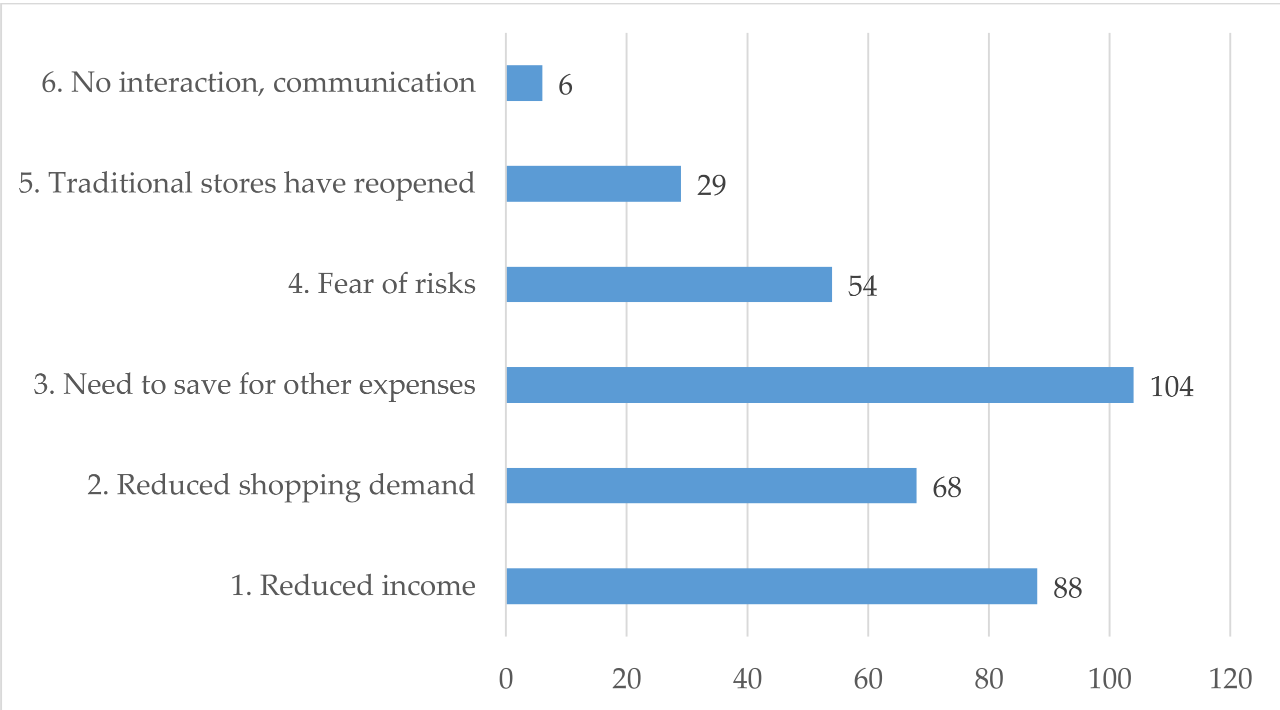

Figure 6. The cause of GenZ Nha Trang conducting less online purchase after the pandemic

(Source: Authors' survey results)

The prominent reason that drives customers to consume more is the attractive price incentives. They shop online more to save on expenses compared to buying directly, thanks to promotional programs and discounts.

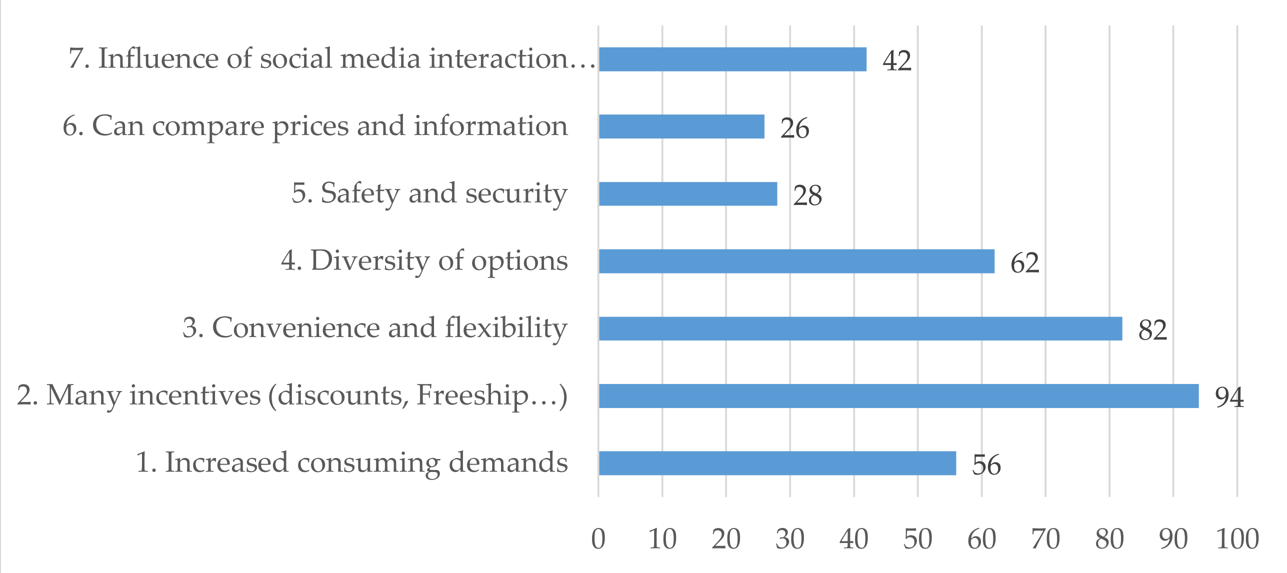

Figure 7. The reason GenZ Nha Trang conducting more online purchase after the pandemic

(Source: Authors' survey results)

4.3. Results

After conducting descriptive data analysis, the results were analyzed using SmartPLS 3.0 software. The findings revealed that all observed variables had Cronbach's Alpha coefficients greater than 0.7, indicating good reliability. The composite reliability values were also greater than 0.7, ensuring satisfactory overall reliability, and the redundancy value of 0.95 indicated non-duplication of measurements. Therefore, the analysis results indicated that all observed variables met the reliability criteria of the measurement scale. Additionally, the average variance extracted (AVE) exceeded the threshold of 0.5, demonstrating convergence of the scale. This indicates that the observed variables align well with the attributes of the main variables they measure. Detailed results of the analysis are presented in the table below.

Table 2. Reliability and Convergent validity of the measurement

Variables and indicators	Outer Loading	Cronbach's alpha	CR	rho_A	AVE
Perceived usefulness		0.901	0.931	0.901	0.772
HIa	0.878				
HIb	0.905				
HIc	0.893				
HId	0.837				
Perceived ease of use		0.916	0.947	0.918	0.856
DSDa	0.929				
DSDb	0.922				
DSDc	0.925				

Attitude		0.924	0.94	0.925	0.725
TĐa	0.851				
TĐb	0.865				
TĐc	0.848				
TĐd	0.875				
TĐe	0.841				
TĐf	0.827				
Subjective norms		0.776	0.87	0.781	0.691
CCQa	0.831				
CCQb	0.864				
CCQc	0.797				
Perceived behavioral control		0.858	0.903	0.865	0.701
KSHVa	0.82				
KSHVb	0.856				
KSHVc	0.864				
KSHVd	0.806				
Perceived risk		0.884	0.92	0.894	0.741
RRCNa	0.802				
RRCNb	0.89				
RRCNc	0.883				
RRCNd	0.865				
Intention to purchase online		0.899	0.921	0.902	0.625
YĐa	0.736				
YĐb	0.722				
YĐc	0.805				
YĐd	0.814				
YĐe	0.858				
YĐf	0.804				
YĐg	0.786				

(Source: Authors' survey results)

To determine whether the observed variables are discriminant, the author utilized the Heterotrait-Monotrait (HTMT) criterion. The analysis results revealed that the interrelationships between the structural concepts were all below the value of 0.85. Therefore, all variables in this model demonstrated discriminant validity. The results are presented in Table 2 below.

Table 3. Discriminant validity of the measurement

	HI	DSD	TĐ	CCQ	KSHV	RRCN	YĐ
HI							
DSD	0.753						
TĐ	0.721	0.685					
CCQ	0.633	0.523	0.822				
KSHV	0.692	0.672	0.711	0.671			
RRCN	0.119	0.114	0.101	0.165	0.206		
YĐ	0.689	0.555	0.735	0.767	0.694	0.241	

(Source: Authors' survey results)

Among the 7 initially proposed research hypotheses, one hypothesis was rejected. Specifically, the perceived ease of use positively and significantly influenced the perceived usefulness ($\beta = 0.686$; $p < 0.001$). Additionally, both the perceived usefulness and the perceived ease of use had positive effects on attitude, with path coefficients of ($\beta = 0.427$; $p < 0.001$) and ($\beta = 0.339$; $p < 0.001$), respectively. Among the 3 variables derived from TPB theory to explain the intention variable, including attitude, subjective norms, and perceived behavioral control, they all had positive and significant effects in the same direction, with path coefficients of ($\beta = 0.318$; $p < 0.001$), ($\beta = 0.273$; $p < 0.001$), and ($\beta = 0.245$; $p < 0.001$), respectively. However, the perceived risk had a significant negative impact on the intention to shop online ($\beta = 0.104$; $p < 0.01$), leading to the rejection of hypothesis H7. Furthermore, the VIF values for all paths were less than 3, indicating the absence of multicollinearity in the author's proposed SEM model.

The R-squared value was used to measure the explanatory power of the independent variables on the dependent variable. With an R-squared value of 0.564, it indicates that the intention variable was explained by 56.4% through the independent variables, or in other words, the variation in the intention variable was explained by 56.4% by the independent variables. The structural model report presents the following results: the perceived ease of use had a strong effect on the perceived usefulness ($f^2_{DSD \rightarrow HI} = 0.89$), and both the perceived ease of use and the perceived usefulness had moderate effects on the attitude towards online shopping ($f^2_{DSD \rightarrow TĐ} = 0.12$, $f^2_{HI \rightarrow TĐ} = 0.192$).. Moreover, "Attitude, subjective norms, perceived behavioral control, perceived risk" had weak explanatory power for the intention variable ($f^2_{TĐ \rightarrow YĐ} = 0.089$, $f^2_{CCQ \rightarrow YĐ} = 0.084$, $f^2_{KSHV \rightarrow YĐ} = 0.077$, $f^2_{RRCN \rightarrow YĐ} = 0.024$).

Based on the results, it can be observed that the bootstrap values of the hypotheses did not include 0, indicating statistical significance. This suggests that all the hypotheses were accepted. Therefore, the authors conclude that the estimated results of the hypotheses in the study are reliable.

Table 4. Results of path analysis for research model

Antecedents/Structural paths	VIF	Hypotheses	Beta (B)	*t*-value	Conclusion
DSD→ HI	1	H1 (+)	0.686	18.71***	Support
DSD→ TĐ	1.89	H2 (+)	0.339	5.52***	Support
HI→ TĐ	1.89	H3 (+)	0.427	7.14***	Support
CCQ→ YĐ	2.025	H4 (+)	0.273	5.49***	Support
TĐ→ YĐ	2.371	H5 (+)	0.318	5.73***	Support
KSHV → YĐ	1.791	H6 (+)	0.245	5.64***	Support
RRCN → YĐ	1.039	H7 (-)	0.104	2.85**	Not Support
R^2= 0.564					
Cohen's Indicator (f^2)	$f^2_{DSD \to HI}$ = 0.89				
	$f^2_{HI \to TĐ}$ = 0.192				
	$f^2_{DSD \to TĐ}$ = 0.12				
	$f^2_{TĐ \to YĐ}$ = 0.098				
	$f^2_{CCQ \to YĐ}$ = 0.084				
	$f^2_{KSHV \to YĐ}$ = 0.077				
	$f^2_{RRCN \to YĐ}$ = 0.024				

(Source: Authors' survey results)

4.4. Discussion

Research has shown the characteristics of Generation Z consumers in Nha Trang city. The focus of this study is to understand and discuss the factors influencing the intention to purchase online among the new generation consumers in Nha Trang city by measuring the factors that make up the TPB theory and perceived risk behavior intention model. The results of the structural equation modeling (SEM) confirm 6 out of 7 assumptions regarding the relationships in the model.

According to the findings, attitude is a significant factor influencing the intention to purchase online. The younger generation, known as Generation Z, is well aware of the benefits of online shopping and it has become a familiar part of their daily lives, especially with the rise of 4.0 technology. The proposed hypothesis aligns perfectly with previous arguments made by authors such as [3] and [15]. Although online shopping is not new in Vietnam, it had gained particular effectiveness due to the ongoing and complex COVID-19 pandemic. After this pandemic, the attitudes of the young population in Nha Trang towards shopping through online stores have shown a more positive shift. Subjective norms were also found to have an effect on intention, but the magnitude of the effect was not significant. Previous studies have shown that young consumers are active users of social media and subjective norms have a strong influence on their online shopping behavior intention [31]. But with genZ Nha Trang, the level of impact from media, family, friends on their online shopping intention are still low. This can be explained that genZ in Nha Trang has their own opinions and prefers to follow their own preferences rather than follow the advices of others. Perceived risk was found to have a minimal impact. The surveyed individuals, mostly students aged 16-22, are familiar with technology and online shopping from an early age, so the perceived risks they encounter do not significantly hinder their purchase intentions or result in excessive optimism due to a lack of emphasis.

Secondly, perceived usefulness and perceived ease of use are identified as the two factors determining the attitude towards online shopping among Gen Z. This implies that if customers require less effort or less operational effort, they may shift from non-usage effort to purchasing. Nowadays, users can easily obtain information about the products and services they desire. Moreover, Gen Z is a target group that values connectivity and follows the trend of consumer behavior. Therefore, emotional factors heavily influence consumer behavior. The author's findings indicate that perceived ease of use strongly predicts perceived usefulness, which aligns with previous studies conducted by [24] and [13, 32]. This suggests that when customers interact with a website or an e-commerce platform, the convenience and ease of operation significantly affect their perception of the benefits of online shopping. However, the comparative results show that the level of agreement on the ease of use among Gen Z in Nha Trang is not high. This may be related to the competition among online service providers, as they strive to improve and integrate new technologies. TikTok, the second-largest platform after Shopee, is experiencing rapid growth. Another possible reason could be the change in psychological mindset and prioritization of efforts after the pandemic.

5. Conclusion and policy implications

5.1. Conclusion

Objective of this research is to measure the factors influencing the intention to shopping online in Nha Trang city, specifically targeting Gen Z individuals aged 16-28, predominantly comprising students and recent graduates. The findings of this research indicate that there are 4 factors influencing the intention to shopping online, ranked in descending order of impact: attitude, behavior control, subjective norms, and perceived risk. Attitude is the most significant factor affecting the intention. To enhance the attitude of Gen Z individuals in Nha Trang city, the study identified two determining factors: perceived ease of use and perceived usefulness. Perceived usefulness not only strongly influences attitude but also significantly affects the overall usefulness. The perception of whether online shopping is useful for users, including Gen Z in Nha Trang city, greatly depends on the ease of use of online platforms or new technologies. Additionally, the perception of risk among Gen Z in Nha Trang is relatively low, with a minimal impact.

5.2. Policy implications

5.2.1. For businesses and individuals engaged in online sales.

Enhancing the online shopping attitude of Gen Z in Nha Trang, increasing the intention to purchase online by offering direct discounts on product prices, combos, and super sales of 5-10%. Setting a minimum quantity to receive discounts, specifying discount hours to create a sense of urgency and stimulate customer purchase intentions. In addition to discounts, businesses can implement discount codes or gift vouchers, loyalty cards, and free shipping (Freeship) to attract customers.

It is necessary to minimize the perceived risks of Gen Z when shopping online. Businesses and individual sellers can announce their product return policies and quality commitments through documentation such as quality certificates, product origin information, and sales policies on websites and online stores. They should have a customer support team to quickly address issues and avoid complex and overlapping resolution processes that may lead to customer dissatisfaction. Providing detailed information about orders, actively engaging with customers, using reliable shipping services, and providing support when issues arise are also important. Measures should be implemented to address customer data breaches and clear statements of responsibility should be made. Regarding purchase costs, all costs that customers need to bear should be accurately and clearly defined in the terms and conditions, or at least a comprehensive breakdown of the costs should be provided for customers to keep track of.

Improving the user-friendliness perception of Gen Z consumers will ultimately enhance their attitudes and perceived benefits of shopping. Continual improvement of design and the addition of user-friendly features, eliminating unnecessary and complicated steps, particularly in the payment process, is crucial. Building teams for design, support, customer care, and issue resolution within a 24-hour timeframe ensures smooth operation even during peak user traffic. Constantly enhancing web processing capabilities to maintain access speed is also essential.

Further strengthening subjective factors for Gen Z is necessary. Implementing public commenting and feedback functions for customers who have purchased products/services creates a sense of confidence in the effectiveness of the product/service. It is especially important for online businesses to be honest in their advertisements about their products/services. Emphasizing live streaming as a sales method and training a professional team to attract customers is recommended. Additionally, recruiting exclusive contracts with Key Opinion Leaders (KOLs) and Key Opinion Consumers (KOCs), who have a large following, can provide a competitive advantage over latecomers.

Increasing the perceived usefulness for Gen Z in Nha Trang, businesses should optimize their website, implement SEO techniques, enhance search functions, and filtering options. Creating a simple interface that focuses on processing speed and scientifically organizing and selecting information is important. Providing more detailed information, particularly about product features, dimensions, and related information, is crucial.

5.2.2. For e-commerce platforms

Enhancing the general attitude of Gen Z users and building trust with e-commerce platforms to increase their intention to shop online. Organizations should provide more transparent and publicly accessible policies regarding terms and conditions. When making changes, valid reasons should be provided and communicated in advance on official platform pages. E-commerce platforms should conduct further research on preferences and relevant factors related to mindset and capabilities to better understand this target audience and make appropriate adjustments.

Minimizing the perceived risks for customers when engaging with e-commerce platforms and increasing their intention to shop online. It is crucial to verify the credibility of sellers and implement a seller rating function for customers' evaluation. Additionally, enhancing information, images, and videos to provide customers with more details and avoid selecting inappropriate or unsuitable products. Different policies should be developed for various partner segments on the platform, distinguishing between individual and business online stores, and adjusting policies and support accordingly. Providing customers with shipment tracking information by integrating a reporting system at each station along the route creates peace of mind and reduces the psychological impact of aimless waiting. Moreover, to ensure the interests and support of domestic partners, collaboration with reputable and trusted logistics providers that customers rely on is necessary. Lastly, clarifying the rights and responsibilities of all parties involved, implementing favorable policies, and consistently standing in a consumer-protective position are essential.

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APPENDIX

Appendix A. THE SCALE OF VARIABLES IN THE RESEARCH MODEL

CONTENTS	SOURCES
Q1. PERCEIVED USEFULNESS	
1a. Online shopping applications/websites make it easier for me to search for product information.	[38, 39, 40]
1b. I can find product information more quickly through online shopping applications/websites.	
1c. I can find more product information when shopping online.	
1d. Online shopping saves me more time compared to shopping directly at physical stores.	
Q2. PERCEIVED EASE TO USE	
2a. I find it quite easy to shop online through applications/websites.	[41, 42, 19]
2b. I perceive the steps involved in online shopping to be uncomplicated.	
2c. I find it easy to become proficient in online shopping.	

Q3. ATTITUDE TOWARDS ONLINE SHOPPING

3a. I really enjoy online shopping.	[41, 42, 19]
3b. I find online shopping to be very useful.	
3c. I believe online shopping is worth it.	
3d. I think using online shopping is suitable for me.	
3e. I believe using online shopping is beneficial for me.	
3f. I have a positive opinion about online shopping.	

Q4. SUBJECTIVE NORMS

4a. My family thinks I should shop online.	[43]
4b. My friends think I should use online shopping.	
4c. The media advises shopping online.	

Q5. PERCEIVED BEHAVIOURAL CONTROL

5a. I can shop online anytime during the day.	[8, 43]
5b. I have all the necessary information to make online shopping decisions.	
5c. Whether or not I use online shopping is entirely up to me.	
5d. I can control my online shopping behavior.	Author's proposal

Q6. PERCEIVED RISKS

6a. I worry that the products I purchase may not be delivered.	[19, 44]
6b. I feel it's difficult to evaluate product quality when shopping online due to the lack of direct contact with the product.	
6c. I worry about difficulties in product returns when shopping online.	
6d. I worry about financial risks during the online shopping process.	

Q7. INTENTION TO SHOP ONLINE

7a. I intend to purchase some products through shopping applications/websites when I need them.	[12, 45]

7b. I think I will shop online during times when travel is difficult (pandemic, earthquake, flood, etc.)	
7c. Currently, I intend to purchase some essential items (food, drinks, etc.) online.	
7d. I have the intention to shop online, even though I rarely used it before.	Author's proposal
7e. I think I will shop online because I don't have to leave my house.	
7f. I think I will shop online because I can research products more thoroughly.	
7g. I think I will shop online because it offers discount policies.	

Appendix B: THE SURVEY QUESTIONNAIRE IN THE STUDY "FACTORS INFLUENCING THE ONLINE SHOPPING INTENTIONS OF GENZ IN NHA TRANG CITY"

This investigation aims to understand the factors influencing the online shopping intentions of Gen Z in Nha Trang city. The study is conducted by student Huynh Quoc Cuong from the Faculty of Economics at Nha Trang University with the guidance of MSc. Do Thuy Trinh.

Commitment: Your personal information will be kept confidential and used only for the purpose of scientific research.

If you have any questions regarding the content of the questionnaire, please contact us via email: cuong.hq.61qtkd@ntu.edu.vn or phone number 0983304736. We will respond to any necessary inquiries.

PART I. Personal Information

1. Gender?
- o Male
- o Female
- o Other

2. Are you currently living in Nha Trang?
- o Yes
- o No

3. What is your age group?
- o 16-18
- o 19-22
- o 23-28
- o Above 29

4. What is your current occupation?
- o Pupil
- o College/University student
- o Employed

5. What is your income?
- o Below 3 million VND

- 3 - 5 million VND
- 5 - 10 million VND
- Above 10 million VND

PART II. Questions about your online shopping habits

1. What is the form that you most often use to shop?
- Direct shopping (directly go to the store, shop, market, …)
- Online shopping (buy products through the internet)
2. Why do you choose online shopping?

   (Multiple answers possible)
- Find information easily
- Find information quickly
- Have many available information about products
- Save moving time
- Easy-to-follow shopping process
- The steps to make online shopping are not too complicated
- Easy-to-conduct online shopping techniques
3. What is the average amount you spend per online shopping session?
- Below 100,000 VND
- 100,000 - 300,000 VND
- Above 300,000 VND
4. In one week, how many times do you shop online on average?
- Less than 3 times
- 3 - 6 times
- 6 - 10 times
- Above 10 times
5. What types of products do you usually purchase online?

   (Multiple answers possible)
- Fashion (clothes, shoes,…)
- Groceries
- Health/Beauty
- Electronics
- Home appliances
- Baby products
- Toys/Hobbies
- Other:__________
6. What is your primary concern when purchasing items by online methods?

   (Multiple answers possible)
- Products are not delivered,
- Returning products is difficult,
- Poor products'quality,
- Having financial risks,

- Having information security risks.
- Other: ________

7. Which e-commerce platforms do you frequently use for online shopping?

   (Multiple answers possible)

- Shopee
- Tiktok
- Tiki
- Lazada
- Cho tot
- Sendo

8. How has your online shopping frequency changed between before and after covid-19?

- Less times
- No change
- More times

❖ ***If you choose the answer "Less times" for question 8, please proceed to question 8.1 and skip question 8.2.***

❖ ***If you choose the answer "More times" for question 8, please proceed to question 8.2 and skip question 8.1.***

❖ ***If you choose "No change" for question 8, please skip both question 8.1 and 8.2. Please continue with Part III.***

8.1. Why do you shop online less times after the COVID-19 pandemic?

(Multiple answers possible)

- Decreased income
- Reduced shopping needs
- Need to save for other expenses
- Concerns about risks
- Physical stores reopening
- Lack of interaction, communication

8.2. Why do you shop online more times after the COVID-19 pandemic?

(Multiple answers possible)

- Increased consuming demands
- More promotions (discounts, free shipping, etc.)
- Convenience and flexibility
- Diverse choices
- Safety and security
- Ability to compare prices and information
- Influenced by social media interaction (KOL, KOC, idols, etc.)

PART III. Questions about factors influencing your online shopping intentions

Please respond to the questions by selecting the corresponding checkbox according to the following scale:

1- Strongly disagree.

2- Disagree.

3- Neutral (Neither agree nor disagree).

4- Agree.

5- Strongly agree

Q1. PERCEIVED USEFULNESS

	1	2	3	4	5
1a. Online shopping applications/websites make it easier for me to search for product information.					
1b. I can find product information more quickly through online shopping applications/websites.					
1c. I can find more product information when shopping online.					
1d. Online shopping saves me more time compared to shopping directly at physical stores.					

Q2. PERCEIVED EASE TO USE

	1	2	3	4	5
2a. I find it quite easy to shop online through applications/websites.					
2b. I perceive the steps involved in online shopping to be uncomplicated.					
2c. I find it easy to become proficient in online shopping.					

Q3. ATTITUDE TOWARDS ONLINE SHOPPING

	1	2	3	4	5
3a. I really enjoy online shopping.					
3b. I find online shopping to be very useful.					
3c. I believe online shopping is worth it.					
3d. I think using online shopping is suitable for me.					
3e. I believe using online shopping is beneficial for me.					
3f. I have a positive opinion about online shopping.					

Q4. SUBJECTIVE NORMS

	1	2	3	4	5
4a. My family thinks I should shop online.					

4b. My friends think I should use online shopping.					
4c. The media advises shopping online.					

Q5. PERCEIVED BEHAVIOURAL CONTROL

	1	**2**	**3**	**4**	**5**
5a. I can shop online anytime during the day.					
5b. I have all the necessary information to make online shopping decisions.					
5c. Whether or not I use online shopping is entirely up to me.					
5d. I can control my online shopping behavior.					

Q6. PERCEIVED RISKS

	1	**2**	**3**	**4**	**5**
6a. I worry that the products I purchase may not be delivered.					
6b. I feel it's difficult to evaluate product quality when shopping online due to the lack of direct contact with the product.					
6c. I worry about difficulties in product returns when shopping online.					
6d. I worry about financial risks during the online shopping process.					

Q7. INTENTION TO SHOP ONLINE

	1	**2**	**3**	**4**	**5**
7a. I intend to purchase some products through shopping applications/websites when I need them.					
7b. I think I will shop online during times when travel is difficult (pandemic, earthquake, flood, etc.)					
7c. Currently, I intend to purchase some essential items (food, drinks, etc.) online.					
7d. I have the intention to shop online, even though I rarely used it before.					
7e. I think I will shop online because I don't have to leave my house.					
7f. I think I will shop online because I can research products more thoroughly.					
7g. I think I will shop online because it offers discount policies.					

Sincerely, thank you for your implementing the survey.

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The Effect of KOLs Characteristic on the Virality of Livestream Commerce

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ABSTRACT

After Covid 19 pandemic, Vietnam has witnessed rapid growth in its livestreaming e-commerce. However, as live-streaming studies are still in their infancy, many knowledge gaps exist. The existing literature focused on the perspective of consumers' engagement or purchase intention, yet, the study of how to make live streams go viral has been neglected. Many brands use KOLs to introduce products and interact with the customer in marketing communication strategy. This study proposes a research model that understands how the characteristics of the key opinion leader (i.e. expertise, attractiveness, trustworthiness, similarity, familiarity, likeability, performance, popularity) influence the virality in live streaming commerce. We conduct questionnaire surveys on 311 Vietnamese consumers who have prior experience with livestreaming comm erce. Using the partical least squares structural equation modeling (PLS-SEM), the findings indicate that all of KOL's dimensions positively influence the virality of livestream commerce (likes, shares, views). Specifically, the popularity of KOL has the greatest impact on viral behaviors. The theoretical and practical implications are to offer guidance for the selection of KOLs in livestream market.

Keywords: KOLs, livestream commerce, virality, KOLs' characteristics.

1. Introduction

After the impact of the COVID-19 epidemic situation, countless enterprises save themselves through livestream e-commerce. Livestream adverting is not only an expedient measure for enterprises to save themselves, but also an important driving force for the digital transformation and upgrading of enterprises. Despite the fact that many previous papers have studied about KOLs, they have mostly focused on studying the effects of KOLs in general, and different studies have produced conflicting results. Moreover, there were few studies that actually investigated the effect

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of KOLs on social media advertising campaigns through Livestreaming. They mostly focus on researching KOLs in Livestreaming such as: Hou et al. (2021), Xia (2022), Hong (2022), Chen (2021), and Rogers and Cartano (1962) studied about the influence of KOLs on attitudes and behaviours; The study of (Hong,2022) show the influence of online Celebrity livestreaming on consumer behavior and The results demonstrate that the Internet celebrity's interactions, promotion discount, and attractiveness have a significant impact on customers' purchase intention, with Social Presence and Emotions acting as a mediator in the internet celebrity live streaming e-commerce.

Hou et al., (2021) find that livestream selling should only be adopted when the influencer can attract a considerable number of viewers (i.e., the social influence is large) and this requirement diminishes as the influencer becomes more capable of identifying the product quality accurately (i.e., the endorsement reliability is high). From the literature review, KOLs are affecting customer' thoughts, emotions, and behavior. This aspect seems to be a notable factor, since Eckler et al. (2011) defend, in their work on viral advertising, that the intention to share and forward a message is greater if the ad has a positive emotional tone. Berger and Milkman (2012) found that content that evokes emotions is more viral than the rest. Also, Baraybar-Fernández et al. (2017) verified "that the resource to emotions in audiovisual advertising messages influences the memory, both of the brands and of the messages they transmit". Therefore, in this study, we fill the gaps by exploring the impacts of KOL characterisitcs on the virality of Livestream.

More interesting, influencer marketing, more familiarly known as KOL (Key Opinion Leader) marketing in Vietnam, has become a crucial element to successful marketing strategies in Vietnam's digital media landscape. In the Vietnamese advertising industry, brand execution varies; some brands use well-known people to sell their products, while others depend solely on lesser-known influencers, for example Ho Ngoc Ha with MOI, Hoa Minzy, Phương Trinh Jolie…Moreover, choosing the right KOLs can be seen as an effective key to a successful advertising campaign. In the context of Livestream commerce, several studies indicated that KOLs play a critical role in increasing product sales by offering a comprehensive assessment of the product or service based on their experience (He and Jin, 2022). However, previous studies focused on customers' behavior, such as customers' behavior or engagement, they have neglected consumers' viral behaviors (like, shares, views), which can drive to achieve awareness, engagement, and behavioral change goals among targeted populations (Alhabash et al., 2019). To date, scholars and industry researchers have found what drives the virality of Livestream. To fill this gap, this study aims to explore how KOL's characteristics affect virality. The study contributes to understanding what KOL's characteristics marketing generates to the virality of livestream commerce in Vietnam. Therefore, with the goal of clarifying and bringing new knowledge to the subject, this research contributes to various aspects of characteristics of KOLs that affect the viral impact of social media campaigns through Livestream commerce.

2. Literature review

2.1. Definitions of Constructs

Livestream

Livestream is simply understood as broadcasting live on social networking tools such as Facebook, Tiktok, Instagram, Youtube... Livestream Commerce (livestream selling) is an emerging trend in e-commerce that combines livestreaming, a feature that can be found on a majority of social media platforms, with the ability to purchase products directly from livestreaming. (Hou et al., 2021) The livestream format typically involves Livestream Selling with Online Influencers an influencer (aka, livestreamers or KOL - key opinion leader), who broadcasts live to demonstrate products and answer the questions from online audiences. People can watch livestreaming on their smart-phones anytime and anywhere, have a real-time interaction with the influencers, and make purchases immediately just by clicking the embedded link on the screen.

Video streaming refers to sending compressed content over the Internet that is displayed in real time. Thus, the content is a continuous stream of data, which is shown as it arrives. (Rouse 2017) Companies can generate streams in many ways: with smartphones, web cameras, and using video sharing services, and live videos can be broadcasted from a mobile device to multiple social media platforms (Hackl 2016). Live streaming platforms include Periscope, Facebook Live, YouTube, Meerkat, Blab, Twitch, YouNow, Livestream, Streaming Media, and Ustream.

Key opinion leader (KOL)

Key opinion leader (KOL) is a marketing idea, and it is commonly described as the people who have more knowledge and whose opinion is more likely to be recognized and trusted by a relevant group of people. Lots of evidence can be found to support that KOL could affect people's thoughts, attitudes, and behavior. Rogers believes opinion leaders are the most influential group in social systems because the opinion leaders exert an influence on the opinions of others (Raghupathi, et al, 2009).

Key opinion leaders (KOLs) are connected to consumers and share common interests. They can produce a significant impact on public opinions because of their trustworthiness and reputation. They are introduced by KATZ, (1957) as "the individuals who were likely to influence other persons in their immediate environment". In fact, there are many different terms that are used to replace KOLs: influential people (Marsteller, 2010; Coleman et al., 1957; Ding & Liu, 2009). Opinion leaders express the views of the public and often strongly influence other customers in general; they have recently become common in marketing (Miao et al, 2013; Zou & Peng, 2019) and bring many considerable achievements.

The Virality

Arroyo and Baños state, "it is so easy to achieve the desired viral effect" (2013, p. 617) When do we know a video is becoming viral? There has been a lot of research has been conducted in attempt to determine what are factors that determine the viral success of videos (Brown et al., 2010; McNeal, 2012; Dafonte, 2014; Coker, 2016; Picazo, 2016; Janicke, 2018; Sachak-Patwa et al., 2018). As a result, viral videos, which attract the attention of millions of people in a short period, have become an important part of the Social Web (Bauckhage et al., 2015).

Alhabash and McAlister (2015) described virality as including three major components: viral reach, affective evaluation, and message deliberation. There is a link between virality and online audience behaviors referred to as viral behavioral intentions (VBI). This correlation is reinforced by subsequent studies showing that the virality of digital ads is frequently linked to many VBIs inspired by a range of audience-based characteristics (Alhabash et al., 2015; Alhabash et al., 2013). The viral effect of social media occurs when peoples participate in promoting that product on social networks.

Previous studies often measure the virality of livestreaming based on the "likes", "shares", and "comments related" on social media (Botha and Reyneke, 2013), (Eckler and Bolls, 2011), (Quesenberry and Coolsen, 2019). In the line with these prior studies, the current study also adopted it.

2.2. Hypothesis Development

Expertise and Virality of livestream commerce

According to Hovland et al. (1953) Expertise refers to “the extent to which a communicator is perceived to be a source of valid assertions”. It is generally related to knowledge, experience, or skills that the endorser possesses in a particular area of interest. In the consumer's eyes, a celebrity's expertise is more important in explaining their buying intent and more convincingly than their attractiveness and trustworthiness. According to Brauneberger (1996), high expertise can lead to optimistic attitudes toward endorsers and advertisers. According to Brauneberger (1996), high expertise can lead to optimistic attitudes toward endorsers and advertisers. Furthermore, Ajzen's TPB Theory of Planned Conduct (1988) has demonstrated that viewers' attitudes and emotions may readily impact their behavior. As a result, consumer’s behaviors such as "View," "Like," and "Share" will be influenced by pleasant feelings which make the Livestream go viral. Therefore, the following hypothesis is proposed as

H1: KOLs’ expertise has an effect on the virality of livestream commerce.

Trusworthiness and Virality of livestream commerce

B Zafer Erdogan et al. (2001) pointed out that trustworthiness is associated with honesty, integrity, and believability of a KOL as perceived by the target audience. It also shows the degree of confidence in the communicator’s intent to communicate the assertions he considers most valid. According to (Friedman & Friedman, 1976), trustworthiness plays a determinant role in the process of persuasion. Ethnic status also affects KOL trustworthiness due to people trusting individuals who are similar to them (Desphande and Stayman, 1994). Discussing the impact of trustworthiness, Miller and Basehart (1969) ran an experiment and found that when the perceived communicator's trustworthiness level was high, change in attitude was more likely to occur. Moreover, KOL’s honesty and credibility have a significant effect on increasing interest and optimistic attitudes toward advertisement. Therefore, advertisers invest on the trustworthiness KOL characteristic, selecting persons who are widely regarded as honest, believable and dependable (Shimp, 2000). As a result, the viewer's attitude and conduct might be influenced by believability. KOLs' reliability is seen to be a significant element in viral behavior. Therefore, the following hypothesis is proposed as

H2: KOLs’ trustworthiness has an effect on the virality of livestream commerce.

Physical attractiveness and Virality of livestream commerce

The Source Attractiveness Model McGuire et al. (1985) supposes that "the effectiveness of a message depends on the source's attractiveness, familiarity, likability and similarity to the respondent” (Pham et al., 2017).

Attractiveness is perceived to rely on whether a particular person is: chic, beautiful, elegant, provocative and appealing, (Ohanian, 1990). It is for no fortuitous event that most notices utilize alluring individuals. It is noticeable that the crowd will, in general, shape positive generalizations about such individuals (B Zafer Erdogan et al., 2001). Research in 1991 by Ohanian stated "Beauty is a better recommendation than any letter of introduction". It is true that "physical appearance is a powerful "weapon" for celebrities to stand out from others, draw audiences' attention and affect their perception and intention" (NGUYEN, 2021). Because of the ability to catch the eyes of customers promptly, glamorous KOLs are likely to receive better appraisal, boost the interest in, the impression of the publicizing on crowds as well as change viewers' attitude toward the advertising (Pradhan et al., 2014; McGuire et al., 1985; Pornpitakpan, 2003). Also, earlier researches had demonstrated that truly alluring KOLs are more effective at changing belief (Chaiken, 1979; Debevec and Keman, 1984; Baker et al., 1977; Kahle & Homer, 1985; Maddux & Rogers, 1980) than their unappealing counterparts. The physical attractiveness of KOLs evokes positive sentiments and attitudes in viewers, which is considered as a significant factor in motivating people to "View," "Like," and "Share" (Ajzen's TPB Theory of Planned Conduct). The more viewers are drawn in by the KOLs' visuals, the more pleasant the feelings are evoked, and the more successful the livestreaming become. Therefore, the following hypothesis is proposed as

H3: KOLs' physical attractiveness has an effect on the virality of livestream commerce.

Likeability and Virality of livestream commerce

Besides familiarity, the source attractiveness model of McGuire et al. (1985) also mentioned likeability as a KOL's characteristic that can generally be described as "affection for the source as a result of the source's physical appearance and behaviors" (B. Zafer Erdogan, 1999). Likability is considered to significantly affect viewers' impression and preference for the advertising (O'Mahony & Meenaghan, 1997; Kahle et al., 1985). They presented an analysis of how likability affects customer behavior. The findings showed if a KOL is likable, it'll raise the interest, preference of audiences for advertising. Moreover, viewers' good emotions about advertising may stimulate Livestream spreading behavior, according to Ajzen TPB Theory of Planned Conduct (1988). Therefore, the following hypothesis is proposed as

H4: KOLs' likeability has an effect on the virality of livestream commerce.

Similarity and Virality of livestream commerce

Another important aspect of KOL characteristics is the similarity, defined as "a supposed resemblance between the source and the receiver of the message" (Belch and Belch, 2001). In other words, celebrity similarity also is understood as "an equality that is bound between the recipient and the source of the message." It is true that people having things in common with each other "get exposed to a greater interpersonal attraction, trust, and understanding rather than those who are seen dissimilar" (Al-Darraji et al., 2020; Martensen et al., 2018; Ruef et al., 2003). Scholars believe that customers' attitudes when watching music videos are expressed as positive or negative emotions. Consequently, similarity offers celebrities the opportunity to gain the public's attention and be remembered more effortlessly.

"Celebrity similarity" can produce positive impacts on the "customer's attitude toward the advertisement" (Pham et al., 2017). Hence we can assume that if there are similarities between viewers and KOLs in the video, it will positively impact viewers' emotions with the advertising and drive them to "View," "Like," and "Share" (Ajzen's TPB Theory of Planned Conduct). Therefore, the following hypothesis is proposed as

H5: KOLs' similarity has an effect on the virality of livestream commerce.

Familiarity and Virality of livestream commerce

In many cases, KOL is the factor that makes customers enjoy watching videos and sharing more strongly with their friends so that selecting KOLs who are suitable for advertising is a tough duty. Marketers have to consider a wide range of characteristics of KOLs. One of them is celebrity familiarity. The research in 1985 of McGuire defined source familiarity as "knowledge of source through exposure." How familiar one is to another depends on the knowledge of the source through exposure or past association (Martensen et al. 2018). This means that familiarity gives a level of comfort to the receiver towards the sender, as a consequence making the sender seem more persuasive (Martensen et al. 2018). Martensen et al. (2018) and Hoffner (2008) explain that when it comes to social media influencers the relationship between the follower and the influencer is considered as a one-sided relationship, however, the follower often feels like they know the influencer. (Al-Darraji et al, 2020)

Many previous studies pointed out that celebrity familiarity contributes significantly to the preference of viewers toward advertising. Commercials with the presence of familiar KOLs are likely to gain huge attention from the public, which results in raising their interest in the advertising (Pham et al., 2017) and making that viral (Ajzen TPB Theory, 1988). It often creates a positive emotion for viewers when they see the familiarity with the celebrity in the livestream that leads to spreading behavior.. Therefore, the following hypothesis is proposed as

H6: KOLs' familiarity has an effect on the virality of livestream commerce.

Popularity and Virality of livestream commerce

In social network literature, the level of popularity is also referred to as status or rank, which is one of the most well-recognized factors that researchers have scrutinized (Lanz et al., 2019). Concerning social media influential individuals, the number of followers was proved to be an effective measurement of the size of their network to identify opinion leadership (De Veirman, Cauberghe, & Hudders, 2017; Feng, 2016). The research in 2013 of Stever and Lawson indicated that utilizing well-known people who win great popularity makes it easier for marketers to find out the perception and preference for aesthetics of consumers.

In real practice, firms believe that KOLs - with higher popularity (who amasses a large number of video views) will drive up more viewer attention and actions than less popular ones. They not only can utilize their popularity to make the content viral but affect viewer's attitudes, emotions (positive or negative), and behavior of sharing as well. Therefore, the following hypothesis is proposed as

H7: KOLs' popularity has an effect on the virality of livestream commerce.

Celebrity performance and Virality of livestream commerce

Celebrity performance is known as "the level of achievement a celebrity attains at any given time in their chosen profession" (Amos et al., 2008). Celebrities regularly must perform at a significant level in their chosen professions to achieve celebrity status. Once achieving that status, they need to maintain or even improve that high-performance rank continuously. In general, a well-known person who succeeds in stable and incredible performance tends to be appreciated and trusted. Thus, if these individuals promote a type of content (music videos, posts, blogs, etc.), it will quickly attract people's attention and be perceived positively.

However, there is no assurance that any celebrity can consistently create successful, excellent works. Indeed, contingent upon their degree of execution, celebrity experience rises and falls in ubiquity throughout their whole vocation (Agrawal & Kamakura, 1995). Agrawal et al. (1995) found out that the decline in celebrity performance can result in the decline in celebrity endorser's effectiveness. KOL performance can have either a positive or negative impact on viewers emotions and behavior. Therefore, the following hypothesis is proposed as

H8: KOLs'performance has an effect on the virality of livestream commerce.

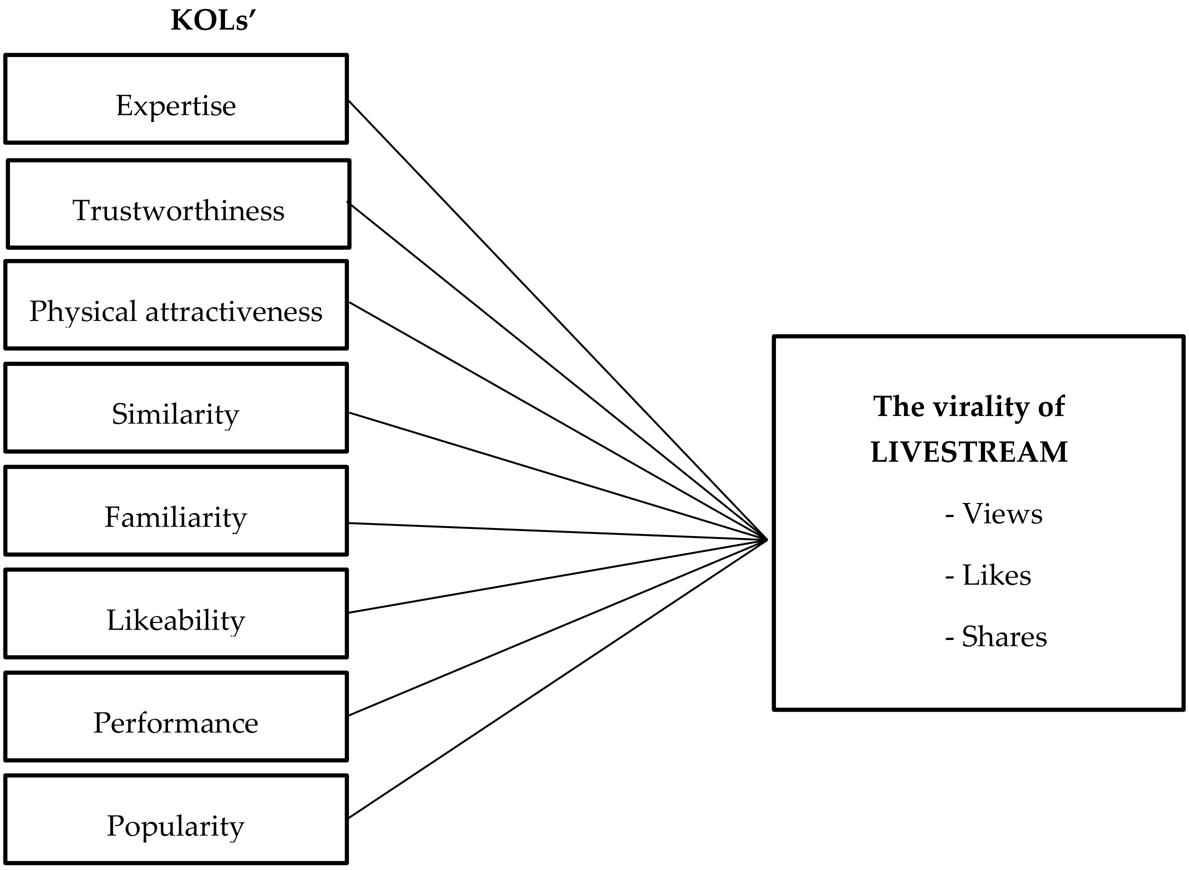

Figure 1. Research Model

3. Methodology

3.1. Mesurement Instruments

All items were adapted from previous literature (Table 1). From earlier papers about characteristics of KOLs as well as studies about the social media and Livestream, a research model to explain the relationship between them more specifically was built:

- Independent variables: expertise, trustworthiness, physical attractiveness, likaility, similarity, familiarity, popularity and performance.

- Dependent variable: The virality of livestream.

This study measures audience intentions by using a five-point likert scale, ranging from 1 to 5 (unlikely – likely, definitely would not – definitely would) to measure all of the items.

Table 1. Measurement items

Construct	Items	Source
Expertise (EX)	EX1-EX4	Roobina (1990), Braunsberger, 1996
Trustworthiness (TR)	TR1-TR4	Roobina (1990), Erdogan et al., 2001
Physical attractiveness (PA)	PA1-PA5	Roobina (1990) Pham et al., 2017
Likeability (LI)	LI1-LI4	Bekk and Spörrle (2010)
Familiarity (FA)	FA1-FA3	Al-Darraji et al. (2020)
Similarity (SI)	SI1-SI4	Bekk et al. (2010, McGuire, 1985
Popularity (PO)	PO1-PO3	Van (2017) and Nguyen (2021)
Performance (PE)	PE1-PE5	Pham et al. (2017). Amos et al, 2008

3.2. Sample and Data Collection

A non-probability sampling design with a convenient random sampling method was used. Online surveys were used and randomly distributed to Internet **users** in Vietnam from September to December 25, 2022. Respondents think of the KOLs in livestreaming e-commerce they had watched and give their opinions on that livestreaming. The questionnaire has three sections including respondent information, evaluation of KOL's characteristics and evaluation of the viral of Livestream with the appearance of KOL.

Online poll gathered 311 acceptable answers in total. Table below indicates demographic statistics of surveyed respondents. It is obvious that the figure of male respondents is 36.3%, slightly higher than that of their counterpart (63.7%). The table also shows that most of the respondents are in the age range of 18 to 25 years old.

Table 2. Demographic Statistics

Statistics		Number	Percent (%)
Gender	Male	113	36.3
	Female	198	63.7
	Total	**311**	**100%**
Age	< 18	88	28.3
	18-25	122	39.2
	26-35	59	19.0
	> 36	42	13.5
	Total	**311**	**100%**

4. Data Analysis and Results

4.1. Common Method Bias Test

Because our data are from a cross-sectional study, they are susceptible to common method bias (CMB). The methods for correcting systematic measurement errors were used to assess this threat (Podsakoff et al., 2003). Harman's one-factor test in SPSS software is used to examine the correcting systematic measurement errors (Podsakoff and Organ, 1986). The outcomes show that CMB is not an obstacle in our study as its maximum variation explained by one factor is lower than 50% (in particular 15.931%).

4.2. Mesurement Model

The Smart PLS- SEM were used to investigate our hypotheses. Table 2 presents the outer loading, the internal consistency reliability which was measured by composite reliability (CR) and Cronbach's alpha , which should be greater than 0.7 (Hair et al., 2014). As presented in Table 3, the outer loadings of most constructs are above 0.7. PE3, PE4 and TR3 are lower than 0.7, but not considerable, therefore, we remain all items. The values of composite reliability (CR) and Cronbach's alpha were above the minimum value of 0.70 suggested for reliability (Nunnally, 1978). Furthermore, Average Variance Extracted (AVE) was all above the 0.50 threshold, except from the AVE of Perfomance (PE) with at least 0.496 (nearly 0.5), thus we also keep all values.

Table 3. Results of variables' reliability and validity

Items	Outer loading	Cronbach's alpha (CA)	Composite Reliability (CR)	AVE
Expertise (EX)				
EX1	0.773			
EX2	0.803	0.798	0.868	0.622
EX3	0.761			
EX4	0.818			
Similarity (SI)				
SI1	0.710			
SI2	0.823	0.765	0.85	0.588
SI3	0.808			
SI4	0.719			
Popularity (PO)				
PO1	0.794	0.741	0.852	0.658
PO2	0.860			
PO3	0.777			
Physical attractiveness (PA)		0.81	0.867	0.567
PA1	0.826			

Items	Outer loading	Cronbach's alpha (CA)	Composite Reliability (CR)	AVE
PA2	0.760			
PA3	0.720			
PA4	0.724			
PA5	0.728			
Familiarity (FA)				
FA1	0.853	0.81	0.887	0.724
FA2	0.826			
FA3	0.874			
Performance (PE)				
PE1	0.713	0.75	0.83	0.496
PE2	0.760			
PE3	0.632			
PE4	0.692			
PE5	0.717			
Likeability (LI)				
LI1	0.737	0.755	0.842	0.572
LI2	0.776			
LI3	0.723			
LI4	0.786			
Trustworthiness (TR)				
TR1	0.825	0.784	0.843	0.581
TR2	0.718			
TR3	0.562			
TR4	0.900			
Virality (Viral)				
Viral1	0.938	0.92	0.944	0.809
Viral2	0.789			
Viral3	0.935			
Viral4	0.927			

As presented in Table 4, when compared to its correlation values with other variables, its square-rooted value in comparison with the Heterotrait-Monotrait correlations confirmed the validity of our data (Table 4).

Table 4. Discriminant validity

	EX	FA	LI	PE	PA	PO	SI	TR	Viral
Expertise (EX)	**0.789**								
Familiarity (FA)	0.094	**0.851**							
Likeability (LI)	0.101	0.136	**0.756**						
Performance (PE)	0.112	0.107	0.145	**0.726**					
Physical Attractiveness (PA)	0.145	0.150	0.291	0.084	**0.753**				
Popularity (PO)	0.088	0.109	0.123	0.261	0.151	**0.811**			
Similarity (SI)	0.128	0.226	0.178	0.189	0.209	0.199	**0.767**		
Trustworthiness (TR)	0.101	0.096	0.112	0.145	0.119	0.157	0.078	**0.762**	
Virality	0.215	0.215	0.291	0.383	0.369	0.668	0.422	0.144	**0.899**

Note: Square root of AVE in bold.

4.3. The structural model test

We performed SEM to investigate our hypotheses. Table 5 presents the SEM results. All SE=3.68, p<.05), likeability (B=.207, SE=.047, p<.05), performance (B=.202, SE=.047, p<.05), physical attractiveness (B=.28, SE=.037, p<.05), popularity (B=.530, SE=.037, p<.05), similarity (B=.141, SE=.036, p<.05), and trustworthiness (B=.092, SE=.036, p<.05),, This supports all hypotheses (H1, H2, H3, H4, H5. H6, H7, H8). Among the variables, popularity has the greatest impact on variality of livestream.

Table 5. SEM analysis

Path	**Estimate**	**S.E.**	**t-value**	***p*-value**
Expertise -> Virality	0.157	0.037	4.274	0.000
Familiarity -> Virality	0.133	0.036	3.680	0.000
Likeability -> Virality	0.207	0.036	5.772	0.000
Performance -> Virality	0.202	0.036	5.659	0.000
Physical Acttractiveness -> Virality	0.280	0.037	7.533	0.000
Popularity -> Virality	0.530	0.037	14.450	0.000
Similarity -> Virality	0.141	0.036	3.883	0.000
Trustworthiness -> Virality	0.092	0.038	2.391	0.017

5. Discussion and Conclusion

This study aims to explore how a group of characteristics of KOLs (i.e., expertise, trustworthiness, physical attractiveness, similarity, familiarity, likeability, performance, and popularity) influenced the virality of livestream. Therefore, this study contributes to the exploration of a model which indicates eight KOLs' characteristics that have a great impact on the effectiveness of Virality Livestreaming. From there, with the analysis of EFA, this study also suggests Eight factors that affect the viral impact of a the viral through Livestreaming with KOLs, namely EX, PA, SI, PO, LI, TR, PE, FA. The findings of this paper add to the literature on influencer marketing and with characteristics of influencers and have theoretical implications for researchers and manger who wish to examine viewer' behavior. It's familier finding with Al-Darraji et al, 2020, Bekk and Spörrle (2010), Roobina (1990) and other previor research.

The multivariable regression analysis indicates a positive relationship between the dependent variables and KOL's characteristics when indicating the elements of a KOL that could influence of the virality of Livestream. The final study model consists of 8 dimensions of KOLs that impact the virality of livestream. The research outcome shows that eight independent variables of KOLs results reveal some impact of these characteristics on the virality of livestream. The most crucial should consider is popularity. This can also be easily explained that when KOLs have high popularity, which means they have a large number of followers, the virality will increase. Depending on the number of followers, KOL has different levels of influence and strong effect on virality. Next, physical attractiveness is the second factor, followed by likeability, performance, expertise, similarity, familiarity, and the last ranked factor is trustworthiness.

Inviting KOLs to participate in product advertising campaigns and especially sales livestreams is the way many companies are applying, wishing their campaigns would viral and reach the right audience. purchase as quickly as possible. The contribution of this research is significant for brands and Sales in helping them identify which KOL traits have a substantial impact on the pervasive effects of their livestream. Normally, managers often think that the expertise or performance of the KOL is the important point, but in the sales livestream, it can be seen from the research results that a "National" KOL has a high popularity greatly affect the virality and thereby greatly affect the effectiveness of the livestream. The study is of great significance for small and medium-sized businesses that are oriented to use livestreams in particular and social media in promoting brands and attracting purchases. The research results are meaningful to administrators when it is suggested that the characteristics of KOLs have a strong impact on the effectiveness of livestream.

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The Factors Influencing Customers' Intention and Decision to Use E-Commerce in Online Shopping in Thanh Hoa Province

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ABSTRACT

The objective of the research is to identify the factors influencing customers' intention and decision to use e-commerce in online shopping, as well as to examine the impact of intention on the decision to use e-commerce by customers in Thanh Hoa province. Both qualitative and quantitative research methods are employed, with data collected and processed from 350 customers who have used e-commerce in Thanh Hoa province. The data is collected, processed, and analyzed using PLS-SEM software. The PLS-SEM structural model is established, and the research findings demonstrate its practical fit, showing that factors such as perceived ease of use, perceived convenience, perceived usefulness, social influence, and consumer habits all have an impact on the intention to use e-commerce, and the intention to use e-commerce also has a positive influence on the decision to use e-commerce. Based on the research findings, the authors propose several recommendations to enhance customers' intention and decision to use e-commerce in online shopping in Thanh Hoa province.

Keywords: Online shopping, Decision to use, E-commerce, intention to use

1. Introduction

Electronic commerce (also known as e-commerce) refers to the buying and selling of products or services through electronic systems such as the Internet and computer networks (Rosen, 2000). E-commerce is commonly viewed from the perspective of electronic business. It also involves the exchange of data, facilitating financial transactions and payment aspects of business transactions (Mesenbourg, 2000).

The development of e-commerce activities has provided a significant distribution channel for goods and services in the current Vietnamese economy. With the advantages of low market entry costs, convenience, and reduced search and transaction costs, it has attracted many sellers and

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buyers. However, with the rapid growth of e-commerce activities, particularly with the support of e-commerce on social media platforms, various legal issues of concern have emerged. Some of these issues include product and service quality, counterfeit goods, misleading or confusing content, complaint resolution, disputes, and consumer rights protection. Additionally, there are challenges related to detecting and addressing crimes such as fraud, embezzlement, and other illicit activities. Furthermore, regulations in areas such as taxation and customs need to be appropriately enforced to align with this new form of business. The primary legal regulations governing e-commerce activities and social media have been issued since 2013, through Decree 72/2013/ND-CP and Decree 52/2013/ND-CP on the management, provision, and use of internet services and information. Currently, these documents are undergoing review and adjustment. This presents a great opportunity to research and propose a suitable legal framework for e-commerce activities on social media platforms in Vietnam.

The common feature of social media platforms in their development of e-commerce at this time is providing product listings with detailed information (such as prices, product descriptions, and other relevant details). Additionally, social media platforms offer shopping utilities to users, including product search, information exchange, and direct transactions with sellers on the platform. However, social media platforms do not currently provide other services such as online ordering, payment, and shipping. Researching the factors that influence consumer perceptions and studying the changes in consumer behavior under the influence of e-commerce in this study will help the field of e-commerce understand the needs and preferences of customers and consumers. This understanding can lead to improvements in e-commerce operations and the delivery of quality services and value to consumers.

2. Literature review

The field of e-commerce and the factors influencing the intention to use e-commerce have attracted significant attention and research from scholars. The main theoretical frameworks used in these studies are the Theory of Planned Behavior (TPB), Theory of Reasoned Action (TRA), and Technology Acceptance Model (TAM). Among them, the TAM model is widely applied. Rahmiati (2017) applied the TAM model to investigate the attitudes of students towards using digital libraries. The results showed a significant and positive influence of perceived ease of use on the intention to use.

Technology Acceptance Model (TAM) is a theory on the usage of information technology system, which is considered very influential and is generally used to explain individual acceptance to information technology system usage. TAM assumes that one’s acceptance of information technology is affected by two main variables, i.e. Perceived Usefulness and Perceived Ease of Use. TAM is commonly used to predict the rate of user acceptance and usage based on perceived ease of use of information technology benefit. The implication of acceptance can be studied by examining the relation between information technology acceptance and its impact on individual user. The purpose of TAM is continuing better measurement in predicting and explaining usage. The research focus is on theoretical construct, perceive usefulness and perceived ease of use, which are theorized to the fundamental factors of system usage.

Pavlou, P. & Fygenson, M. (2006), combines TAM with trust and risk perception to understand the key drivers for attracting consumers to online transactions. Gong et al (2013) concluded that demographic factors such as age, income, education level, marital status and usefulness of Chinese consumers are important predictors. on online shopping intentions. In addition, product characteristics such as price and product type also influence online shopping intention. Cheung et al. (2005) reported that there are five main types of determinants that influence consumers' online behavior: demographics, attitudes, motivations, perceived risks, and trust.

Over the past 20 years, the field of online shopping behavior decision-making has become popular and has gained significant attention from researchers. Li and Zhang (2002) summarized 35 representative studies in the field of online shopping behavior decision-making worldwide, of which 29 studies used survey methods. Most of these studies utilized theories such as TRA, TPB, and TAM, and identified factors such as Cognitive behavioral control, Perceived convenience, Perceived Usefulness, Perceived ease of use, and Social influence.

The intention and behavior of consumers are directly related to products, services, brand, place of purchase, quantity purchased and other options. Research by Kotler & Keller (2009) identified a number of groups of factors that directly affect the intention and choice of consumers, including: cultural factor group, social factor group, individual factor group and psychological factors. Many recent studies suggest that trade Electronic devices drive purchase intention closer to the actual purchase decision and behavior. The authors Sumathy & Vipin (2017) concluded that some characteristics of e-commerce such as ease of use, usefulness or safety affect intention and willingness to use consumer e-commerce use. The study of photo elements effects, developments and changes in consumer perception under the influence of e-commerce in this study will help the e-commerce field to grasp needs and tastes of customers and consumers, there by proposing improvements to the operation. This action brings quality and value services to consumers.

3. Research hypotheses and model

The research is based on relevant concepts and theories related to consumer shopping behavior, as well as recent related studies, to construct a research model on the factors influencing customers' decision to use E-commerce in Thanh Hoa province. The related theories on shopping behavior include the Theory of Reasoned Action (Ajzen, 1991), Theory of Planned Behavior (TPB) by Ajzen (1975), Shopping Behavior Model by Armstrong (1998), and Consumer Behavior Model by Philip Kotler (2013). In addition, the author conducted in-depth interviews with 20 customers regarding the factors influencing their intention to use E-commerce in online shopping based on behavioral theories. Most participants agreed that these factors influenced their behavioral intentions. Based on this, the author identified six independent measurement scales that influence the mediating variable of Intention to use E-commerce in online shopping for customers, and the Decision to use E-commerce measurement scale as Figure 1.

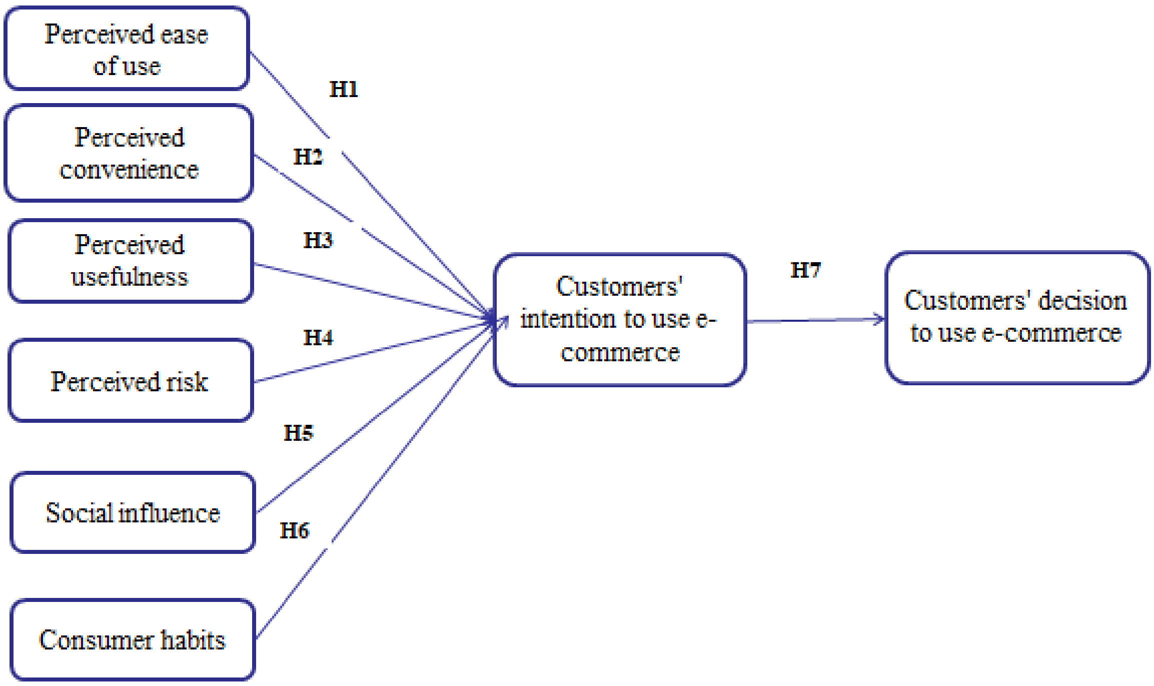

Figure 1. Proposed Research Model

Research hypotheses:

Perceived ease of use: Perceived ease of use relates to an individual's perception of how easy or difficult it is to use a product, service, or technology. In the context of e-commerce, it refers to a customer's perception of how effortless and straightforward it is to navigate and interact with an online platform or website. According to Adriyano & Rahmawati (2016); Adams et al (1992), perceived ease of use of e-commerce is defined as the belief that using that purchasing method can be understood and used Easy to use, save time to learn or use it. Studies confirm the influence of perceived ease of use as Rahmiati (2017), Oentario et al (2017). Therefore, the hypothesis put forward is:

H1 (+): Perceived ease of use has a positive impact on customers' intention to use e-commerce in online shopping.

Perceived convenience (PC): Perceived convenience refers to an individual's perception of how convenient and hassle-free it is to use a product, service, or technology. In the context of e-commerce, it relates to a customer's perception of the ease and convenience of shopping online compared to traditional brick-and-mortar stores. Studies confirm the influence of perceived ease of use as Rahmiati (2017), Oentario et al (2017). Therefore, the hypothesis put forward is:

H3 (+): Perceived convenience has a positive impact on customers' intention to use e-commerce in online shopping.

Perceived usefulness: The perception of the usefulness of e-commerce in life and work. The usefulness is demonstrated through fast online transactions, no waiting time (Davis, 1989). Perceived usefulness has a direct impact on customers' purchasing behavior, which can be a way of saving money compared to traditional shopping (Teck, 2002). Customers tend to choose to shop online because they feel superior to traditional shopping methods. Therefore, the hypothesis put forward is:

H3 (+): Perceived usefulness has a positive impact on customers' intention to use e-commerce in online shopping

Perceived risk: refers to consumers' awareness of uncertainty and potential negative consequences when engaging in a specific activity (Dowling & Staelin, 1994). Studies by Zorkadis & Karras (2000), Hsu & Bayarsaikhan (2012), Putro & Haryanto (2015) confirm that technology enables more convenient online business transactions but also entails various risks, such as product, financial, or information security risks. The level of cybersecurity strongly influences the safety of customer information, and the perceived risk in online shopping negatively affects customers' intentions. Therefore, the hypothesis is put forward as follows:

H4 (-): Perceived risk has a negative impact on customers' intention to use e-commerce in online shopping.

Consumer Habits: have been shown to be an important predictor of technology use (Kim & Malhotra, 2005; Kim et al, 2005). Research by Pham et al (2020) shows that teachers' habits have an impact on teachers' behavior of using information technology in lectures. However, according to Nguyen et al (2014), Habit has a negligible impact on behavioral intention to use technology. Raman and Don (2013) indicate that Habit has no positive effect on Behavioral Intent or Usage Behavior. To test this relationship, the author hypothesized:

H5(+): Consumer Habits has a positive impact on customers' intention to use e-commerce in online shopping

Social influence: Moe and Schweidel (2012) argue that online product reviews from others can influence the intentions of online shoppers. This influence leads to the final decision of the customer, which can either result in the adoption or rejection of the online service (Ha and Stoel, 2009; Chin et al., 2009; Zhao et al., 2018). Therefore, the hypothesis is put forward as follows:

H6 (+): Social influence has a positive impact on customers' intention to use e-commerce in online shopping

The relationship between the intention to use and the decision to use e-commerce of customers:

Venkatesh et al. (2003) acknowledged that behavioral intention is an important predictor of technology usage behavior. Wang (2016) concluded that behavioral intention directly influences the employees' usage behavior of e-learning systems. Similarly, in the exploratory study by Nguyen et al. (2014), it was demonstrated that behavioral intention has a positive impact on the usage behavior of cloud-based e-learning systems. Pham et al. (2020) highlighted that behavioral intention strongly influences the usage behavior of teachers. Based on these reports, the hypothesis is presented as follows:

H7 (+): There is a positive relationship between the Intent of use and the decision to use e-commerce of customers in online shopping.

4. Methodology

The research process combines qualitative research methods, preliminary quantitative research, and formal quantitative research. The qualitative research results are aimed at testing the validity of each measurement scale, screening observed variables, and providing preliminary affirmation of the 06 proposed factors in the research model as suitable and eligible for inclusion in the quantitative research. To ensure the reliability of the research results, a survey questionnaire was sent to 330 customers in Thanh Hoa province who have used E-commerce for online shopping.

Hari et al (1998) suggest that if the sample size is around 100 then the factor loading criterion should be greater than 0.5 (Bollen, 1989) recommended a ratio of 5:1 for sample size compared to the number of parameters in multivariate analysis. In the research model, the author has identified 37 observed variables, using a 5-point Likert scale. The initial calculated sample size is 37*5 = 185 samples. Therefore, the study selected a minimum sample size of N = 185, which was collected using a quasi-experimental method through a survey questionnaire. The number of live questionnaires was 150 and 200 from February to April 2022.

The survey questionnaire was sent out through the form of a Google form link, distributed on various E-commerce platforms such as Lazada, Tiki, and Shopee. The target population included both males and females of all ages and professions who had a need for online shopping. After conducting the survey, a total of 322 responses were received, out of which 298 valid responses were used for data analysis. Exploratory factor analysis was performed to extract factors, with variables having factor loadings greater than 0.4 being retained (Field, 2009). This study employed the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach to analyze the research findings. There are four reasons for using PLS-SEM. First, PLS-SEM is suitable for the research objective, which focuses on the predictive ability of the dependent variables (Henseler et al., 2009), as it maximizes the explained variance in the dependent variables when testing for standard collinearity or when there are no issues of multicollinearity (Hair et al., 2014). Second, PLS-SEM allows for the calculation of indices such as Cronbach's alpha, composite reliability (CR), average variance extracted (AVE), and factor loadings. Third, PLS-SEM can estimate both the measurement model and the structural model simultaneously. Fourth, PLS-SEM does not require data to be structured and considers all path coefficients simultaneously, helping to avoid errors in the model estimation process.

5. Research results

5.1. Descriptive statistics of the study sample

The survey sample was distributed according to demographic variables as follows: females accounted for 77.5%, males accounted for 22.5%; shoppers aged 18 to 30 accounted for 52.5%; those aged 31 to 40 accounted for 31.5%; those aged 41 to 50 accounted for 11.6%; those above 50 years old accounted for 4.4%; and individuals with an income below 5 million VND accounted for 15.4%; those with an income from 5 million to 10 million VND accounted for 31.5%; those with an income from above 10 million to 15 million VND accounted for 28.5%, and those with an income above 15 million VND accounted for 24.7%. All survey participants had experience in online shopping, with over 75% of them making online purchases 2-4 times per month. The survey data showed that over 80% of shoppers made purchases through websites and e-commerce platforms, while purchasing through forums and social media accounted for 21.51%. E-commerce platforms in Vietnam, such as Shopee, Lazada, Tiki, and Sendo, have recently expanded their offerings to include essential food and commodities to meet consumer needs.

5.2. Measurement Model Evaluation Results

5.2.1. Internal Consistency and Reliability

The reliability of the measurement scale is assessed using two main indicators: Cronbach's Alpha and composite reliability, the analysis results show that the Cronbach's Alpha of the factors has values from 0,852 to 0,914 (> 0,7), and the confidence the lowest reliability is 0,859 and the highest is 0,973 (>0,7) (Table 2), so the observed variables determine the reliability (Henseler & Sarstedt, 2013). Numerical system The quoted variance AVE of all factors is greater than 0,5, which explains at least > 50% of the variation of the observed data, so the scale reaches the convergent value. Check the discriminant value of the scale to see that the scale achieves a discriminant value with the square root of AVE greater than any corresponding numerical value in the column and row containing it. In Table 2, it can be observed that all constructs fulfilled the requirement for discriminant validity. Additionally, in accordance with the findings of Henseler et al. (2015), the cross-factor loading values and heterotrait-monotrait ratio (HTMT) criteria were also examined, yielding similar results. Consequently, the constructs can be considered to possess convergent validity, and the requirement for discriminant validity is adequately met.

Table 2. Reliability and convergence value evaluation results

	Cronbach's alpha	Composite reliability (rho_a)	AVE	CH	DE	INT	PC	PE	PR	PU	SI
CH	0,866	0,883	0,651	0,807							
DE	0,907	0,908	0,782	0,277	0,884						
INT	0,914	0,917	0,743	0,325	0,582	0,862					
PC	0,862	0,874	0,707	0,159	0,542	0,434	0,841				
PE	0,852	0,859	0,692	0,234	0,496	0,498	0,397	0,832			
PR	0,867	0,973	0,630	-0,103	-0,150	-0,103	-0,172	-0,010	0,794		
PU	0,913	0,937	0,700	0,215	0,507	0,471	0,282	0,293	-0,049	0,837	
SI	0,880	0,887	0,735	0,157	0,389	0,323	0,210	0,172	-0,003	0,265	0,857

Source: Survey results by the author team

5.2.2. Structural model verification

The evaluation of measurement results and structural models in PLS-SEM is built on a set of non-parametric evaluation criteria and uses techniques such as bootstrapping (Hair et al., 2019). In this research survey, each bootstrapping sample will contain 100 observations corresponding to the total number of observations of the original sample. In order to ensure the verification requirements of the linear structural model, the author deploys bootstrapping technique 5,000 times (Hair et al., 2016).

Check for multicollinearity violation (Colinearity Statistics)

The evaluation of measurement results and structural models in PLS-SEM is based on a set of criteria for assessing non-parametric evaluations and using techniques such as bootstrapping (Hair et al., 2019). In this research survey, each bootstrap sample will contain 100 observations, corresponding to the total observations in the original sample. To meet the validation requirements of the linear structural model, the author performs 5,000 bootstrapping iterations (Hair et al., 2016).

Collinearity Statistics Test

To assess collinearity issues in the structural model, the focus is on the Variance Inflation Factor (VIF) as the sole important result. The VIF for each indicator should be greater than 0.2 and less than 5. If it exceeds these limits, it is necessary to consider removing indicators, combining indicators into a single composite index, or creating higher-order structures to address collinearity issues (Hair et al., 2019). Table 3 shows that the VIF coefficients indicate no violation of the collinearity assumption for the linkages between the predictor factors because all coefficients fall within an acceptable range (VIF = 1.665 – 3.800 < 5). Therefore, the analysis can proceed.

Table 3. Results of the VIF index of the model's predictor

Observed variables	VIF	Observed variables	VIF	Observed variables	VIF
CH1	1,915	INT4	2,472	PR3	1,939
CH2	2,198	INT5	2,855	PR4	2,649
CH3	1,988	PC1	2,001	PR5	2,863
CH4	2,021	PC2	2,353	PU1	2,411
CH5	1,665	PC3	2,030	PU2	4,475
DE1	2,316	PC4	1,840	PU3	3,739
DE2	2,643	PE1	1,860	PU4	2,107
DE3	2,711	PE2	2,126	PU5	1,686
DE4	3,800	PE3	2,049	PU6	3,133
INT1	2,801	PE4	2,039	SI1	2,070
INT2	2,511	PR1	1,961	SI2	2,464
INT3	2,717	PR2	2,353	SI3	2,130
				SI4	2,355

Source: Survey results by the author team

Check the predictive level of the structural model

There are a number of key criteria to perform the structural model evaluation in PLS-SEM including: path coefficients, R^2 value, impact factor f^2, degree of goodness of fit. Q^2 newspaper (Hair & ctg., 2019). The most commonly used measure to evaluate structural models is the coefficient of determination (R^2 value). The higher the R^2 value, the more accurate the prediction is. According to Wetzels, Odekerken-Schroder, and Van Opepen (2009), based on the R^2 values to assess the quality of the PLS structural model, the analysis results show that the R^2 value of the DE model is 0.339; The R^2 value of the INT model is 0.445, indicating that the model is explained to a large and medium level (Table 5).

In addition, the Stone-Geisser Q^2 value (Geisser, 1974; Stone, 1974) is an indicator of the model's predicted fit. In structural modeling, Q^2 values greater than 0 for an endogenous latent variable reflect a certain degree of relevance predicted by the path model for this particular structure (Hair et al., 2019). Table 4 shows that Q^2 is all greater than the threshold of 0.35, indicating that the goodness of fit of the prediction is good (Chin, 2010; Hair et al., 2014).

Table 4. Presents the results for R^2 and Q^2

R^2	**Q^2**	
DE	0,339	0.400
INT	0,445	0.490

Source: Survey results by the author team

In addition to assessing the R^2 values in the endogenous structure, in the event that an exogenous conformation alters R^2, this ignored change can be used to assess whether the structure is ignored. have a significant effect on endogenous structure. This measurement is called the impact factor f^2. The f^2 values are 0.02 respectively; 0.15 and 0.35 reflect “small”, “medium” and “large” effects (Cohen, 2013). Table 5 results show:

Table 5. Presents the results for f^2

Correlations	**f^2**	**Level of effect**
CH -> INT	0,035	medium effect
INT -> DE	0,513	large effect
PC -> INT	0,048	medium effect
PE -> INT	0,117	medium effect
PR -> INT	0,003	small effect
PU -> INT	0,104	medium effect
SI -> INT	0,032	medium effect

Source: Survey results by the author team

Regarding the effect size (f^2), the impact of factors on customers' intention to use e-commerce had a small to medium effect (f^2 had a value from 0,003 to 0,117); and the relationship between the intention to use e-commerce and the decision to use e-commerce of customers had a large effect (f^2 = 0,513). Finally, we ran a relevance analysis that allowed us to evaluate the predictive accuracy of the model. The results of this analysis indicated that the model had predictive validity. According to Hair et al (2014) criteria, the effect of environmental sustainability and social sustainability was small.

5.3. Testing the research hypotheses in the model

Table 6. Results of structural equation model estimation

Hypothesis	Path	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Decision
H1	PE -> INT	0,288	0,289	0,053	5,413	0,000	Supported
H2	PC -> INT	0,185	0,184	0,055	3,402	0,001	Supported
H3	PU -> INT	0,263	0,261	0,051	5,115	0,000	Supported
H4	PR -> INT	-0,04	-0,05	0,055	0,735	0,462	Rejected
H5	SI -> INT	0,142	0,141	0,053	2,666	0,008	Supported
H6	CH -> INT	0,145	0,148	0,047	3,077	0,002	Supported
H7	INT -> DE	0,582	0,584	0,047	12,495	0,000	Supported

Source: Survey results by the author team

Path coefficients were used to evaluate the structural model with path coeficient and R squared values used, significance at 5% level (P values < 5%). Non-parametric Bootstrap analysis resampled sample size of 5,000. The results of data analysis show that, in the initial hypotheses, the PLS - SEM regression results in Table 6 have the results P < 0.05, confirming that the hypotheses H1, H2, H3, H5 , H6, H7 are all accepted, that is, the factors: perceived usefulness, ease of use, service quality, reference group all have a positive impact on the intention to use e-commerce in online shopping of cutomer. Hypothesis H4 was rejected, because there was P>0.05.

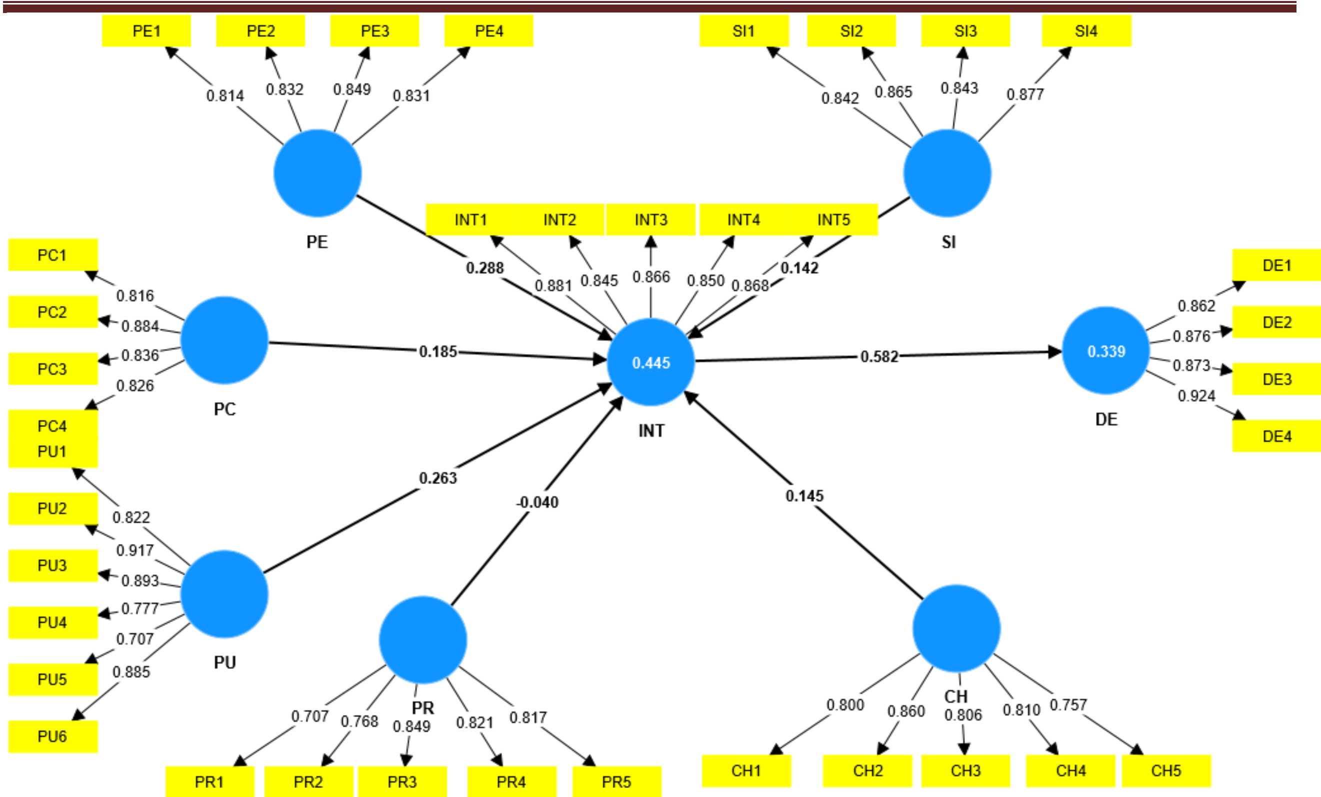

Figure 2. The results of the PLS-SEM

6. Discussion and implications

With the combined application of TPB and TAM theory, the study has shown the impact of 05 factors determining the use of e-commerce in online shopping of customers.

The research findings indicate the following: The PE variable has the strongest impact on the intention to use E-commerce in online shopping for customers (β coefficient = 0.288). This can be explained by the fact that through e-commerce, consumers can quickly access products at lower prices and save time. This result is also consistent with previous studies such as Liu Xiao (2004), Gong & colleagues (2013), Cuong Nguyen & Toan Do (2019). The PU and PC factors (β coefficients of 0.263 and 0.185, respectively) also have a significant impact on the intention to use E-commerce in online shopping for customers. Many studies have reported similar results, such as Limayem et al (2007), Zhao & colleagues (2018), and Cuong Nguyen & Toan Do (2019). The CH and SI factors also have a positive impact on the intention to use E-commerce in online shopping for customers in Thanh Hoa province (β coefficients of 0.145 and 0.142, respectively). Additionally, the research findings show a strong relationship between Intention and Usage Behavior (β coefficient = 0.582). These findings are consistent with previous studies in the same field. Overall, the results of the study support the importance of PE, PU, PC, CH, SI, and the relationship between Intention and Usage Behavior in influencing customers' intention to use E-commerce in online shopping.

This study identified theories and perspectives in the field of e-commerce in general, and the influences of various factors on customers' online shopping behavior in particular. The research findings indicate that five independent variables, namely perceived ease of use, perceived convenience, perceived usefulness, social influence, and consumer habits, all have an impact on the intention to use e-commerce. Furthermore, the intention to use e-commerce also positively influences the decision to use e-commerce. However, the factor of perceived risk does not have a positive impact on the intention and behavior of online shopping. These results differ slightly from previous studies conducted by Masoud (2013), Xiao (2004), and Forsythe et al. (2006), which suggested that perceived risk has a positive influence on attitude and online shopping behavior. This finding reflects the reality that consumers are aware of the potential risks involved in online shopping on e-commerce platforms. However, due to the current demand for online shopping and the reluctance to visit crowded places and limit direct contact during the Covid pandemic, most people have become accustomed to using online shopping as a means to fulfill their shopping needs.

Based on the research findings, the author proposes the following solutions:

Firstly, Vietnamese online retailers should focus on developing useful products and services to attract more customers. Customers tend to make purchases when the service provider offers home delivery or free shipping. Furthermore, to enhance the perceived usefulness for customers, business managers should provide comprehensive product information, quick order processing, price comparison tools, and product reviews. Therefore, the utilities of online shopping platforms will significantly encourage Vietnamese customers to use e-commerce. Secondly, e-commerce platforms in Vietnam should pay more attention to brand building as a strong brand can attract and persuade customers to shop online. Word-of-mouth marketing can also help businesses increase positive social influence on online customers. An e-commerce platform with well-known brands, excellent product quality, and attentive services will always be preferred by potential customers. Additionally, businesses can attract new customers by providing referral incentives or group discounts to the acquaintances of existing customers. Thus, social influence can encourage more people to shop online through e-commerce platforms in Vietnam. Thirdly, the website interface must be user-friendly and cater to the customer's experience. Websites that have user-friendly interfaces are always supported by customers and recommended to their friends and family. The interface of e-commerce websites should be user-friendly, with graphic designs that focus on website layout, mobile applications, and product placement. These design elements can help customers quickly decide to engage and make online purchases. Fourthly, for advertising purposes, e-commerce websites often require customers to provide personal information before making a purchase. Many customers are dissatisfied with this requirement, and businesses should minimize this step by linking accounts with third parties to improve customer perception of the ease of use of the e-commerce platform. Although the research has achieved its objectives, there are still certain limitations. Firstly, the study was conducted in Thanh Hoa province, which may limit the generalizability of the research findings. Secondly, the study did not investigate the differences of control factors such as age, occupation, income, etc., in the research model. Therefore, it is necessary to supplement and expand the variables of the model in future studies to provide a clearer explanation of the acceptance and usage intentions of e-commerce in online shopping by customers.*Source: Survey results by the author team*

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PART 7.
TOURISM & MARKETING

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Factors Influencing Customers' Decision to Choose Me Trang Coffee Products in Nha Trang City

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ABSTRACT

This study aims to examine the influential factors that impact customers' decisions in selecting Me Trang coffee products in the city of Nha Trang. The research identifies several influential factors that affect customers' product selection decisions, including the attributes of the product itself, pricing, brand image, the attitudes of service staff, location and facilities, as well as social influence. The study conducted a formal survey of 225 coffee consumers at various Me Trang coffee shops within the city of Nha Trang. To analyze the data, the study employed multiple linear regression analysis after ensuring the reliability of the factor scales and conducting exploratory factor analysis. The findings indicate that all the identified factors have a significant positive impact on customers' product selection decisions. Specifically, the attributes of the product, social influence, pricing, and brand image play crucial and statistically meaningful roles in influencing customers' decisions. The study proposes practical implications for Me Trang Coffee Joint Stock Company, suggesting effective marketing strategies and further product improvements to meet the growing demands of customers.

Keywords: product selection decisions, influential factors, Me Trang, coffee.

1. Introduction

With the implementation of open-door policies and economic integration into the global market, Vietnam's economy has been witnessing significant growth. As a result, the standard of living for its citizens has improved considerably, leading to a heightened demand for services, culinary experiences, and entertainment. Particularly in the realm of food service, the selection of high-quality, reputable, and hygienic coffee products has become a complex and vital concern for

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consumers. Vietnamese coffee, renowned for its abundant production and distinctive flavor profile, holds a significant position in the global market, representing the unique brand identity of Vietnam.

The coffee market in Vietnam can be classified into two primary categories: instant coffee and roasted ground coffee. Instant coffee dominates two-thirds of the market, while roasted ground coffee accounts for the remaining one-third. The segment of instant coffee can be further divided into two subcategories: pure instant coffee and mixed instant coffee. Notably, Vietnam has experienced the highest growth rate in coffee consumption among coffee-exporting nations worldwide, with consumption increasing from 0.43 kg per capita per year to 1.38 kg per capita per year during the 2005-2015 period. Projections indicate a further increase to 2.6 kg per capita per year by 2021 [1].

In recent years, there has been a significant proliferation of coffee chain stores in Nha Trang city, including prominent brands such as Highlands Coffee, Trung Nguyen, The Coffee House, Phuc Long, Starbucks, Hoang Tuan, Milano, leading to an intense market competition. This poses a substantial challenge for businesses in the industry, particularly for Me Trang Coffee Joint Stock Company, to meet the increasingly discerning demands of customers while ensuring product quality, diversification, and competitive pricing. When it comes to customer choices in the coffee market, several questions arise: which brand do they prefer, why do they make their choices, and what are their specific preferences? To address these inquiries, it is essential for businesses to first identify the factors that influence customers' decision-making when selecting Me Trang Coffee products in Nha Trang city. Subsequently, the impact of these factors on customers' decision-making regarding Me Trang Coffee products can be assessed.

2. Theory framework

2.1. Literature Review

Several domestic and international studies have explored the factors influencing customers' coffee product choices. Lautiainen (2015) proposed three influential factors in consumers' decisions to choose a coffee brand: (1) personal factors, (2) social factors, and (3) psychological factors [2]. Similarly, Kiling and Tumewu (2016) examined the impact of brand value and product quality on customer purchasing decisions and identified three key factors: (1) social factors, (2) personal factors, and (3) psychological factors [3].

Within the domestic context, Ha Minh Hieu’s study (2019) investigated the factors influencing consumers' choices of coffee shop chains in Ho Chi Minh City. The study identified six statistically significant factors: (1) reasonable prices, (2) location, (3) customer service, (4) brand, (5) ambience, and (6) product. However, the study found minimal differences in the level of impact among these factors [4]. Tran Thi Truc Linh (2016) examined the factors influencing consumers' choices of foreign coffee in Ho Chi Minh City and identified six factors in their decision-making process: (1) distribution density, (2) perception of price, (3) perceived financial control, (4) social norms, (5) attitudes toward choosing foreign coffee, and (6) perceived quality [5]. Nguyen Huu Nghia (2018) focused on the factors influencing the selection of garden coffee shops in Tan An City, Long An Province, and found four statistically significant factors: (1) café shop service, (2) café ambience, (3) barriers and risks, and (4) influencing factors [6].

Overall, these studies provide insights into the factors influencing customers' coffee product choices in specific locations, considering various influencing factors. However, no research has been conducted on the factors influencing customers' choices of Me Trang coffee products in Nha Trang City.

2.2. Theoretical basis

According to Kotler and Keller (2013), consumer behavior is the study of how individuals, groups, and organizations choose, purchase, use, and dispose of products, services, ideas, or experiences to meet their needs and desires [7]. The focus of consumer behavior is on understanding how consumers make decisions about utilizing their available resources, such as time, money, and effort, to consume related products. This encompasses the factors influencing what, why, when, where, how often, and how consumers buy and use products, as well as their evaluation of them after purchase and the subsequent impact on future buying decisions [7].

To explain individual behavior, Fishbein and Ajzen (1975) propose the Theory of Reasoned Action (TRA), which suggests that consumers' behaviors of choosing a brand is influenced by their attitudes toward the brand, as well as the subjective/ social norms regarding the brand consumption [8]. Therefore, attitudes toward product and social norms play significant roles in shaping brand consumption (e.g., choosing to buy the product). Theory of Planned Behavior (TPB; Ajzen, 1991) is an expansion of TRA with the addition of perceived behavioral control (PBC) to account for environmental constraints (e.g., inconvenience, unavailable) in predicting behaviors. This is because even when consumers have strong attitudes and perceive high social norm toward a brand, they might not choose to buy the brand due to environmental constraints [9].

Attitudes can be understood as the evaluation of a brand, indicating the degree of positive or negative evaluation of the brand by the individual. Attitudes toward a brand can be general, reflecting overall evaluation or can be specific, focusing on the evaluations of different aspects of the brand. This study, following previous research, considers attitudes toward a brand involve attitudes toward its products [3, 4, 5, 10], product price [11-14], brand image [4, 15, 16], and service staff attitudes [4, 17]. Social norm is defined as an individual's perception of the extent to which important others believe they should or should not engage in a behavior. For brand consumption, the significant referents are family, friends, colleagues [8]. PBC refers to an individual's perception of the ease or difficulty with which they can consume a brand. In the current study, it reflects the convenience and availability of location and facilities [18, 19]. Finally, the variable brand selection (Decision to choose Me Trang coffee) is a dependent variable, reflecting the buying decision behavior of customers.

2.3. Research Model

Drawing upon theoretical foundations and an extensive review of existing literature, the research hypotheses have been formulated, leading to the development of a comprehensive research model. The proposed model encompasses six key factors that influence customers' decision-making when selecting Mê Trang coffee products in Nha Trang (see Fig. 1). These factors include: (1) product, (2) price, (3) brand image, (4) service staff attitude, (5) location and facilities, and (6) social influence.

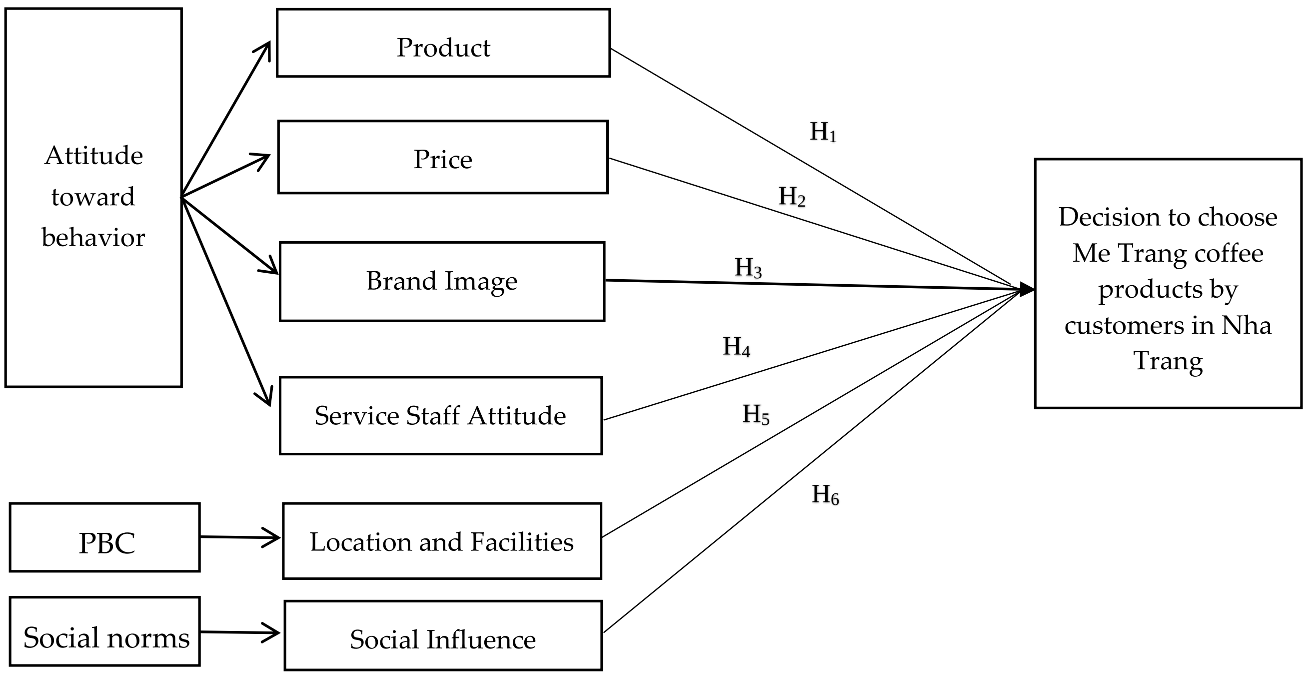

Fig. 1. Proposed Research Model

Source: Author's proposal

The research hypotheses can be outlined as follows:

Hypothesis H1: Product. The product factor pertains to the extent to which it meets and satisfies the needs of consumers. As the economy continues to advance, product quality becomes an increasingly significant aspect that consumers prioritize. This hypothesis is supported by various studies conducted by Kiling and Tumewu [3], Ha Minh Hieu [4], and Tran Thi Truc Linh [5]. The studies by Huang & Dang (2014) indicate that consumer purchasing behavior of coffee beverages is influenced by health benefits [10]. The research conducted by Liang & Wu (2012) reveals that coffee quality and beverage options are factors that customers care about when visiting coffee shops [20].

Hypothesis H2: Price. Price refers to the monetary value that customers are willing to allocate towards the purchase of a particular product. The price customers are willing to pay should align with the perceived benefits and quality they anticipate. Based on studies such as Kotler and Keller (2006), price is considered an important factor in stimulating consumer purchasing [11]. The research conducted by Batt & Chamhuri [12] demonstrated the impact of price as a significant and primary factor compared to others. Wang's (2000) study showed that when customers perceive a reasonable price, it stimulates their decision to make a purchase or continue purchasing when needed [13]. Additionally, Cole [14] provide further support for this hypothesis.

Hypothesis H3: Brand Image. Brand image encompasses the perceptions and associations customers hold regarding a brand. Customers formulate their brand perceptions based on their interactions and experiences. According Kotler in Armstrong (2001: 225) defines brand image as a set of consumer trust about the certain brand [15]. There are studies that support this hypothesis, such as the research conducted by Foi [16], Ha Minh Hieu [4], and Chi, Yeh, and Huang [21].

Hypothesis H4: Service Staff Attitude. The attitude exhibited by service staff is demonstrated through various elements such as friendliness, approachability, attire, service speed, problem-solving capabilities, product knowledge, and overall service attitude. Ha Minh Hieu [4], Hung [17] have determined that friendly staff and service speed significantly influence the choice of coffee shops.

Hypothesis H5: Location and Facilities. The location of a coffee shop represents a crucial factor that customers consider, including aspects such as accessibility, proximity to central areas, and convenience. Supporting evidence for this hypothesis can be found in research conducted by Clarkson et al. [18], Jaravara and Chitandon [19]. These studies emphasize that the placement of a store plays a crucial role in retail businesses and in attracting customers.

Hypothesis H6: Social Influence. Social influence refers to the impact exerted by influential individuals on customers' purchasing behavior. These influential individuals may include family members, friends, colleagues, and others [8]. Tran Thi Truc Linh [5] have demonstrated the statistically significant influence of social factors on customers' product choices.

3. Methods

The research comprises two main phases: Preliminary Study and Formal Study. The Preliminary Study involves conducting in-depth interviews with two experts and group discussions with five randomly selected customers who use Me Trang coffee products. This phase aims to refine the research model and develop appropriate measurement scales.

The Formal Study is conducted by conducting a preliminary survey with 20 customers to validate the measurement scales. Subsequently, detailed information is collected through a comprehensive questionnaire administered to 225 customers who use Me Trang coffee products at various Mê Trang coffee shops in Nha Trang. The questionnaire utilizes a Likert scale with five response levels. The measurement scales and observed variables are presented in Table 1. Convenience sampling method is employed for participant selection. The collected data is processed and analyzed using SPSS 22 software. The reliability of the measurement scales is assessed using Cronbach's Alpha coefficient, followed by exploratory factor analysis (EFA) to identify factors, estimate regression models, and conduct relevant tests.

Table 1. Definitions of the items/ variables

Factor	Symbol	Observed Variables	Source
Product (PRODUCT)	PRODUCT1	Me Trang coffee has good quality	[4]
	PRODUCT2	Me Trang coffee has a delicious and rich flavor	
	PRODUCT3	Me Trang coffee products are clean and ensure food safety	[5]
	PRODUCT4	Me Trang coffee has clear origin	
	PRODUCT5	Me Trang coffee offers diverse and abundant product options	
Price (PRICE)	PRICE1	Price is suitable for the quality of Me Trang coffee	[5]
	PRICE2	Price is suitable for personal income	

	PRICE3	Me Trang coffee is competitively priced compared to other coffee brands	Interview group discussion
	PRICE4	Using Mê Trang coffee helps save expenses for oneself	
	PRICE5	Me Trang coffee often has promotional programs and discounts	
Brand Image (BRAND IMAGE)	BRAND1	Me Trang is a reputable coffee brand	[4]
	BRAND2	Me Trang coffee brand is well-known by many people	
	BRAND3	Me Trang coffee is trusted for quality and service	
	BRAND4	Me Trang coffee products have a repution for coffee cleanliness	Proposed by the author
Attitude of Service Staff (STAFF)	STAFF1	Polite and friendly service staff	[4]
	STAFF2	Staff always provide helpful explanations	Proposed by the author
	STAFF3	Staff demonstrate professionalism in their work	
	STAFF4	Staff are always present to serve customers promptly	
	STAFF5	Staff have neat and tidy uniforms	[4]
Location and Facilities (LOCATION)	LOCATION1	Me Trang coffee shops have convenient locations for buying and using	[5]
	LOCATION2	Customers can easily find Me Trang coffee shops	
	LOCATION3	Me Trang coffee shops have a cool and clean environment	Proposed by the author
	LOCATION4	Me Trang coffee shops always have sufficient and comfortable seating	
	LOCATION5	Me Trang coffee shops have a variety of equipment to serve different coffees	
Social Influence (SOCIAL)	SOCIAL1	Family members support (or have no opinion) when using Me Trang coffee	[9]
	SOCIAL2	My friends recommend using Me Trang coffee	Proposed by the author
	SOCIAL3	My friends often use Me Trang coffee products	
	SOCIAL4	Colleagues recommend using Me Trang coffee	
	SOCIAL5	Colleagues often use Me Trang coffee	

Decision to choose Me Trang coffee products by customers (DECISION)	DECISION1	I choose to use Me Trang coffee because of its clean, good quality	Proposed by the author
	DECISION2	I choose to use Me Trang coffee because of its reputation and reliability	
	DECISION3	I choose to use Me Trang coffee because of its affordable price	
	DECISION4	I choose to use Me Trang coffee because it is easily accessible and convenient	
	DECISION5	I choose to use Me Trang coffee because my friends, family, and colleagues also use it	

4. Research Results and Discussion

The results of Cronbach's Alpha analysis indicate that all measurement scales have Cronbach Alpha coefficients ranging from 0.855 to 0.934 (>0.6), ensuring reliability (see Table 2). Table 3 and 4 presents the results of the exploratory factor analysis (EFA). The principal component extraction method with varimax rotation was employed, and factors with eigenvalues greater than or equal to 1 were retained. Variables with factor loadings greater than 0.4 in the EFA analysis were considered. The analysis showed that the independent factors had a Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.921 (>0.5), and Bartlett's test of sphericity was statistically significant (sig. = 0.000 < 0.05), meeting the requirements. Six independent factors were extracted with an eigenvalue of 1.084 (>1), explaining a total of 74.506% of the variance. The factor loadings (>0.5) of the components met the required criteria, indicating the meaningfulness of the EFA analysis. The dependent factor was extracted at an eigenvalue of 3.553. explaining a total of 71.052% of the variance and demonstrating significance, with the observed variables meeting the required criteria (Table 5).

Table 2. Results of Cronbach's Alpha coeffcient analysis and descriptive statistics

Scale	Number of Variables	Cronbach's alpha	Mean (N=225)	Standard Deviation
Independent Factors:				
Product	5	0.909	4.019	0.828
Price	5	0.900	3.627	0.983
Brand Image	4	0.855	4.051	0.732
Attitude of Service Staff	5	0.890	4.025	0.789
Location and Facilities	5	0.878	3.922	0.849
Social Influence	5	0.934	3.781	0.974
Dependent Factor:				
Decision to choose Me Trang coffee products by customers	5	0.896	3.963	0.819

Source: Own data and calculations

Table 3. Results of Exploratory Factor Analysis (EFA) for independent variables

KMO Coefficient= 0.921; Variance Extracted: 74.506%; Eigenvalue = 1.084

Observed Variable	The factors influencing customer's product choice decision					
	1	2	3	4	5	6
SOCIAL4	0.835					
SOCIAL3	0.828					
SOCIAL2	0.816					
SOCIAL5	0.807					
SOCIAL1	0.591					
STAFF2		0.799				
STAFF3		0.770				
STAFF4		0.763				
STAFF1		0.726				
STAFF5		0.585				
PRICE2			0.810			
PRICE1			0.793			
PRICE4			0.777			
PRICE3			0.729			
PRICE5			0.490			
PRODUCT2				0.805		
PRODUCT1				0.785		
PRODUCT4				0.679		
PRODUCT3				0.669		
PRODUCT5				0.578		
LOCATION2					0.775	
LOCATION1					0.746	
LOCATION3					0.685	
LOCATION4					0.629	
LOCATION5					0.579	
BRAND2						0.763
BRAND1						0.738
BRAND3						0.586
BRAND4						0.532

Source: Own data and calculations

Table 4. Results of Exploratory Factor Analysis (EFA) for dependent variables

KMO Coefficient = 0.809; Variance Extracted: 71.052%; Eigenvalue = 3.553	
	Component
	1
DECISION3	0.888
DECISION4	0.864
DECISION5	0.822
DECISION2	0.822
DECISION1	0.816

Source: Own data and calculations

Table 5 presents the results of the multiple regression model estimating the factors influencing the customer's product choice decision for Me Trang coffee brand in the city of Nha Trang. The results indicate that the regression model is statistically significant at the 1% level, with an explanatory power of approximately 61.5% ($R^2 = 0.615$). The diagnostic tests confirm that the model does not violate the assumptions of multiple regression, ensuring the reliability of the estimated results. The coefficients of the four variables: PRODUCT, PRICE, BRAND and SOCIAL are statistically significant at the 5% level or better. However, the variables STAFF and LOCATION do not have a statistically significant impact on the customer's product choice decision for Me Trang coffee in Nha Trang. Therefore, hypotheses H1, H2, H3, and H6 are accepted and supported, while hypotheses H4 and H5 are rejected.

Table 5. Results of regression model estimation

	Unstandardized Coefficient		Standardized Coefficient (β)	Statistic t	Significance (sig.)	VIF Coeffcient
	B	Standard error				
Constant	0.444	0.211		2.102	0.037	
PRODUCT	0.261	0.064	0.267	4.077	0.000	2.503
PRICE	0.131	0.051	0.157	2.564	0.011	2.184
BRAND	0.144	0.072	0.127	1.985	0.048	2.393
STAFF	0.095	0.062	0.090	1.535	0.126	2.017
LOCATION	0.090	0.060	0.091	1.462	0.145	2.252
SOCIAL	0.180	0.048	0.226	3.748	0.000	2.110

Dependent variable: DECISION; F = 60.715 (sig.=000); $R^2 = 0.626$; R^2 Adjusted = 0.615; DW = 2.254

Source: Own data and calculations

The regression analysis reveals that the product factor has the strongest impact on the customer's product choice decision for Me Trang coffee (β = 0.267). The descriptive statistics (Table 2) show that the average value of the product factor is relatively high (4.019). This indicates that customers are primarily concerned with the quality and origin of Me Trang coffee. These findings are consistent with the study conducted by Đoan Phuong Trang and Nguyen Thi Oanh (2018) [22], which found that customers prioritize product characteristics such as quality and origin over other factors. The second most influential factor is social influence (β = 0.226). The survey results indicate a moderate level of social influence (3.781). This suggests that customers' choices of Mê Trang coffee are influenced by their family, friends, colleagues, etc. The level of social influence in this study is lower than in the study by Tran Thi Truc Linh [5]. This difference may be due to Tran Thi Truc Linh's [5] research focusing on customers who use various foreign coffee brands, particularly those who work in companies or organizations and have close relationships with colleagues and friends. This would have a greater impact on the social influence factor compared to other customer groups.

Next, the price factor has a significant impact on the customer's product choice decision for Me Trang coffee (β = 0.157), and the survey results indicate a moderate level of importance for the price factor (3.627). The prices of Me Trang coffee products are known to vary and depend on the type of beverage, but there is also a significant price difference between company-owned stores and franchised stores. Additionally, the company has limited promotional programs, discounts, and customer appreciation initiatives. The significant impact of the price factor in this study is consistent with the research conducted by Nguyen Thi Kim Thuy [23]. Following the price factor is the brand image factor with a relatively low influence coefficient (β = 0.127), but the survey results indicate a high level of importance for the brand image factor (4.051). This study shows a lower value compared to the research by Tran Thi Thu Huong [24]. This difference may be due to Tran Thi Thu Huong [24] study focusing on a larger proportion of customers using seafood products compared to customers using beverages in this research sample.

Furthermore, the importance of the location and facilities factor is relatively small with β = 0.091 and no statistical significance. The analysis of observed variables shows that customers highly value Mê Trang coffee shops with spacious, clean environments and convenient locations. However, the observed variables of the location and facilities factor only contribute to customer satisfaction when visiting the shops and do not significantly impact the customer's product choice decision for Me Trang coffee. This can be explained by the fact that the majority of customers in this context prioritize product quality, price, and brand when making their purchasing decisions, rather than focusing heavily on location and facilities. Moreover, it could be due to habits and social influence, as many customers are already familiar with the taste of Me Trang coffee. Therefore, even if other coffee shops have better locations, they still choose the familiar Me Trang coffee shop due to their established preference and familiarity. The lack of statistically significant influence of the location and facilities factor in this study differs from the research conducted by Ha Minh Hieu [4] and Tran Thi Truc Linh [5].

Finally, the attitude of the service staff is found to have the least importance with β = 0.09 and no statistical significance. The analysis of observed variables shows that customers highly rate the attitude of the service staff, and the survey results range from 3.920 to 4.138. Although the attitude of the service staff is highly rated by customers, it does not significantly influence the customer's product choice decision for Me Trang coffee. This indicates that customers prioritize the overall experience rather than solely fixating on the attitude of the serving staff. They value a holistic combination of factors, including product quality, brand image, and pricing, over the specific demeanor of the staff. Moreover, the influence of social connections, such as family, friends, and colleagues, greatly impacts the decision-making process when selecting Me Trang coffee products. Consequently, customers may not place significant emphasis on the attitude of the staff, as their choices are driven by a multitude of other influential factors. It is just one of the factors that contribute to customer satisfaction when enjoying coffee at Me Trang coffee shops. The lack of statistically significant influence of the service staff's attitude in this study differs from the research conducted by Nguyen Thi Kim Thuy [23].

5. Conclusions and implications

The study has identified the influence of factors on customers' decision to choose Me Trang coffee products in Nha Trang. The research findings indicate that there are six influential factors: product, price, brand image, service staff attitude, location and facilities, and social influence. The results show that two factors, service staff attitude and location/facilities, do not have a significant impact on customers' decision to choose Me Trang coffee products in Nha Trang, while the remaining factors have statistically significant effects.

Based on the findings, several managerial implications can be drawn for Me Trang Coffee Joint Stock Company to improve the quality of their products and enhance competitiveness in the market. Firstly, managers need to recognize the significant role of the product factor in influencing customers' decision. Therefore, the company should focus on training and improving the management skills of their executives and enhancing the skills of their workers in the production process and packaging procedures. In addition to human resources, the company should pay attention to the quality and origin of input materials by sourcing from reputable suppliers who have food safety certifications and ensure thorough inspection and screening processes for the ingredients. Furthermore, market research and customer feedback should be taken into consideration to make appropriate changes and improvements that cater to consumer preferences. Secondly, the social influence factor also plays a significant role in customers' decision-making. Although it might be challenging for managers to directly impact this factor, they can concentrate on providing excellent customer service and investing in product quality. Through these efforts, satisfied customers are likely to recommend Me Trang coffee products to their friends and family. Additionally, the company can utilize word-of-mouth marketing strategies by creating appealing and emotionally engaging stories to attract customer attention. Thirdly, the company needs to address the pricing factor of their products. Managers should develop pricing policies based on market research and benchmarking to ensure healthy competition while maintaining the quality of the products. Finally, the company should establish a brand presence in the minds of consumers by offering unique flavors that reflect the essence of Me Trang coffee. To increase brand awareness, the company should invest in promotional activities and marketing through social media platforms and real-life events to bring Me Trang coffee closer to the customers.

The research has achieved its objective of identifying the factors influencing customers' decision to choose Me Trang coffee products in Nha Trang and determining their respective levels of influence. Future studies can further segment the customers' decision-making based on Likert-scale ratings and compare the decision-making process between different customer groups. Additionally, expanding the scope of the research to include customers using Me Trang coffee products in the entire Khanh Hoa province and other provinces would provide a more comprehensive understanding. Therefore, future research directions should focus on addressing these limitations.

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Assessing the Potential of Homestay Tourism Development in Khanh Hoa Province

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ABSTRACT

The objective of this study is to evaluate the potential of homestay tourism development in Khanh Hoa province. This study collects secondary data from tourism management agencies of Khanh Hoa province and collects primary data through surveying by questionnaires. The research results show that Khanh Hoa province has many famous monuments and tourist sites. Khanh Hoa is a coastal province located at the easternmost point of the country, in the South Central Coast region, with a coastline of over 200km and many famous beautiful bays such as Nha Trang, Van Phong, Cam Ranh,... The province has Nha Trang seaport and Van Phong seaport project which is a national general seaport located in Van Phong economic zone. Beside, Cam Ranh International Airport is the focal point connecting Khanh Hoa with the whole country and some other countries. People realize the potential to develop homestay tourism to increase their income and improve their quality of life. From those results, the authors proposed solutions and recommendations to attract more tourists to visit, discover local cultural values, promote the development of homestay tourism in Khanh Hoa to ensure stability and sustainability in the tourism industry.

Keywords: tourism development, homestay, historical monument, potentiality, Khanh Hoa.

1. Introduction

Khanh Hoa province is one of the lands with wonderful natural beauty in Vietnam. It has 385 km of coastline and a series of large and small islands such as Nha Trang Bay, Mun island, Tam island, Chong island, and beautiful beaches stretching from Ninh Hoa to Cam Ranh such as Dai beach, Truong beach, and Bai Long beach. North... This is a land with great potential for tourism. It has a diverse and rich ecosystem, with more than 7,000 species of marine life, including corals, fish, shrimp, crabs, snails, and seaweed.

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Besides the beautiful coastline, Khanh Hoa province is also known for its diverse topography of hills and mountains; Valley; limestone outcrops; along with many traditional villages, historical and cultural sites where visitors can experience handicraft activities such as weaving, pottery making, fabric dyeing and handicraft making. In addition, culinary art in Khanh Hoa is also very diverse and rich, from specialty dishes to popular dishes, all bearing the local culture. All these factors create potentials for developing homestay tourism in this locality, creating diversity and richness for Khanh Hoa tourism industry.

The type of homestay tourism has begun to develop in Khanh Hoa province from the past years when tourists have a need to learn and explore the life of the local population. Currently, homestay tourism has been expanded in some localities such as Cam Ranh, Ninh Hoa, Van Ninh, Khanh Vinh and most still in the center of Nha Trang city.

However, in the process of developing this type of tourism is facing many difficulties. Products and services are still sketchy, poor, and have not been developed commensurate with the potential of the locality. The resource conditions for the development of homestay tourism in Khanh Hoa are diverse and abundant, but they have not been properly exploited. Even this form of tourism is carried out spontaneously and without management. This situation not only causes limitations on the efficiency of tourism business, but also has a negative impact on the local tourism resources. On the other hand, information channels about homestay tourism in Khanh Hoa are still limited. Promotion activities for this type of tourism are still fragmented and have not been able to reach many tourists, so the effectiveness has not been commensurate with the development potential. These are very interesting issues of homestay tourism in Khanh Hoa province. The research results aim to assess the current status and potential of homestay tourism development associated with the provincial relics.

2. Literature review

2.1. Definition of homestay

For developing countries, tourism may represent “growth without prosperity”, when governments talk about the environment, but in reality, they prioritize economic development over investment in environmental protection [1]. Governments are now paying much attention to rural tourism in order to diversify the tourism industry and play an active role in managing economic activities in order to increase income for local communities in a sustainable way [2, 3].

Homestay is one of the community-based tourism products in which the host (operator) provides family-friendly bedroom facilities to guests or visitors to rent and generate additional income for the family [4, 5]. [6] argue that homestay refers to a rural area where tourists will live, eat and enjoy traditional cultural activities and performances of the community. Homestay is an attractive sustainable rural tourism product [7, 8] and this service is considered as a rural development strategy [9]. However, according to [10] homestay is a place away from home and an affordable place for students, professional lecturers and tourists who want to learn and experience living with other communities. Homestay offers tourists the feeling of home, interaction with host families, direct relationship with local people, experience of local culture and low-cost accommodation [11, 12].

Homestay tourism in Vietnam has developed relatively strongly, attracting a large number of international visitors to Vietnam. This has contributed to improving the living standards of the local people and brought high economic benefits to the country's tourism industry [13].

This type of tourism is suitable for those who like to experience life, like to immerse themselves in nature and want to challenge themselves in a different living environment than their usual place [14]. Homestay tourism helps people to love simple things, appreciate the life values that nature offers and learn to be grateful for the traditional cultural values of ethnic groups [15].

2.2. Features of homestay tourism

With homestay tourism, visitors will be able to live together with local people, participate in family activities through the guidance of the homestay owner, learn the unique features of the local culture [10]. This is the fastest approach to indigenous culture. From there, tourists and local people will be more conscious in preserving and developing the cultural values of the nation, and improving the value of life.

Homestay locations are often places with unspoiled natural resources that have not been exploited by humans. These are residential areas with diverse and rich cultural resources, basic characteristics of regional ethnic culture and cheaper costs compared to other types of tourism services [11].

Thanks to the above distinctive and outstanding features, homestay tourism is having a great attraction for many different types of tourists.

2.3. Experience in developing homestay tourism in other countries

2.3.1. Experience in developing homestay tourism in other countries

During the period 1998-1999, the Thai government promoted Thailand to become a tourist country under the "Great Thailand" campaign. Then in 2007 the government supported research and development on homestay with community-based tourism product management and initiated the Thai homestay certification standards for community projects and suppliers. service providers [16], to ensure that homestay users enjoy positive experiences during their stay in Thailand. Homestay tourism in Thailand allows tourists to rent a house to eat, sleep, and live like a Thai [17]. The homestay owner will enthusiastically introduce and guide each visitor on what specialties to eat or how to map the area. Homestay here is comfortably designed with restaurant - coffee, full bar and swimming pool, but the price is cheaper than many other hotels. Due to the influence of the typical culture of the region, in everything they do, they use their gentleness and gentleness to treat customers like family members. That is the most valuable thing that a homestay can bring to its customers when they arrive in Thailand.

Homestay owners in Australia are very hospitable, attentive, willing to share meals with tourists. To protect the interests of tourists, in Australia, there is a dedicated committee under the Australian Culture Department that is always ready to solve problems related to homestays that tourists stay through a hotline. Most homestays in Australia have affordable rental fees for tourists, especially backpackers or backpackers. Homestays in Australia have very good security and hygiene.

Darjeeling is a famous tourist destination of India, it is located in the Mahabharata range - also known as the Little Himalaya [18]. Homestays here are single rooms located in two-story mud and brick houses. Tourists can enjoy a unique menu of sandwiches, chapatis (flatbreads) and momos - spherical bread dough with minced goat or lamb meat. Food is served with tea. Tourists can join an interesting walking tour, learn to cook and hunt yaks. Sunnymead Homestay is famous for its breakfast served in bed. Not only that, tourists are also welcomed by the beautiful natural scenery and the royal garden in the British architectural style. This homestay is derived from the traditional houses restored by the government in 2022 with an architecture that blends ancient breath and modern lines. In particular, the delicious dishes here are evaluated as not inferior to the top-class restaurants, the ingredients are collected from the garden.

2.3.2. Experience in developing homestay tourism in other provinces of Vietnam

Cat Ba is an archipelago of Hai Phong city, where in addition to the beautiful beaches located in Lan Ha Bay, there is also Cat Ba National Park, so this is one of the quite famous and attractive tourist destinations. Many tourists come to Hai Phong. With the advantage of beautiful natural landscape, Cat Ba is very suitable for forms of eco-tourism and resort tourism. Tourists coming to Cat Ba in addition to experiencing sea activities can also experience picnics, mountain climbing, cave exploration, etc., especially those who like to explore culture, can come live. in the homestays in Cat Ba of local people to live together and learn about the lives of the people here. Tourists can take a walk to admire the sea, especially at dawn or dusk, to admire the masterpiece of nature that is not available everywhere.

In Ninh Binh, it is impossible not to mention homestay tourism in Van Long eco-tourism area. Coming here, visitors can ride a cart pulled by buffalo, visit the communal houses, caves and pagodas, such as Dinh and Phu Long pagoda - Chi Le pagoda - communal house and Mai Trung pagoda - Trung Hoa pagoda, Dich Long cave, Hoa Lu Cave, etc. Residents here actively plant trees and ornamental plants to create a green-clean-beautiful landscape for the village. Besides, every year, Gia Van Commune People's Committee also cooperates with Tourism Professional Department or Ninh Binh Provincial Tourism Promotion Center to open training courses for local people on tourism knowledge, culture and behavior. with visitors. At the same time, they also coordinate with tourism businesses in the area to promote and introduce local tourism, and create jobs for idle farmers.

Tourists coming to Da Lat city have a preference to find accommodation in homestays, creating a strong trend of homestay development in recent years. They choose a homestay not because they focus on service quality, but because of their preference for the difference in scenery, architecture, behavior of the owner, or a convenient location that they want to go to. In order for homestay tourism to develop sustainably, the management agency has built a common identity for homestay in Da Lat with the aim of making homestay workers more aware, forming a complete set of criteria and contributing to the development of homestay tourism. To build Da Lat as a safe destination in the service supply chain for tourists and to make Da Lat tourism more civilized and complete. Homestay Da Lat is also based on 3 groups of criteria that are the elements that make up the local cultural identity of the Da Lat people: "Peaceful - Elegant - Hospitable". That is the group of criteria about infrastructure, activities and images crystallized from local community culture. From another perspective, the criteria are divided into two categories, which are hard criteria:

directly identifiable and soft criteria: perceptual, permeation and deposition. The current situation of homestays in Da Lat is difficult to classify and standardize, but it is also interesting if the homestays agree to build this type in the style of Da Lat to create a unique and different charm.

2.4. Analysis of types of homestay tourism in Khanh Hoa province

Homestay tourism models in Khanh Hoa are divided into 3 main types: traditional homestay, farm homestay and yacht homestay.

Traditional homestay is built based on the architecture of local ethnic minorities such as Raglai, Cham or Vietnamese traditional house. These homestays are usually built in areas with beautiful scenery, quiet and close to tourist attractions. According to a statistical report of Khanh Hoa Provincial Department of Tourism, as of 2019, Khanh Hoa has a total of 147 traditional homestays, with 2,704 rooms, capable of receiving up to 9,825 tourists [19].

Farm homestay is a combination model between homestay and agriculture. These homestays are usually built in rural areas, which may include farms, vegetable gardens, raising animals, etc. Here, tourists can participate in farming, animal care, and practice activities. cooking with local dishes… As of 2019, Khanh Hoa has a total of 52 farm homestays, with 1,398 rooms, capable of hosting up to 4,701 tourists.

Yacht homestay is the latest model in homestay models in Khanh Hoa. These homestays are usually designed on yachts, fishing boats or boats, moving to tourist destinations on Nha Trang Bay and surrounding islands. The yacht homestay also offers activities such as scuba diving, fishing, visiting tourist attractions. As of 2019, Khanh Hoa has a total of 23 yacht homestays, with 42 rooms, capable of welcoming up to 126 tourists. In addition, according to a report from the Khanh Hoa Tourism - Trade Promotion Center, the occupancy rate of homestays in Khanh Hoa in 2019 reached over 50%, with the highest occupancy rate reaching 90% during the high tourist season. point. This shows the attractiveness of the homestay model to tourists and at the same time creates business opportunities for homestay owners.

Among homestays in Khanh Hoa, traditional homestays account for the largest proportion with more than 66% of the total number of homestays, farm homestays account for about 23% and yacht homestays account for about 11%. This shows that traditional homestay is still the most popular model in Khanh Hoa, but farm homestays and yacht homestays are getting more and more attention and development.

The development of homestays in Khanh Hoa will help strengthen local tourism resources, while also providing business opportunities for homestay owners and creating unique travel experiences for visitors.

3. Data and analysis methods

Secondary data collection method: Data is collected from reports, documents, research of Khanh Hoa Provincial People's Committee, news, online articles related to homestay models in Khanh Hoa.

Primary data collection method: The authors used the questionnaire method to collect data, including: 30 copies of the participation of the local community who are implementing homestay tourism activities; 60 copies for tourists to Khanh Hoa (40 for international tourists and 20 for domestic) to study the demand for homestay tourism in Khanh Hoa; and 20 copies for travel agencies in Khanh Hoa. The author used Convenience sampling method. Convenience sampling is a non-probability sampling method where units are selected for inclusion in the sample because they are the easiest for the researcher to access.

The questionnaires were conducted in Nha Trang from June 2022 to September 2022.. To collect the data, author must go to the region where homestay tourism is developping and approach the tourists, asking them whether they want to participate in the research. Author had to to ask until the sample size is reached. Methods of data analysis: The data is checked, processed and calculated by Excel software.

4. Results and discussion

4.1. Performance of homestay tourism in Khanh Hoa

In recent years, homestay tourism activities in Khanh Hoa province have changed very strongly, as shown in Table 1.

Table 1. The number of tourists coming to homestay in Khanh Hoa.

Targets	2020		2021		2022	
	Quantity (People)	Ratio (%)	Quantity (People)	Ratio (%)	Quantity (People)	Ratio (%)
Foreigner	240.129	48,58	53.204	17,05	89.450	15,31
Domestic passenger	154.101	51,42	258.936	82,95	494.854	84,69
Total	494.230	100	312.140	100	584.304	100

Source: Khanh Hoa Tourism - Trade Promotion Center, 2022

According to statistics of Khanh Hoa Tourism Promotion Center, the homestay tourism model is gradually being preferred by tourists instead of having to stay in hotels with relatively modest room sizes and low prices and expensive. However, in recent years, the number of foreign tourists coming to homestays in Khanh Hoa has decreased a lot compared to previous years, this is a consequence of the situation of the Covid-19 epidemic worldwide in recent years. But domestic tourists coming to Khanh Hoa in recent years have increased because the climate in here is mild every year. This is also a suitable feature for sustainable tourism development in the future.

Table 2. The area size of homestay in Khanh Hoa.

Targets	Unit	Traditional Homestay	Farm Homestay	Yachts Homestay
Floor area				
- Max Floor area	m^2	350	200	130
- Min Floor area	m^2	100	85	65
Landscape area				
- Max Landscape area	m2	500	800	240
- Min Landscape area	m2	250	320	98

Source: Khanh Hoa Tourism - Trade Promotion Center, 2022

Regarding the size of the homestay, the vast majority depends on the type of homestay service, the homestay owners will arrange different floor areas to serve visitors when they come to use the service in here. Currently, the type of farm homestay is arranged the most area because it has acreage of resort rooms for tourists and to arrange trees around the homestay, for example, arrangement of vegetable and fruit tree gardens. This has made visitors very satisfied.

4.2. The management of homestay tourism in Khanh Hoa

Table 3. Promotion channels of Homestay in Khanh Hoa.

Targets	Traditional Homestay		Farm Homestay		Yachts Homestay	
	Quantity (People)	**Ratio (%)**	**Quantity (People)**	**Ratio (%)**	**Quantity (People)**	**Ratio (%)**
Booking	55	37,41	13	25	5	21,74
Agoda	42	28,57	19	36,53	8	34,78
Facebook	28	19,05	10	19,23	4	17,40
Traveloka	15	10,20	7	13,46	5	21,74
Others	7	4,77	3	5,78	1	4,34
Total	**147**	**100**	**52**	**100**	**23**	**100**

Source: Khanh Hoa Tourism - Trade Promotion Center, 2022

With the development of information technology recently, the vast majority of homestays promote their establishment's brand image through popular travel websites such as Agoda.com, Booking.com, traveloka.com, Facebook,… Because these websites are reputable and popular websites about tourism today, the vast majority of tourists who are planning to travel know and easy to find the information.

Table 4. Services associated with homestay business in Khanh Hoa.

Targets	Traditional Homestay		Farm Homestay		Yachts Homestay	
	Quantity (People)	**Ratio (%)**	**Quantity (People)**	**Ratio (%)**	**Quantity (People)**	**Ratio (%)**
Coach/ car	37	25,17	13	25	3	13,04
Playground	26	17,68	8	15,38	4	17,39
Tour selling point	30	20,40	4	7,69	7	30,43
Specialty store	24	16,32	9	17,30	4	17,39
Craft village	12	8,16	4	7,71	3	13,04
Restaurant	18	12,27	14	26,92	2	8,71
Total	**147**	**100**	**52**	**100**	**23**	**100**

Source: Khanh Hoa Tourism - Trade Promotion Center, 2022

The vast majority of homestay establishments in Khanh Hoa now have links with other tourism businesses in the province. Specifically, selling points of tours, island tours, craft village tours, restaurants, local specialties, amusement parks, etc. Through this association, visitors have more options when traveling to Khanh Hoa.

Table 5. Plan to develop service quality of homestay establishments.

Targets	Traditional Homestay		Farm Homestay		Yachts Homestay	
	Quantity (People)	**Ratio (%)**	**Quantity (People)**	**Ratio (%)**	**Quantity (People)**	**Ratio (%)**
Repair and upgrade accommodation	35	23,80	18	34,61	6	26,08
Buy for more modern equipment	29	19,72	8	15,38	5	21,74
Renovating the landscape in the homestay area	45	30,61	15	28,84	7	30,43
Decorating the living room	25	17,03	5	9,61	3	13,04
Restoration of toilets	13	8,84	6	11,56	2	8,71
Total	**147**	**100**	**52**	**100**	**23**	**100**

Source: Khanh Hoa Tourism - Trade Promotion Center, 2022

In order to better serve tourists when they come to the homestay, recently, most of the homestay owners in Khanh Hoa also have plans to develop their homestay such as repair and upgrade accommodation, renovating the landscape in the homestay area to be better and better in serving and satisfying visitors when they come to stay at the homestay.

Focus on upgrading and repairing homestay facilities to serve tourists, most of the homestay owners renovate the surrounding environment and the homestay premises, especially guest room renovation and repair. This will make visitors always feel new and more modern every time they come to the homestay and this will be appreciated by visitors as a new innovation every time they come to stay here.

4.2.1. Assessment of the local government on the development of homestay tourism in Khanh Hoa

Coming to Khanh Hoa, tourists are very interested in the pristine, fresh and cool beaches, with fresh seafood, especially the hospitality and enthusiasm of people in here. From there, it can be seen that focusing on the development of local sea and island tourism is also an opportunity for the development of homestay.

Table 6. Assessment of the local government on homestay tourism development in Khanh Hoa.

Targets	Assessment of the local government
Types of tourism	Traveling to the sea, islands, mountains, countryside
The form of tourism promotion	The government organizes a lot forms of promotion and management of the activities of travel companies, backpacking tours and the participation of local people do tourism.
The activities of management and training	Guide and monitor, encourage people do tourism to earn income.
Benefits	The government hasn't profit, only manages and encourages people to develop tourism through tax collection

Source: Authors' survey results

Most of the local people are familiar with to daily life, such as fishing and lobster farming, so they do not have professional expertise about tourism.

Although the government encouraged to develop and taught the basics of tourism, but (1) due to that local people are familiar with daily life, they do not have professionalism in serving guests. That leads to poor customer service quality and customers are not satisfied. (2) The academic level of residents about tourism is not high, so they cannot show professional service and satisfy tourists as well as depend a lot on travel agencies through guides.

4.2.2. Evaluation of the local community on the development of homestay tourism in Khanh Hoa province

Through the actual survey of homestays in Khanh Hoa province, the authors have collected many opinions of people doing homestay tourism.

a) **Services provided to customers**

Table 7. Regular services provided to tourists.

Order	Regular services provided to tourists	Ratio (%)
1	Guide guests visit famous tourist attractions	12.38
2	Introducing delicious and attractive dishes	19.05
3	Introduction and instructions for guests to join	31.43
4	Prepare bedrooms, amenities and serve meals for guests	33.33
5	Directly organize guided tours for guests	1.90
6	Other	1.90

Source: Authors' survey results

Table 7 shows that the main services are preparing bedrooms, amenities and serving meals for guests, accounting for 33.33%; introduce, guide guests to join, accounting for 31.43%. Thereby, we see that homestay tourism is still a simple nature, guests stay and have meals with local residents. Besides, local people also introduce delicious and attractive dishes and guide visitors to join famous tourist attractions in the locality.

b) **Benefits from tourism**

Table 8. Benefits from tourism.

Order	*Benefits from tourism*	Ratio (%)
1	Raise income	33.33
2	Enhance the tourism knowledge	23.81
3	Enhance communication and tourist business skills	18.1
4	Raise the awareness of oneself and everyone in a family about protecting tourism resources	15.24
5	Create a friendly, healthy, civilized and harmonious living environment with the nature	9.52

Source: Authors' survey results

The research results in Table 8 show that local communities realize that homestay tourism brings many benefits. In which, the main benefit is income improvement, accounting for 33.33%. In addition, improving knowledge about the tourism, accounting for 23.81%, communication skills and business skills, accounting for 18.1%, raising the awareness of oneself and everyone in a family about protecting tourism resources, accounting for 15.24%.

A few find that homestay tourism helps them create a friendly living environment, healthy, civilized and hamornious with nature accounting for 9.52%.

In addition, over 80% of households taking part in homestay tourism agree that they will continue to develop this type of tourism, 15% of households will switch to motel activities and another 5% will be general service activities. From there, it shows that homestay tourism is still developing and bringing many benefits to the local community.

c) **Evaluations of tourists about the development of homestay tourism**

The results of the collection of opinions as well as the evaluation of tourists are presented in Table 9.

+ The reasons why tourists choose homestay tourism

Table 9. The reasons why tourists choose homestay tourism.

Order	*The reasons why tourists choose homestay tourism*	Ratio (%)
1	Homestay is a cheap type of tourism.	30.07
2	Homestay is a fairly new type of tourism.	21.24
3	Like exploring unspoiled and fresh nature as well as being immersed in life.	33.33
4	Like experiencing interesting life with the local people	10.46
5	Other	4.9

Source: Authors' survey results

The most main reason tourists choose homestay tourism is because they like exploring the wild, fresh nature as well as being immersed themselves in local life, and homestay tourism is a cheap type of tourism (33.33 % and 30.07 %). In addition, homestay tourism at local is also a fairly new tourism type, accounting for 21.24 %, they like to experience interesting life with local people, accounting for 10.46 %. These are the conditions that the local government as well as the local community should exploit and embellish local tourism resources as strengths to attract more and more tourists to use homestay tourism services. The homestay tourism development in local is not only contributing to increase income for each household, but also promoting the local economy, while conserving and preserving tourism resources in a natural way.

5. Conclusion and policy implications

Khanh Hoa province has strong potentials in sea tourism, but the development of homestay tourism is still quite new and has not been fully exploited yet. To develop homestay tourism sustainably, we need to implement a number of solutions to ensure service quality, make a difference and meet the needs of tourists.

5.1. The management of homestay tourism in Khanh Hoa

In order to ensure that homestay activities take place safely, legally and effectively, there needs to be a coordination between authorities, homestay enterprises and the local community. Homestay tourism management activities in Khanh Hoa include: Management of homestay operation permits; food safety, hygiene, clean water quality and regulations on safety level and fire prevention; supervising prices and ensuring the interests of tourists; Guiding and advising homestay enterprises on legal regulations, standards of safety, hygiene, quality and customers; rights to ensure homestay activities take place in accordance with regulations and law; Promoting and introducing homestay tourism effectively to attract tourists to Khanh Hoa; Creating good conditions for local communities to ptake part in the tourism, helping to increase income and improve quality of life.

5.2. Infrastructure solutions and tourism services

In Khanh Hoa, Homestay is often found in areas near the sea such as Van Phong bay or Binh Ba Island. Homestay gives tourists a unique experience that closes to the life of local people. To develop this type of tourism, infrastructure is an extremely important factor. The infrastructure needs to be upgraded to ensure the safety for tourists such as roads, electricity and water, telecommunications systems, and sanitation systems. In addition, tourist services also play an important role in the development of homestay tourism, such as transportation, tourist guides, entertainment activities, sports and local dishes. These services will help visitors have a complete and best experiences when enjoying their staying at homestay. Supporting policies and encouraging investment in tourism infrastructure and services should be introduced to attract both domestic and foreign investors.

In addition, educating and training programs for members of tourism and local staff should be promoted, in order to provide high-quality human resources with the necessary knowledge and skills to serve tourists. This will contribute to enhancing service quality and help create a complete and best experience for tourists when coming to Khanh Hoa.

5.3. Solutions for tourism promotion and promotion activities

To attract tourists, it is necessary to have diverse and attractive homestay products which meet the needs of different types of tourists. This can be done by cooperating with homestay owners and investors to build new homestay projects or upgrade existing homestays to improve the visitors experience. There is a need to strengthen skills training for homestay owners and service staff, ensuring that they are skilled enough to provide professional and dedicated services to tourists.

We can use online and offline communication channels to promote homestay tourism in Khanh Hoa. At the same time, it is necessary to create attractive promotions to attract customers and retain them with all homestay products. We can work with travel partners such as travel agencies, travel service providers and booking websites to promote high- quality homestay products to potential tourists.

We need to build cultural exchange programs, introduce traditional activities, creating interactive experiences with the local community to increase the specificity and attractiveness of homestay products. Enhance security and safety for tourists so that they feel secure when coming to Khanh Hoa.

5.4. Solutions for human resource in homestay tourism

To develop human resources in homestay tourism in Khanh Hoa, it is necessary to build solutions as follows:

Professional training for homestay staff, including cooking skills, beverage preparation, customer service and other skills related to homestay tourism. In addition, there should be periodic training courses to improve knowledge and skills for employees.

Creating comfortable and safe conditions to attract workers such as increasing wages, offering policies including attractive bonuses and benefits. At the same time, it is necessary to create comfortable and safe working conditions, have good insurance and health care regimes so that employees are motivated to work better.

Homestays can also increase recruitment and retention employees by creating better working conditions, offering attractive remuneration policies such as reasonable salary, insurance and other benefits. In particular, homestay establishments should focus on training and developing internal human resources, giving employees the opportunity to advance and develop their careers.

In addition, supporting from the government and local organizations is needed to invest in homestay human resource development. Training programs, financial support and facility construction as well as a service quality supervising and evaluating system are also key factors to help improve the quality of homestay human resources in Khanh Hoa province. Only with high-quality human resources, homestay tourism can develop sustainably.

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Applying the Theory of Planned Behavior to Study the Factors Influencing Student's Decision to Choose a University in Vietnam

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ABSTRACT

From a university perspective, understanding a student's reasons for choosing a university and courses is essential for developing an organizational position. From the learner's perspective, exploring the factors that motivate them to choose a university is essential to have counseling strategies to help them make more informed decisions. The article will provide a different approach about university choice behavior of students in Vietnam by applying the Theory of Planned Behavior (TPB) to assess the influence of factors including Individual Factors, Reference group, Perception of training program and support activities, Perception of learning costs, Perception of quality and reputation, Perception of areas' advantages to the students' Intention and Decision. The study uses primary data through a student survey of 8 public universities in the North Centre Region to test and confirm the relationships of the proposed factors with the support of data analysis tools (SPSS and AMOS 22). The factor of Intention is also illustrated to be an intermediate variable that has a great impact on the university decision of students. These have important implications in contributing to the consolidation of theory and practice in the current difficult university enrollment situation in Vietnam these days.

Keywords: Theory of Planned Behavior (TPB), student, decision, choose, university.

1. Introduction

The context and trends of the technological revolution are profoundly changing higher education [3]. University is no longer a place to provide knowledge exclusively. However, it now has to perform the task as an economic organization, which is to attract "customers" and build an image so that learners have a good perception of the brand and reputation of the university, thereby

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deciding to use the product - educational program of that university [13]. On the other hand, learners have many choices in terms of addresses and methods to equip themselves with knowledge as well as different career choices. Such contexts have influenced how higher education institutions operate today and are seen as driving forces for higher education marketing. Therefore, improving the quality of training services and marketing activities to take care of students as “customers” becomes more important than ever.

From a marketing point of view, identifying the right customers, understanding their needs in providing educational services, and finding ways to meet the ever-changing needs of customers in the competitive context is a top task of universities. Issues such as learner expectations and choices characterize consumer behavior in educational service delivery. Understanding a learner's reasons for choosing a university and courses is important for developing an organizational position [11]. Meanwhile, choosing a suitable university to apply to is an important decision for learners. It affects not only a student's future career direction but also their motivation to study, commitment and interaction with the university. In fact, the unreasonable choices have led students to difficulties maintaining their motivation to study, achieving high academic results, and getting desirable job. Exploring the factors that motivate students to choose university, therefore, is essential to have counseling strategies to help them make more informed decisions.

2. Literature Review

2.1. University Selection and Decision

Universities are influenced by many groups of related people known as stakeholders and can be classified into sixteen main groups [4]. However, the decision to choose a school is directly and most clearly influenced by the students, who will directly receive the products of educational services and have the most profound thoughts through the process of searching and selecting university. The concept of university selection is a complex, multi-stage process in which an individual develops aspirations to continue formal education after high school, followed by a decision to attend a particular university, college or advanced vocational training institution [5]. High school students can decide whether or not to attend college. However, students who choose to go to university will go through the process of selecting and deciding to choose a university because choosing a school and a career will significantly affect their future.

2.2. University decision – making process

Many researchers have tried to explain the university decision-making process of students. The explanations were related to different models of decision-making and consumption behavior [16][20]. Such interpretations help later researchers understand that a student's decision to attend a university is a long and complex process and is affected by various factors. A comparison of the steps in the decision-making process is summarized in Table 1.

Table 1: Step-by-step process in the university decision process

Authors	Students' decision-making process				
Chapman (1981)	Before searching	Search	Register	Choose	Admission
Hanson & Litten (1982)	Decide to go to university	Search	Submit application, matriculation, admission		
Jackson (1982)	Prefer		Exclude	Evaluate	
Hossler & Gallagher (1987)	Shaping		Searching		Choosing
Kotler & Fox (1985)	Initial decision and search	Collect information	Evaluate and eliminate options	Choose	

Source: Compiled from many authors

2.3. Theory of Planned Behavior - TPB

The theory of planned behavior predicts an individual's intention to engage in a behavior at a particular time and place. The TPB aims to explain all behaviors for which humans are capable of self-control. The key component of this model is behavioral intention, which is influenced by attitudes about the likelihood of that behavior and a subjective assessment of the risks and benefits of an expected outcome. Applied to the field of education, the TPB shows certain relevance.

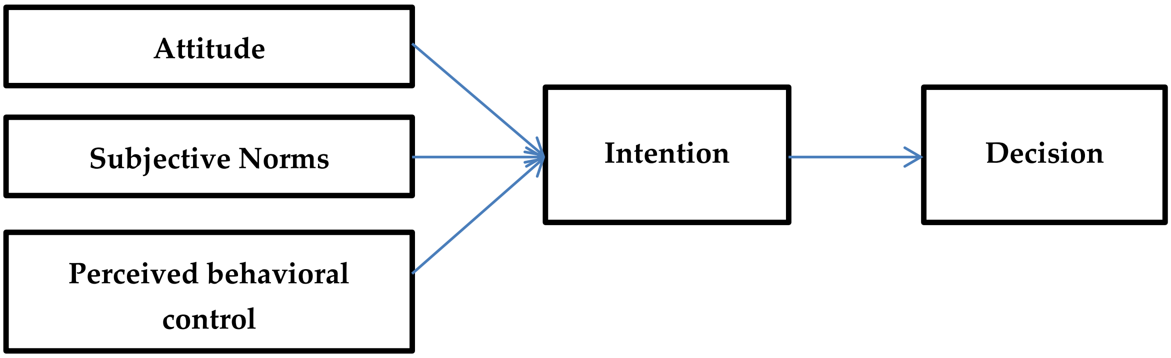

Figure 1: Theory of Planned Behavior [1]

+ Attitude: refers to the degree to which a person has favorable or unfavorable evaluations of the behavior of interest. Students choosing a university will evaluate the advantages and disadvantages of choosing one of the universities of interest to make a decision to choose to attend.

+ Subjective norms: refers to the belief that most people approve or disapprove of the student's behavior of choosing a university.

+ Perceived behavioral control: refers to the presence of factors that are perceived to facilitate or hinder the choosing behavior; perception of how easy or difficult it is to engage in college-choice behavior

+ Behavioral intention: refers to the motivational factors affecting students' college choice behavior in which the stronger the intention to perform the choosing behavior, the more likely the decision-making behavior is performed.

2.4. Applying the Theory of Planned Behavior to build the model of the factors influencing student's decision to choose a university in Vietnam

2.4.1. The basis for applying the Theory of Planned Behavior

Students' decision to choose a university is not spontaneous but is considered seriously for a long time before coming to a final decision; that is, forming "behavioral intention". Therefore, a tool to judge the "choosing decision" is needed through the study of the "intention" to choose a university. This study suggests that the application of the theory of planned behavior is completely appropriate.

(i) Attitude: the positive attitude towards the behavior of choosing a university is recognized through the practical perspective of Vietnamese people about the role of choosing and attending university in life and career. From those, learners are formed thinking and awareness about making efforts and have a study orientation plan in line with their future career plan since entering high school and focusing on specific academic fields for the university entrance exam. In addition, when learners have a positive outlook and attitude, they are well prepared, strive and believe in their ability to do it.

(ii) Subjective Norms: important people of the student (such as family, friends, acquaintances...) also expect and encourage them to perform the behavior. The result is that students will have a higher level of behavioral intention (more motivation) and are more likely to act (implement the intention). For people in Vietnam, the relationship and ideological influence between family members, surrounding people or society is quite high. Therefore, decisions in life and career are more influenced by subjective norms. Choosing a university is no exception.

(iii) Perceived behavioral control: is the student's perception of how easy or difficult it is to perform the choosing behavior. This perception depends on the resources, conditions, influencing factors and opportunities to perform the behavior (referred to as the perception of external influences on the behavior). It can be the candidate's perception of the advantages or disadvantages of a university or an environment. Universities can influence the perception of candidates through the availability/facilitation of university-specific factors such as cost of study, reputation, variety of training programs, academic supports, etc.

(iv) Intention: based on the enrollment regulations of Vietnam's universities and colleges in recent years, the process of choosing a university of students is formed in a long period from before the national graduation exam until after the exam results are announced, registration, adjustment of aspirations, announcement of admission scores, and finally admission confirmation. This multi-step process explains that a student will go through a stage of carefully forming a school choice through consideration, so called "Intention". From a marketing point of view, it can be affirmed that customer choice is part of their behavioral intention and to understand the choice of learners as a customer of the university, it can be considered based on behavioral intentions. The factor of intention to choose a school then formed, contributing to building a theoretical basis suitable to the current actual situation of university enrollment in Vietnam.

2.4.2. Building research model

The TPB behavioral research model will clarify the decision-making process based on learners' perceptions through adjusting the name to be suitable for the field of higher education: “Individual factors”, “Reference group”, group of factors “Perception of a university”, “Intention” and “Decision” to explain the behavior of choosing a university. However, the original TPB model, when selected to apply in each field and research space, will have its own characteristics. This leads to the need to concretize through the addition and expansion of new factors. Based on the research overview and the characteristics of higher education services, the characteristics of education and students in Vietnam, the research expanded the group of factors “Perception of a university” with independent factors including: perception of training program and support activities, Perception of learning costs, Perception of quality and reputation, Perception of areas’ advantages.

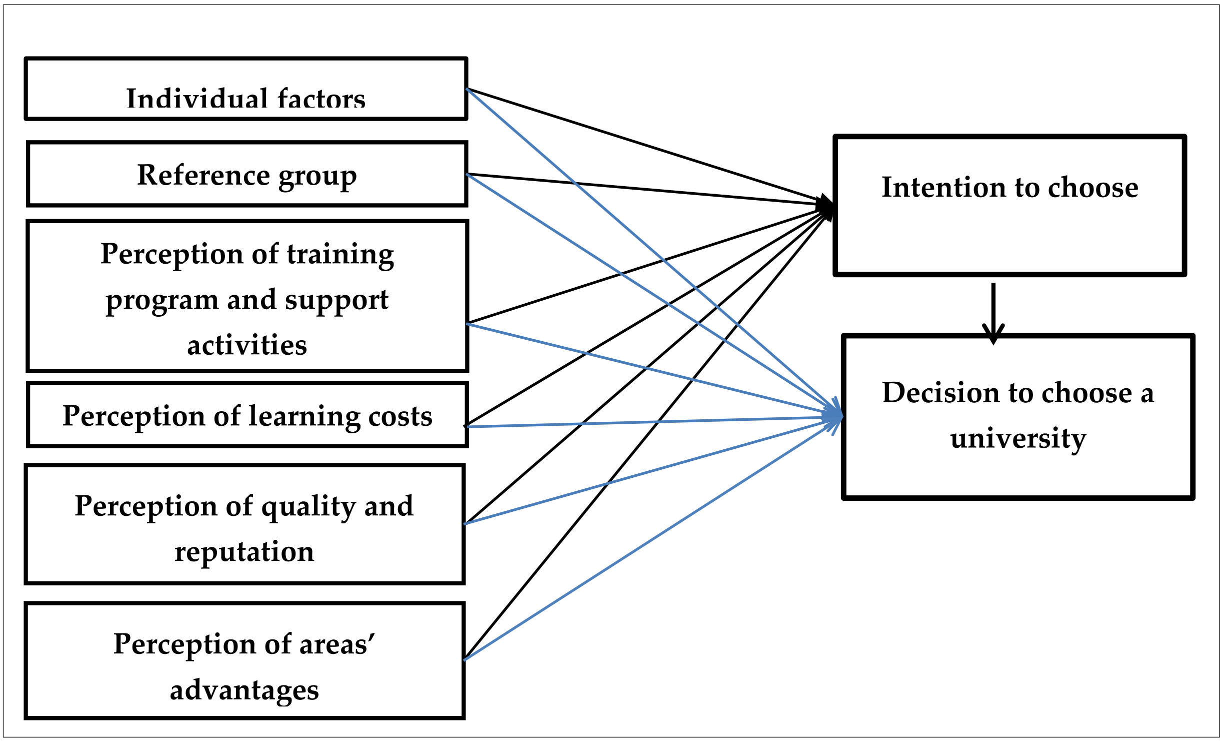

Figure 2: Research Model

(i) Training Program and support activities: are the core products and values in providing higher education services for any university in order to meet the human resource requirements of the labor market as well as attract and meet the needs of the learners. Therefore, training program and support activities are the most important factor, throughout, contributing to affirming training quality and reputation. Besides, training and support activities are factors confirmed in many studies that can focus on attracting learners and determine the development of universities [19].

(ii) Learning costs: is also considered as "price" in higher education services, which has a direct impact on the interests of the universities as well as the learners. This is the core reason why the state, businesses, training institutions, families and learners, etc., consider in the process of investing in higher education. It is a fact that people's ability to pay is very limited, especially according to the overview of the low living standards and average income of people in different local regions. In addition, the basic theories of economics, sociology and most of the research authors have also confirmed the influence of the cost factor on students' access to higher education [15]. Therefore, this study continues to confirm that the perception of learning costs has an influence on the intention to choose a university of students in Vietnam.

(iii) Quality and Reputation: includes students' opinions, views and impressions of the university they want [14]. The quality, reputation, prestige and image of the university are expressed through words, past experiences and marketing activities of the university [6]. However, reputation cannot be outside of quality. Unlike many other types of products and services, the nature and goal of higher education is to train people, provide knowledge and professional skills for the future workforce; so when a university accomplishes this goal, it will contribute to improving the prestige and academic image of stakeholders and vice versa. Awareness of the importance of maintaining academic values and preserving the principles of quality education will build reputation and communicate that reputation to the university [8].

(iv) Areas' Advantages: Each geographical area where the university is located will have unique characteristics and conditions in terms of geographical location, management and policy mechanisms, training and linkages with different stakeholders. From this point of view, each region will have its own characteristics. These are stable psychological characteristics that have been formed for a long time and have the ability to influence people's behavior. Since then, higher education will also be influenced by the specific characteristics of that locality. The local-specific factors as well as the favorable conditions derived from the local factors are therefore assumed to directly affect students' views and perceptions about university choice [9]. The element "Perception of areas' advantages" was formed.

The study has interpreted and applied an adjusted theoretical model of planned behavior in accordance with practical conditions in the field of higher education in Vietnam. The research model, besides testing the impact of independent factors on behavioral intentions, also tests the impact on behavioral decisions because, in fact, according to the university admission regulations of the Ministry of Education and Training, the intention is not completely consistent with the decision to choose a university because students can change and adjust their aspirations during the application process. The TPB model is considered as a relatively suitable basis to add the factor "Intention to choose a university" into the research model.

3. Research Method

Research locale: an experimental survey was conducted at 08 public universities in the North Central region of Vietnam, including: (1) Hong Duc University, (2) University of Culture, Sports and Tourism; (3) Vinh University, (4) Vinh University of Technical Education, (5) Nghe An University of Economics; (6) Ha Tinh University; (7) Quang Binh University; (8) Hue University. The questionnaire was conducted with a scale of 700 full-time university students, who have gone through the stage of choosing a university since the appearance of a need, information search, selection, intention and decision. As Gallifa (2009) pointed out, admitted students have a more comprehensive knowledge of the university than high school students.

Sample size: To determine the sample size, the study used Slovin's (1984) formula to determine sample size. With a total of 76,962 students, the minimum sample size is 397. Using this minimum sample size and excluding the ineligible questionnaires, the study decided to select 700 questionnaires and distribute according to the student size ratio of each universities. The number of valid votes is 688 respondents. After collected, data is coded and processed with the support of SPSS and AMOS 22 software.

Sampling method: The study sample was selected based on the random sampling method in both direct and online forms. The questionnaire was designed based on a 5-Likert scale ranging from strongly disagree to strongly agree.

Table 2: Scale development source

No	Code	Factor	Number of observations	References
1	SV	Individual factors	4	Tran et al. (2018), Le and Khuc (2020)
2	TK	Reference group	3	Le (2014), Nguyen et.al (2011)
3	DT	Training Program and support activities	5	Tran and Cao (2009); Tran et al. (2018)
4	CP	Costs	4	Tran et al. (2018); Tran and Cao (2009)
5	CL	Quality and Reputation	4	Kim & Gasman, (2011), Le (2015)
6	DP	Areas' Advantages	4	Le (2015), Shamsudin (2018), authors
7	YD	Intention	4	Qualitative research results, authors
8	QD	Decision	4	Tran and Cao (2009), Le (2014); Tran et al. (2018)

Scale development: The basic principle of building the scale is based on related theories and research. When the scales do not fully represent the measurement of the concept, this study continues to consider and put some observed variables developed by the qualitative research into the scale to measure concepts in the model (Table 2).

4. Results and Discussion

4.1. Findings

For 325 questionnaires collected directly, the number of valid questionnaires collected was 288; for 400 answers recorded online and valid by the system, the total number of valid votes to be included in the analysis is 688 votes, ensuring the minimum sample size. The number of questionnaires collected for analysis by university is as follows: (1) Hong Duc University: 77 votes; (2) University of Culture, Sports and Tourism: 68 votes; (3) Vinh University: 142 votes; (4) Vinh University of Technical Education: 67 votes; (5) Nghe An University of Economics: 64 votes; (6) Ha Tinh University: 65 votes; Quang Binh University: 64 votes; Hue University: 141 votes. The number of votes collected by each university for analysis is close to the expected number of votes initially.

Table 3: Characteristics of respondents

Characteristics of respondents		Frequency	Percent	Characteristics of respondents		Frequency	Percent
Gender	Female	378	54,94%	Living area	North Central Region	616	89,53%
	Male	310	45,06%		Different	72	10,47%
Major	Economics	232	33,72%	Admission method	Direct entry	4	0,58%
	Social Sciences, Humanities, Foreign Languages	128	18,60%		Academic results in high school	142	20,64%
	Natural science, engineering, technology	138	20,06%		Competency assessment results	15	2,18%
	Pedagogy	190	27,62%		High School Graduation Exam Result	512	74,42%
School year	First	296	43,02%		Other	0	0,00%
	Second	182	26,45%	Living expenses/ month	Under 3 millions	159	23,11%
	Third	160	23,26%		03-05 millions	299	43,46%
	Fouth	50	7,26%		More than 05 millions	230	33,43%
Admission aspirations	1 to 2	331	48,1%	Family's average monthly income	Low, unstable income	25	3,6%
	3 to 5	278	40,4%		From 6-10 millions	160	23,2%
	6 or above	79	11,5%		> 10-20 millions	321	46,6%
	Other	14	2,0%		>20 millions	182	26,4%
Approximate score for admission to university	14-18	120	17,44%	Information channel of the university selected	From websites/ internet	330	30,81%
	>18-22	307	44,62%		From family or relatives	398	37,16%
	>22-26	137	19,91%		From teachers	99	9,24%
	> 26	124	18,02%		Consultants	130	12,14%
	Other	19	2,76%		Promotional material	94	8,78%
Graduation results for high school	Average	261	37,94%		Other	20	1,87%
	Good	269	39,10%	Reference people	Family members	295	28,47%
	Excellent	158	22,97%		Friends, relatives	228	22,01%

Intention for choosing university from	Grade 10	111	16,13%		Teachers	127	12,26%
	Grade 11	154	22,38%		Former Students	68	6,56%
	Grade 12	353	51,31%		Consultants	188	18,15%
	Other	70	10,17%		Other	130	12,55%

The results show that through the first test, all scales have strong Cronbach's Alpha coefficient; The total correlation coefficient of all observed variables is greater than 0.3, except SV4 and DT4. Therefore, the study removes the SV4 and DT4 variables from the scale and re-tests them. After the second rerun, the Corrected Item-Total Correlation of all variables was greater than 0.3 and the factor's Cronbach Alpha coefficient was greater than 0.6. The observations measuring the concepts are the same and the scales can be used in the next steps.

The Exploratory Factor Analysis results show that: KMO = 0.880 (0.5 <= KMO <= 1); Statistics Bartlett's Test = 9958,591; Sig = 0.00 < 0.05, which means that the application of EFA analysis is appropriate; the observed variables are correlated with each other in the population. In addition, the factors have Eigenvalue > 1 and greater than 50% (72.23%). All factor loading coefficients are greater than 0.5 to ensure the distinction, so the variables are kept in groups as in the original scale. According to the factor rotation matrix, the observed variables have significant contributions to the model.

The results of the Confirmatory Factor Analysis show that Chi-squared / df = 2,306 (df <3); TLI = 0.949; CFI = 0.957 (TLI, CFI > 0.9); GFI = 0.927 > 0.8 and RMSEA = 0.044 < 0.08. PCLOSE = 0.995 > 0.05 . The Model Fit indicators are all in the good range. Therefore, it can be concluded that the model is compatible with the actual data.

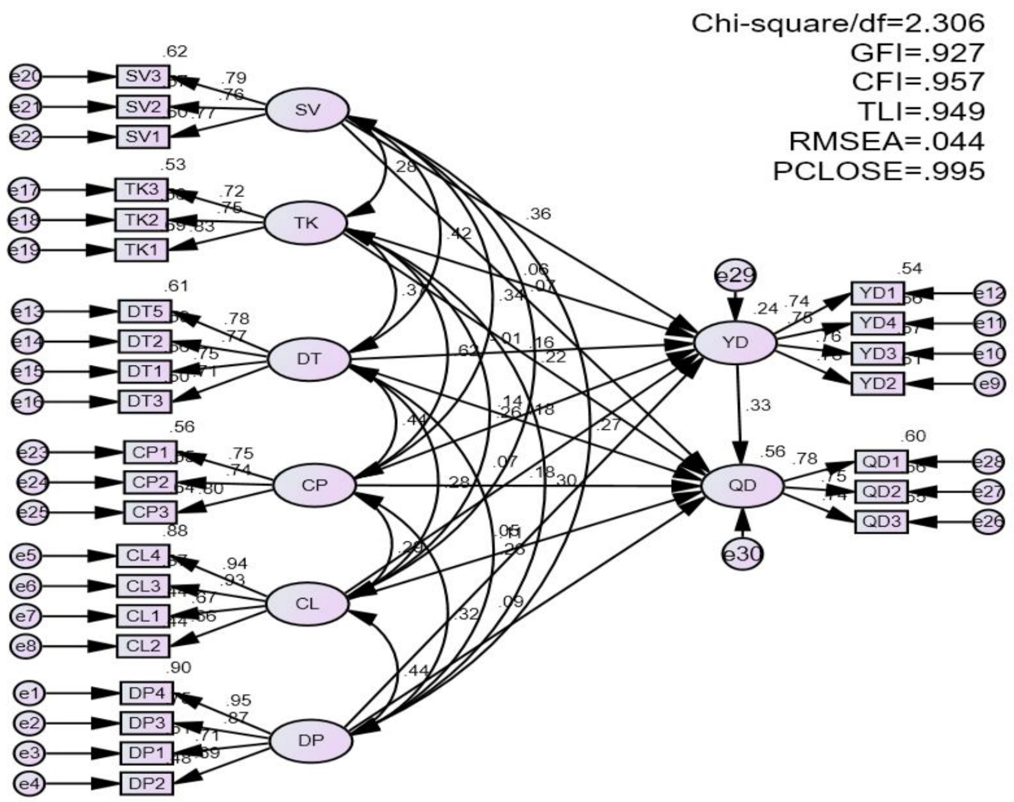

Figure 3: Analysis results of linear structural model

There are 3 independent factors, namely Individual factor (β = 0.360), Perception of learning costs (β = 0.138) and Perception of quality and reputation (β = 0.073) (in order of effect) positively related to the intention to choose a university. The reliability coefficients of the factors have $p < 0.05$, so the effects are statistically significant. Three other factors (with p-value > 0.05) have no statistical significance. Therefore, it is not possible to confirm their influence on the intention to choose a university (Table 4).

Table 4: Hypothesis results

			Estimate	**S.E.**	**C.R.**	**P**	**Hypothesis Results**	**Level of impact**
YD	<---	SV	,360	,041	6,922	***	Accepted	1
YD	<---	TK	,056	,057	,937	,349	Rejected	-
YD	<---	DT	-,015	,051	-,285	,776	Rejected	-
YD	<---	CP	,138	,052	2,157	,031	Accepted	2
YD	<---	CL	,073	,036	1,607	,008	Accepted	3
YD	<---	DP	,047	,036	1,011	,312	Rejected	-
QD	<---	YD	,325	,040	7,207	***	Accepted	Strong
QD	<---	SV	,269	,032	1,485	***	Accepted	1
QD	<---	TK	,161	,043	3,075	,002	Accepted	4
QD	<---	DT	,183	,039	4,011	,002	Accepted	3
QD	<---	CP	,195	,040	3,291	,001	Accepted	2
QD	<---	CL	,081	,028	2,816	,004	Accepted	5
QD	<---	DP	,072	,027	2,346	,019	Accepted	6

Besides, the effects of the proposed independent variable on the dependent variable "decision to choose a university" in the model are positive. The order of the regression coefficients shows the order of effects of the independent variables on the dependent variable. Thus, the order of impact of the independent variable on the dependent variable is: individual factors (β = 0.269), perception of learning costs (β = 0.195), awareness of training programs and supporting activities (β = 0.183), Reference group (β = 0.161), Perception of quality and reputation (β = 0.081) and finally Perception of areas' advantage (β = 0.072). In addition, the intention to choose a university has a strong impact on the decision to choose a university (β = 0.325) and $p < 0.05$; which means that hypothesis is accepted.

4.2. Discussion

Applying the Theory of Planned Behavior to the study the factors influencing student's decision to choose a university in Vietnam for promoting the choice of students is a new field in Vietnam, and no previous studies have been conducted. The research results revealed that in the students' choice of university in Vietnam, the students' expectations regarding the future and career perception, learning ability and conditions of individual students have an extremely important influence on their decision to choose a university. Besides, characteristics of educational institutions such as training program and support activities, study costs, quality and reputation of universities are also essential elements. The research results are also consistent with the economic, sociological, and behavioral perspectives on rational choice in the university selection process and continue to confirm the role of factors belonging to students and universities to choose a university according to the research model [20][12]. The research results are consistent with the views of previous researchers on the decision-making behavior of students and confirm the appropriate applying of the theory of planned behavior to study the factors influencing student's decision to choose a university in Vietnam [12][18][19]. It is also consistent with the practice of university enrollment in Vietnam when intention only becomes an official decision after long admission process.

The research results show that Student's individual factors have a most positive impact on the students' intention and decision to choose a university. This is explained from the nature of the student's university decision-making process. Prospective candidates can consult from many different sources, but it is student who makes the final selection and decision because they are the one who benefits from educational services. Students form an idea of choosing a university based on the criteria of "suitability" because choosing a university is also highly competitive. If the choice is not suitable for ability, student will lose opportunity to attend university. It must be suitable to the students' personal and family conditions, wishes and interests of the students. This conclusion is consistent with the sociological perspective model for university choice because it emphasizes the ways in which socioeconomic background characteristics influence student decision making [17].

5. Conclusion

Research on the factors affecting students' decision to choose a university has been generalized from many theories such as motivation, behavior, marketing theory... The results of this study have demonstrated the relevance and correctness when applying Theory of Planned Behavior, thereby adding factors that are suitable for the specific characteristics of the research subjects at the current time period in Vietnam. In each stage of educational development, there will also be different changes in learners' choice behavior because the process, method, and characteristics of service delivery are different. Therefore, in order to adapt to each stage of development, it is necessary to have new studies to supplement the theoretical and practical basis for those changes.

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Tourism Destination Competitiveness in Laos: From Suppliers Perspective

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ABSTRACT

This study was conducted with the aim of proposing a research model and assessing the competitiveness of tourism destinations in Laos. By synthesis literature reviews, discussing with tourism experts, conducting surveys with 376 supply-side stakeholders and analysing data by using SPSS, the nine groups of factors with 52 attributes are determined. These are destination tourism policy and development, demand factors and activities promoting cooperation among stakeholders of destination, tourism infrastructure of destination, attraction factors of destination, tourism destination management, destination marketing, tourism resources of destination, tourism services of destination, and human and environmental factors supporting tourism destinations. Moreover, by using the Importance - Performance Analysis (IPA) model, a chart showing the average value of importance and performance assessment for the components of Laotian destination competitiveness is demonstrated. This is the foundation for evaluating resources and suggesting managerial actions for further improvement in tourism destination competitiveness. Hence, implications for stakeholders in the tourism industry and Laotian destination management agencies have been also proposed.

Keywords: Destination competitiveness, Laos, supply-side stakeholders, IPA model

1. Introduction

Over the past 70 years, tourism has continuously developed and diversified to become the main economic sector of the world and is considered to be one of the largest and fastest-growing industries [11]. The growth in the number of tourists travelling to different destinations around the world has increased competition among destinations, indicating that a destination should maintain and enhance its competitive advantage to be more competitive [2, 12]. Therefore, destination managers need to be aware of what needs to be done to be more competitive than other destinations.

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On the other hand, due to environmental changes and significant technological advancements, the tourism industry has recently undergone significant changes, which requires destination managers to better understand how to achieve, maintain and enhance the competitive position of the tourism destination. However, measuring the competitiveness of tourist destinations is recognized as complex and time-consuming because many factors need to be taken into account [13]. To deal with such complexity, researchers have used holistic perspectives regarding what is measured, how, and by whom in search of the most effective measurement method [14]. However, there are still some points of disagreement and no consensus on the approach and the best practices to be used [16]. Over the years, Laos has identified tourism as one of the key economic sectors and has attracted many international tourists to visit and travel. This helps bring positive results to the economy and promotes tourism-related businesses, creates more jobs for people, and stimulates infrastructure development. However, tourism in Laos has not developed commensurate with its potential. Therefore, this study was carried out to build a research model and assess the factors constituting the competitiveness of destinations in Laos, by examining the competitiveness variables and using the Importance - Performance Analysis (IPA). Thus, the management implications are also proposed to enhance the tourism destination competitiveness in Laos.

2. Literature Review

2.1. Tourism destination competitiveness

Although there are different definitions in the tourism literature, the approach to destination competitiveness in the research of Ritchie & Crouch [2]; Crouch & Ritchie [7] is considered to be the most comprehensive work on this topic [8, 9,10]. Scholars believe that the competitiveness of tourism destinations is the ability to increase tourism expenditures, attract more tourists and provide them with satisfactory, unforgettable, and profitable experiences. Moreover, it also ensures the welfare of residents in the destination and preserves the natural capital of the destination for future generations.

2.2. Tourism destination competitiveness with sustainable development of tourist destinations

For many years, researchers have tried to propose a suitable and comprehensive definition for sustainable tourism development. However, an agreement is being formed that sustainable tourism development aims to minimize negative impacts on the environment, maintain cultural heritage and provide learning opportunities to benefit the community, local economy and strengthen the social structure of the community [6, 15].

Some authors examining the relationship between sustainability and the competitiveness of tourist attractions demonstrate that sustainability can enhance competitiveness. Many research and proposed models defined competitiveness from the perspective of the number of tourists and market share. Richie & Crouch [2] believe that the competitiveness of tourist destinations should be evaluated from a long-term perspective. They also confirmed that the competitiveness of the destination is associated with prosperity, a high standard of living and residents' quality of life by achieving the destinations' defined visions and goals

2.3. Theories related to tourism destination competitiveness

Two economic theories, the theory of comparative advantage and the theory of competitive advantage [18] served as the original foundation for the research of destination competitiveness. These theories allow a deeper understanding of the phenomenon of competition and its interrelationships and applications in the tourism context. In addition, the stakeholder theory proposed by Freeman [19] is also used in this research since the assumption in this theory is that the stakeholders at the destination play an important role in the success of the destination and therefore should be included in the assessment of the destination's competitiveness.

The theory of comparative advantage

The theory of comparative advantage was developed by David Ricardo in the early nineteenth century by extending the theory of mercantilism and Adam Smith's theory of absolute advantage. While the concept of absolute advantage is the result of identifying the lowest-cost producer in the world, comparative advantage is based on the opportunity cost of producing a given good over others. Countries that may not have an absolute advantage in the production of any goods will have a comparative advantage in the production of at least one good. This inter-country opportunity cost assessment encourages specialization and thus trade. This theory is based on a rigorous set of assumptions including perfect competition, constant returns to scale, known and stable international market prices; and uncertainty related to prices and fixed characteristics of goods [20]. Despite these strict assumptions, the structure of comparative advantage is still considered a fundamental element in trade theory [21]

Theory of competitive advantage

Early research by Hofer & Schendel [22] laid the groundwork for the idea of competitive advantage, but Michael Porter's work has made the notion renowned. This concept became popular in the 1970s and 1980s. Porter [19] explains that competitive advantage emerges from the value a company can create for the buyers that exceed the firm's costs to create it. Value is what the buyer is willing to pay, and superior value comes from offering a lower price than a competitor for an equivalent or unique benefit that compensates for higher prices [19]

This definition focuses primarily on the customer, and comparative value and distinguishes two basic types of competitive advantage: cost leadership (by providing the lowest-cost products) and differentiation (by providing unique benefits). Furthermore, it explains that gaining a competitive advantage leads to higher performance. In other words, competitive advantage is the outcome and goal of the strategy, not just an element used in the strategy.

Stakeholder theory

Stakeholder theory is a management theory that sets out to clarify the roles and responsibilities of various stakeholders within an organization [23]. The idea, which was first proposed by Ansoff [24] and refined with the seminal work of Freeman [19], is used to challenge the conventional wisdom that shareholders' perspectives are the only ones that matter. This perspective is viewed as a system that may help manage and balance competing interests and requirements among many stakeholders.

Jones and Wicks [25] effectively summarize the four essential premises of stakeholder theory. First, an organization is characterized in terms of its relationship, and presence and is influenced by its decisions Freeman [19]. This theory, secondly, is concerned with the processes and results of these relationships [25]. Third, in theory, all individuals or groups with a legitimate interest have intrinsic value and there is no preference or dominance of one group of stakeholders over others. The theory concludes with a discussion of managerial judgment, offering suggestions for how managers might foster a stakeholder-centred management approach.

Applied to the context of tourist destinations, stakeholder theory implies that the support of destination stakeholders is fundamental to the destination's success. The importance of considering the interests of different stakeholders for the destination's long-term profitability is widely recognized. In addition, it can be inferred that by applying stakeholder theory to the tourism context the performance of a tourist destination should be assessed against stakeholder expectations as companies do.

Generally, all these theories are seen as the foundation base for this current research. The study of competitiveness is based on the theories of comparative advantage and competitive advantage. Additionally, stakeholder theory provides a useful lens for investigating and assessing the competitiveness of destinations and provides the basic premise for this study that destination stakeholders must play an active role in assessing the competitiveness of a tourism destination.

2.4. Measuring the competitiveness of the destination

There is no single set of competition indicators that apply to all destinations at all times. There are a wide variety of indicators that contribute to a destination's competitiveness, from more subjective characteristics (the attractiveness of the destination, beautiful places, etc.) to more empirically determined characteristics (market share of tourists to a place, revenue in foreign currency) [3]. As a result, the primary indications may be split between the hard measure and the soft measure. Hard metrics are quantitative or objective indicators. In contrast, soft measures are concerned with stakeholder opinions and are typically less formal, more subjective or called qualitative indicators.

A tourist destination's competitiveness is critical for achieving and maintaining success in the global tourism business. Tourism research cannot ignore the importance of the management of these locations [26]. Researchers have used a wide range of methods, instruments, and indicators to diagnose the competitive situation of individual destinations and clusters of destinations when assessing destination competitiveness [26]. However, there is a heterogeneity of this research topic, some contradictions and problems are also discussed.

The first point is that these different definitions have led the authors to measure different elements in their assessments. Tourism scholars have recognized the multidimensional complexity of destination competition structures and have attempted to take a more holistic approach that includes both price and non-price factors [1; 3; 27]. Crouch and Ritchie [1] and Dwyer and Kim [3] were some of the first authors to research specific factors or aspects of tourism competitiveness. Although most of the basic opinions regarding the factors and determinants of destination competitiveness are similar, these aspects are influenced by the internal and external environment in a specific destination, which adds to the complexity and diversity of this research topic.

Even in empirical research with more complex frameworks, there is a wide range of variables to examine. For any determinant of destination competitiveness, there is a range of indicators that can be used as a measure [28]. Therefore, detailed assessments that provide an overall account of a particular destination's competitive position require a large number of indicators (e.g. 83 indicators according to Dwyer et Kim [3]; from 92 indicators to 111 indicators according to Chens et al. [29]). However, the majority of studies measuring destination competitiveness include only 20 to 30 indicators with some studies using only eight [29]. It can be argued that the use of too few indicators has limited effect in providing detailed information and understanding of each determinant of destination competitiveness and limits the ability to identify specific directions to strategically improve its position. On the other hand, studies that use extensive lists of indicators and use questionnaires as a tool to collect their data may reduce response rates because respondents are bored or tired, thus also threatening the accuracy of the data.

Some studies have surveyed visitors to compile lists of competitive indicators from a demand perspective, while others have consulted supply-side stakeholders [29]. Quantitative data are frequently used since they are thought to be more exact and accurate. Two approaches related to qualitative data or "soft measures" can be found in the tourism literature. First, competitiveness is measured by using data from surveys and tourists' perceptions. The second approach is based on empirical evaluation of a number of subjective indicators of tourism competitiveness, surveyed across key tourism stakeholders, such as reports [30]

3. Research model development

Based on the analysis of models of tourist destination competitiveness, some practical studies and some qualitative research on this topic, this study provide a comprehensive model to assess the competitiveness of tourism destinations in Laos towards sustainability. The research model is shown in Figure 1.

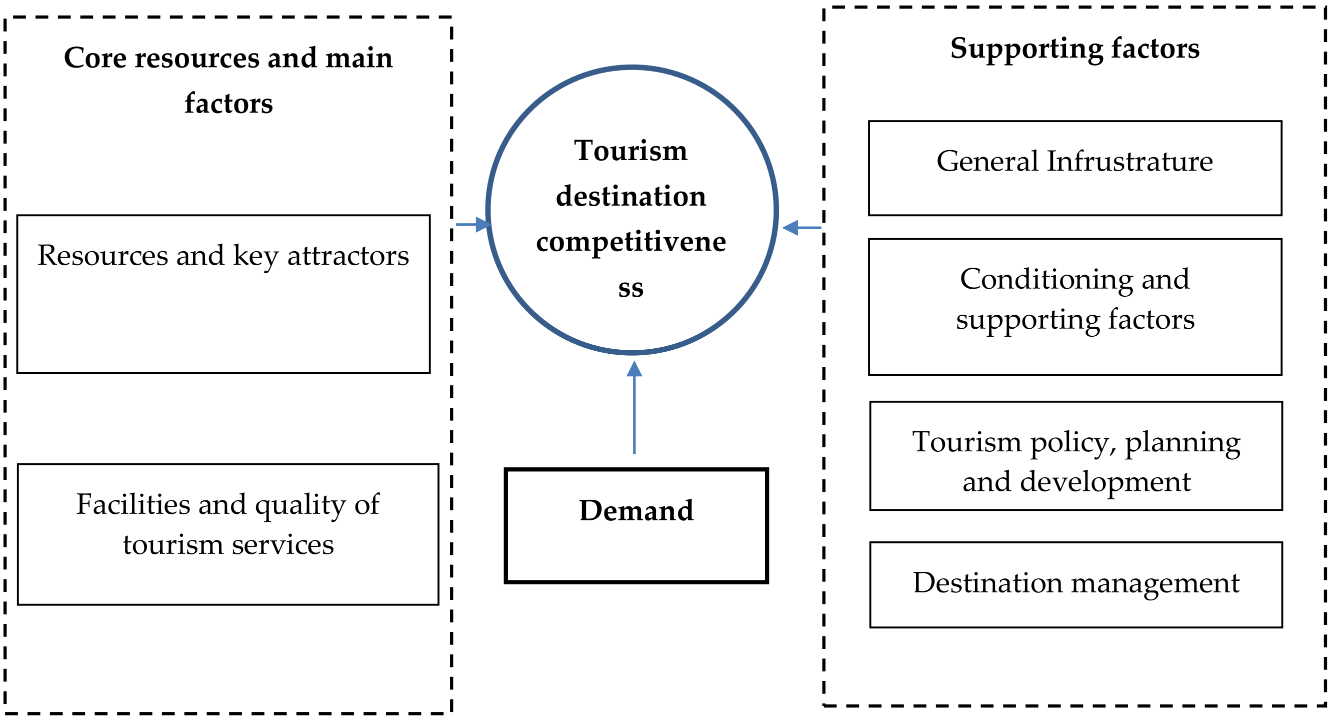

Figure 1. The proposed model to assess tourism destination competitiveness in Laos

4. Research Methods

The author employs the qualitative method and quantitative method as the main research method of the study. After in-depth interviews with experts and supply-side stakeholders in the tourism sector, the attributes of the 7-factor model (combined in 3 groups) were selected from the original research models in the research of Ritchie & Crouch [2] and Dwyer & Kim [3]. Moreover, some observed variables of weather and climate at the destination, transportation, travel and immigration services, job creation policies, and the match between products and customers' preferences are added to the list of variables. In addition, the participants also suggested changing and adjusting the words in some sentences to make them clearer and easier to understand. After conducting in-depth interviews, a scale to assess destination competitiveness in Laos is proposed to include three groups with seven main components. To be more detail, "Core resources and main attraction factors of tourism destinations"; "Conditioning and supporting factors"; "Tourism policies, planning and development" and "destination management" are inherited from Crouch & Ritchie [1], "Facilities and quality of tourism services"; "General infrastructure" are developed based on the research of Gun & Var [4]; "Demand factor of Lao tourism destination" is inherited from Dwyer & Kim [3].

Following the theoretical framework explained before, the research questionnaire was developed and modified. The questionnaire consisted of two sections: demographic information (gender, age, occupation, business sector) and seven sections related to seven factors affecting tourism destination competitiveness. All latent constructs were measured by using a 5-point Likert scale.

This study conducted surveys with stakeholders in the tourism industry in Laos including managers from public organizations; senior and middle managers of enterprises in the tourism industry in Laos. The convenience sample selection method was employed. After collecting data, a total of 376 valid responses were collected. These data were analyzed by using SPSS. In addition, Importance – Performance Analysis (IPA) was applied for both attributes and dimensions confirmed by EFA. IPA was proposed in 1977 to introduce a technique for making planning decisions by providing a chart with four quadrants for policymakers. This chart will suggest where to direct managerial actions based on the importance and performance given to each attribute [17].

5. Research results

5.1. Characteristics of respondents

Among the 376 samples collected, there are 182 male respondents (48.4%) and 194 female respondents (51.6%). Regarding age, the proportion of participants between 25-35 years old and 35-45 years old was the highest accounting for 46.3% and 30.1%. However, the proportion of respondents aged between 18-25 years old, 45-55 years old and over 55 years old was quite low, at 10.6%, 9.3% and 3.7%, respectively. Concerning respondents' position, the department head/deputy head accounted for the largest proportion (59%), followed by (General) Director/Deputy (General) Director with 20.2%. Sales and marketing staff accounted for 15.4% and tour guides accounted for 5.3%. The majority of respondents work in the travel industry (36.4%) and tourist transportation (29.8%). The others are in the hotel industry (16%), tourism management agencies (8.2%), speciality/souvenir sales (8.2%), restaurants (5.9%) and entertainment services (3.7%).

5.2. Exploratory factor analysis (EFA)

The results show that all scales have Cronbach's Alpha coefficient greater than 0.7, and the total correlation is greater than 0.3. Thus, no variable is excluded from the scale.

The results of the EFA analysis show that the KMO coefficient is 0.919, the extracted variance is 56.148 % > 50%, and the Bartlett test shows that Sig. = 0.000 < 0.05. Among 57 observed variables, 5 variables were excluded due to loading coefficients less than 0.45. After excluding the invalid variables, the test was rerun. Based on the results in Table 1, the variables belonging to seven factors in the research model are grouped into nine main factors including 52 variables constituting the competitiveness of destinations in Laos, specifically as follows:

Factor 1: **Destination tourism policy and development in Laos,** including 13 observed variables: QH1, QH7, QH2, DK8, QH8, QH4, QH5, QH6, DK6, DK7, QH3, DK4, DK5.

Factor 2: **Demand factors and activities promoting cooperation among stakeholders of destination in Laos**, including 7 observed variables: YT3, YT1, YT2, QL9, QL10, YT5, and YT4.

Factor 3: **Tourism infrastructure of destination in Laos**, including 8 observed variables: CL1, CL2, CS1, NL9 CS2, CL3, NL5, CS3.

Factor 4: **Attraction factors of destination in Laos**, including 6 observed variables: NL7, NL8, CS4, CS5, NL6, CL5.

Factor 5: **Tourism destination management in Laos**, including 5 observed variables: QL5, QL6, QL4, QL8, QL7.

Factor 6: **Destination marketing,** including 3 observed variables: QL3, QL1, QL2.

Factor 7: **Tourism resources of destination in Laos**, including 4 observed variables: NL2, NL4, NL3, NL1.

Factor 8: **Tourism services of destination in Laos,** including 3 observed variables: DK2, DK1, CL4.

Factor 9: **Human and environmental factors supporting tourism destinations in Laos**, including 3 observed variables: DK11, DK10, and DK9.

Table 1. The results of the EFA analysis

CODE	**FACTOR LOADING**								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
QH1: Having a long-term vision/commitment of the government for tourism development	.707								
QH7: The public sector has useful training programs to ensure the quality of staff for the tourism sector	.680								
QH2: Having a comprehensive tourism development plan which is associated with the overall development of other sectors	.646								

DK8: Travel companies with good capacity in Information & communication technology	.642								
QH8: Focused cooperation between public sector units has been on tourism development	.634								
QH4: Public sector has methods to mitigate the negative social impacts of tourism on local communities	.596								
QH5: Public sector has methods to maximize the economic impact of tourism development on local communities	.578								
QH6: Clear policies in creating job opportunities in the tourism sector	.573								
DK6: Many local businesses providing tourism products and services	.547								
DK7: Good local supply of goods and services	.547								
QH3: Having a tourism development plan which helps to minimize the negative environmental impacts of tourism	.541								
DK4: Trade links/ business ties with major tourist markets (business relationships, sports links, religious relationships...)	.522								
DK5: Competitive price (services fee, exchange rates, etc.)	.520								
YT3: Clear, complete and correct tourists' awareness of this destination		.686							
YT1: Tourists love the destination's local cultural and natural heritage		.673							
YT2: Tourists show responsibility when travelling to this destination		.657							
QL9: Fostering partnerships between public and private stakeholders		.621							

QL10: Promoting partnerships between tourism businesses		.609							
YT5: Many tourists want to come back to the destination		.519							
YT4: Less seasonality in the number of tourists to this destination		.468							
CL1: Abundant hotel/resort system, meeting the quality standards of accommodation services			.668						
CL2: Diversity of quality and safe food establishment			.593						
CS1: Convenient Road and traffic system			.589						
NL9: Many kinds of attractive entertainment, nightlife activities			.551						
CS2: Convenient, quality communication system			.530						
CL3: Diversified, quality and environmentally friendly tourist transport services			.517						
NL5: Special local events and festivals			.493						
CS3: Adequate and convenient medical care facilities			.492						
NL7: Diversity of shopping opportunities				.708					
NL8: Many activities for visitors to participate in				.703					
CS4: Adequate and clean public hygiene				.655					
CS5: An environmentally-friendly waste disposal				.599					
NL6: Specialty, unique local cuisine				.530					
CL5: Fast and convenient immigration service				.485					
QL5: Strong investment in promotion and communication aspects of tourist destinations					.710				

QL6: Focused management of visitor satisfaction					.669				
QL4: Specific experience programs to satisfy tourists					.592				
QL8: Efforts towards natural environment management and monitoring of tourism impacts					.548				
QL7: Specific and up-to-date guide and tourist information at the destination.					.474				
QL3: A reasonable structure for destination management						.604			
QL1: A clear destination location						.593			
QL2: Clearly defined market segmentation to attract tourists						.574			
NL2: Favorable and comfortable climate for travelling							.707		
NL4: Many historical sites, cultural areas/folk villages with unique traditional art							.680		
NL3: Architectural art at the destination is beautiful and has a unique design							.533		
NL1: Beautiful natural scenery, rich and special flora and fauna							.451		
DK2: Ease/Cost of obtaining an entry visa								.595	
DK1: Many direct/indirect international flights to the destination								.519	
CL4: Travel services, shuttles to tourist attractions are available and of good quality								.512	
DK11: Environmental quality (cleanliness; not too crowded, noisy)									.636
DK10: Friendliness of residents towards tourists									.578
DK9: High level of professional skills in tourism									.536

(Source: Results from SPSS)

These components in nine groups of factors were tested for reliability by Cronbach's Alpha, giving results > 0.7. All variables have a total correlation greater than 0.3, thus, no variables need to be removed from this scale.

5.3. Assessing the importance and implementation level of the factors constituting the destination competitiveness in Laos

5.3.1. The importance of factors constituting the competitiveness of Laotian destinations

The average score on the importance of 52 observed variables in nine factors ranges from 4.10 to 4.30, showing that most of the respondents rate the importance as high. Among these components, the most appreciated components are "Tourism Resources of Laotian Destination", "Human and environmental factors supporting tourism destination in Laos", and "Tourism Infrastructure". The lower-rated component is "Laotian destination tourism policy and development", "Demand factors and activities promoting cooperation among Laotian destination stakeholders" and "Destination Marketing".

5.3.2. The level of achieving Laotian tourism destination competitiveness:

The average score for evaluating the performance of the factors ranges from 3.92 to 4.24, showing that most of the respondents rated it as good. Among the 9 components, the most appreciated components are "Tourism Resources of Destination in Laos", "Attraction Factors of Laotian Destination", and "Tourism Infrastructure of Destination in Lao". The component with lower-rated value are "Destination Marketing"; "Demand factors and activities promoting cooperation among Laotian destination stakeholders" and "Laotian destination tourism policy and development".

5.4. The results of Importance - Performance Analysis (IPA) for the factors constituting the competitiveness of the destination in Laos

The results show that the performance level of the factors is lower than the level of visitors' expectations. The study used the Paired Samples T-test to measure the difference between the mean value of the attribute of importance and the level of performance in the assessment of Laotian destination competitiveness from the stakeholders' perspective. The results are shown in Table 2.

Table 2. Average results of importance, implementation level and implementation gap

OBSERVED VARIABLES	Importance (I)	Performance level (P)	Difference (P-I)	sig.(2-tailed)	Quadrant
Destination tourism policy and Development in Laos	**4.13**	**3.92**	**-0.21**	**0.001**	
QH1	4.08	3.92	-0.16	.001	3
QH7	4.09	3.86	-0.23	.000	3

QH2	4.10	3.87	-0.23	.000	3
DK8	4.14	3.93	-0.21	.000	3
QH8	4.20	3.90	-0.3	.000	1
QH4	4.06	3.92	-0.14	.003	3
QH5	4.11	3.89	-0.22	.000	3
QH6	4.08	3.94	-0.14	.001	3
DK6	4.22	3.90	-0.32	.000	1
DK7	4.23	4.08	-0.15	.001	2
QH3	4.07	3.92	-0.15	.001	3
DK4	4.07	3.87	-0.2	.000	3
DK5	4.20	3.93	-0.27	.000	1
Demand factors and activities fostering cooperation among Laotian destination stakeholders	**4.10**	**3.93**	**-0.17**	**0.015**	
YT3	4.16	3.87	-0.29	.000	1
YT1	4.09	3.88	-0.21	.000	3
YT2	4.05	3.86	-0.19	.000	3
QL9	4.03	3.91	-0.12	.006	3
QL10	4.14	4.04	-0.1	.016	4
YT5	4.09	4.01	-0.08	*.082*	4
YT4	4.15	3.91	-0.24	.000	3
Tourism infrastructure of destination in Laos	**4.17**	**3.99**	**-0.18**	**0.001**	
CL1	4.18	4.01	-0.17	.001	2
CL2	4.25	3.98	-0.27	.000	1
CS1	4.12	3.91	-0.21	.000	3
NL9	4.18	4.03	-0.15	.000	2

CS2	4.16	3.97	-0.19	.000	1
CL3	4.11	3.97	-0.14	.004	3
NL5	4.28	4.14	-0.14	.002	2
CS3	4.11	3.94	-0.17	.000	3
Attraction Factors of Destination in Laos	**4.16**	**4.02**	**-0.14**	**0.01**	
NL7	4.20	3.99	-0.21	.000	2
NL8	4.15	4.03	-0.12	.007	4
CS4	4.06	3.97	-0.09	.028	3
CS5	4.09	4.01	-0.08	.035	4
NL6	4.24	4.13	-0.11	.007	2
CL5	4.19	4.01	-0.18	.000	2
Tourism destination management in Laos	**4.14**	**3.99**	**-0.15**	***0.06***	
QL5	4.13	3.95	-0.18	.000	3
QL6	4.20	3.97	-0.23	.000	1
QL4	4.07	4.00	-0.07	*.051*	4
QL8	4.10	4.05	-0.05	*.257*	4
QL7	4.19	3.98	-0.21	.000	1
Destination marketing	**4.13**	**3.95**	**-0.18**	**0.002**	
QL3	4.20	3.92	-0.28	.000	1
QL1	4.12	4.01	-0.11	.004	4
QL2	4.05	3.93	-0.12	.002	3
Tourism resources of destination in Laos	**4.30**	**4.24**	**-0.06**	**0.177**	
NL2	4.29	4.24	-0.05	.304	2
NL4	4.31	4.22	-0.09	.031	2

NL3	4.24	4.19	-0.05	.252	2
NL1	4.35	4.29	-0.06	.121	2
Tourism services of destination in Laos	**4.16**	**3.98**	**-0.18**	**0.000**	
DK2	4.08	3.94	-0.14	.001	3
DK1	4.24	4.06	-0.18	.000	2
CL4	4.15	3.94	-0.21	.000	3
Human and environmental factors supporting tourism destination in Laos	**4.19**	**3.96**	**-0.23**	**0.000**	
DK11	4.25	3.96	-0.29	.000	1
DK10	4.13	3.99	-0.14	.001	4
DK9	4.20	3.94	-0.26	.000	1
The average value	**4.15**	**3.98**	**-0.17**	**0.02**	

(Source: Results from SPSS)

The research results showed that among 52 factors, 46 factors had a statistically significant difference ($p<0.05$). The results about the gap between performance and importance have a (P-I) value of -0.17.

The IPA model illustrated in Figure 2 shows the average value of importance and performance assessment for the components of Laotian destination competitiveness. Specifically, the vertical cutoff has a value of 3.98, while the horizontal cutoff has a value of 4.15.

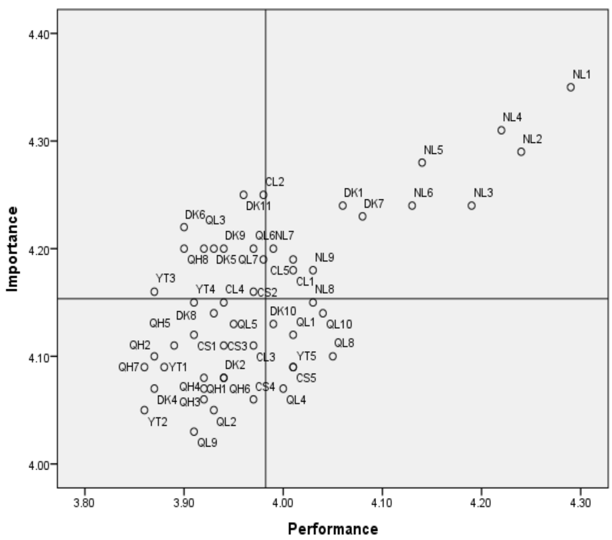

Figure 2. Importance – Performance Analysis (IPA) Model of Destination Competitiveness in Laos

(Source: Results from SPSS)

Quadrant 1 (Focus on development) includes 11 elements: QH8, DK6, DK5, YT3, CL2, CS2, QL6, QL7, QL3, DK11, DK9.

Quadrant 2 (Keep up the good work) includes 12 attributes: DK7, CL1, NL9, NL5, NL7, NL6, CL5, NL2, NL4, NL3, NL1, DK1.

Quadrant 3 (Constraints to Development) is the place with the most distributed attributes including 21 elements: QH1, QH7, QH2, DK8, QH4, QH5, QH6, QH3, DK4, YT1, YT2, QL9, YT4, CS1, CL3, CS3, CS4, QL5, QL2, DK2, CL4.

Quadrant 4 (Focus on developing other attributes) includes 8 elements: QL10, YT5, NL8, CS5, QL4, QL8, QL1, DK10.

6. Conclusion, implications and research limitations

6.1. Conclusion

The IPA model will enable tourism destination managers in Laos to identify criteria that need to be prioritized for improvement to enhance tourism destination competitiveness in Laos. These are destination tourism policy and development, demand factors and activities promoting cooperation among stakeholders of destination, tourism infrastructure of destination, attraction factors of destination, tourism destination management, destination marketing, tourism resources of destination, tourism services of destination, and human and environmental factors supporting tourism destinations. The results of sorting the attributes of the nine components into four quadrants identify the attributes which should be invested strongly to improve competitiveness (Quadrant 1) and the attributes which should be maintained (Quadrant 2). Besides, attributes in Quadrant 3 (Constraints to Development) include 21 components and attributes in Quadrant 4 (Focus on developing other attributes) include 8 components.

6.2. Management Implications

6.2.1. Enhancing the quality of policy-making activities for tourism development in destinations in Laos

The diversified participation of local enterprises in the tourism industry has brought many benefits, including sustainable tourism development, job creation and the development of the local economy. However, establishing and developing a local tourism business has faced a lot of challenges. Therefore, tourism management agencies need to train and support enterprises to improve the quality of products and services by applying international standards, and to promote cooperation among stakeholders. Arbitrage management also needs to be properly regulated. In order to maintain the ability to provide local goods and services, tourism managers need to encourage the use of local goods and services, train human resources in the tourism industry, and establish sustainable partnerships between tourism enterprises and local suppliers.

6.2.2. Demand factors and activities promoting cooperation among stakeholders of destination in Laos

Public and private tourism agencies have not paid special attention to raising awareness about the destination clearly, fully and correctly. This has affected accessibility to destinations and tourist attractions. Therefore, administrators need to obtain a deep understanding of the local destination, culture, history and scenic spots, which is considered an important basis for creating a memorable travel experience. Hence, it is necessary to invest in training staff, and tour guides; develop diverse tour programs and packages to meet the needs of tourists. Exploiting some unique destinations and building good relationships with partners are also of importance in attracting visitors and developing the tourism industry.

6.2.3. Develop and maintain the tourism infrastructure of destination Laos

Currently, the food quality and food safety in Laos have not met the requirements, despite the diversity of cuisine. It still needs to be improved to ensure the health and satisfaction of visitors. In addition, the tourist information system in Laos also needs to be enhanced so that tourists can search for information and make travel plans easily. Besides, tourism managers need to develop a quality hotel/resort system along with developing attractive entertainment activities and vibrant nightlife. Local agencies should organize special local events and festivals to introduce and preserve the unique culture and traditions of Laos.

6.2.4. Attraction Factors of Destination in Laos

Laos has many local markets and shopping areas for visitors to explore and buy unique products such as handicrafts, jewellery, silk fabrics, and local specialities or to enjoy traditional dishes like Khao niaw, Khao Poon, Larb, etc with reasonable prices and interesting experiences. Laos also offers fast and convenient immigration services, with international airports in Vientiane and Luang Prabang, making it time-saving and convenient. In order to maintain some advantages such as diverse shopping opportunities, special local cuisine and specialities, as well as fast and convenient immigration services in Laos, tourism managers need to strengthen promotion and marketing, improving local food, speciality and shopping services. Furthermore, the government should encourage public and private partnerships to develop shopping, speciality and culinary opportunities. Besides, managers need to improve transportation infrastructure and services, establish a rating and feedback system for visitors to continuously improve the quality of the tourism experience, train human resources and promote cooperation between tourism businesses. Last but not least, it is necessary to invest in waste disposal technology to comply with environmental regulations.

6.2.5. Tourism destination management in Laos

The level of visitor satisfaction and tourist information provision has not been done well in Laos. Managers need to monitor and evaluate feedbacks from visitors to improve service and enhance their satisfaction. Travel guides and tourist information should also be provided in a clear and detailed manner. Laos has done well in developing an environmental management and experience program, but not enough attention has been paid by stakeholders. Thus, it is essential to establish appropriate experience plans and promote them. Environmental management needs to be strengthened to protect resources and maintain sustainability. Managers should invest and focus on promotion and communication activities to promote and introduce the tourist destination of Laos.

6.2.6. Destination marketing

Designing a destination management structure and determining the segmentation of the tourism market are two important factors for the sustainable development of Laos' tourism industry. Currently, Laos is facing difficulties in managing destinations and meeting tourists' needs. Therefore, tourism managers need to focus on designing a reasonable destination management structure and clearly defining target market segments. This requires close cooperation between local authorities, relevant institutions, and tourism enterprises. In addition, it is necessary to train and raise the awareness of stakeholders in Laos’ tourism industry to ensure high-quality human resources and to apply advanced management models. This will contribute to the sustainable development of the tourism industry and the country while enhancing Laos' value and attractiveness in the international tourism market.

6.2.7. Tourism resources of destination in Laos

Local institutions in Laos have done well in protecting and planning tourism resources, but they need to continue to improve the competitiveness of the destination. Local tourism institutions need to establish a tourism resource database and remote sensing information system to intelligently manage and develop resources by utilizing the resources of local enterprises and communities. The public sector also needs to restore, protect, and display historical sites, buildings, and unique cultural traditions, so that tourists can better experience and understand the history of Laos. Creating a weather database and a database of beautiful natural location help tourists choose a convenient time and plan their trip better. Laotians can contribute to the tourism industry through community-based tourism, providing local services and products, generating income, and promoting local economic development.

6.2.8. Tourism services of destination in Laos

Laos currently has many direct and indirect international flights, creating favourable conditions for tourists to visit and explore this country. Specifically, Vientiane International Airport and Luang Prabang International Airport are the main entry points. Visitors can easily connect from cities such as Bangkok, Hanoi, Ho Chi Minh, Kuala Lumpur and Singapore through direct flights and have indirect connections through major aviation hubs such as Bangkok, Hong Kong, Seoul and Taipei. This creates favourable conditions for them to come to Laos and contribute to the economic and cultural development of this country. Although applying for a visa in Laos is not difficult and is considered to be quite easy and convenient, units in the tourism industry in the public and private sectors have not focused on investing in this factor. This may be due to financial and resource constraints. To increase the attractiveness and competitiveness in the tourism industry, it is necessary to invest in training staff, creating attractive tour packages and programs, building good relationships with tourism destination managers, tourism and related partners, and improving facilities and equipment for travel services.

6.2.9. Human and environmental factors supporting tourism destination in Laos

Lao residents are considered friendly and hospitable, making an important contribution to the visitor experience and local economic development. However, it is necessary to raise awareness of and importance of residents in the tourism industry, to encourage their participation and support of tourism. Moreover, the training of human resources is an important strategy to ensure the sustainable development of tourism. Local management agencies need to focus on environmental management ensuring compliance and enforcement of environmental protection regulations. This thus contributes to the sustainable development of the country.

6.3. Research Limitations and future research

This is a broad and complex research topic, so this research topic cannot avoid certain limitations. Firstly, this study focuses on analyzing the concept of tourism destination competitiveness in Laos. Geographical restrictions can lead to different results about the impacts of determinants on destination competitiveness. In order to achieve reliable results, it is necessary to expand the scope of research in other countries and collect data from different tourist destinations. Secondly, this study mainly focuses on evaluating tourism destinations' competitiveness in Laos from a supply-side stakeholder. Further research needs to analyze some factors carefully and evaluate them from two aspects (supply-side and demand–side stakeholders) to better understand the competitiveness of tourism destinations.

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Tourist Animosity and Destination Choices in the Post Covid-19 Pandemic: A Study of Vietnamese Independent Tourists

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ABSTRACT

This study explores tourist animosity and its effects on Vietnamese independent tourist destination choices in the post-COVID-19 era. The study objectives have been fulfilled by analyzing qualitative data collected through seventeen semi-structured interviews. The results show that tourist animosities such as general animosity, war animosity, the COVID-19 threat, and the countries' policies towards the COVID-19 pandemic negatively influence tourist intention to visit, intention to revisit, and word-of-mouth. The findings of this study also documented that tourists often seek tourism information and countries' travel policies online through governments' websites before deciding to travel to a country even in the post-COVID-19 era. This study enriches the literature on tourist animosity and tourist destination choices, thus providing value implications for travel agencies and tourism businesses.

Keywords: tourist animosity; intention to visit; foreign destination choices; Vietnamese tourists; post-COVID-19.

1. Introduction

Due to globalization, economic interdependencies, and migratory flows, businesses are incentivized to cross borders. Understanding consumers' behavior is crucial when selecting a marketplace and determining the correct marketing strategies. Globalization also poses challenges, such as actions taken by governments, corporations, and media in one country may not be well-perceived in another. One country's response to natural disasters may also be scrutinized in another, potentially causing animosity and negative consequences for businesses. Many countries and regions have re-tightened travel restrictions due to the surge in COVID-19 cases in late 2020. The majority of research on consumer animosity towards a country has focused on goods rather than services. However, only a small number of studies have explored whether these negative feelings affect people's choice to travel to that location. The tourism literature has established that events like wars, terrorist attacks, natural disasters, epidemics, etc., have a negative impact on travel (Clements & Georgiou, 1998; Hall, 2010; Rittichainuwat & Chakraborty, 2009). However, tourism animosity and its impact on travel has recently attracted research attention and still needs more research. Furthermore, animosity in general consumer marketing might also be different from animosity in tourism, especially because tourist destinations also refer to places, and thus have a great link with their geographical origin [1], thus warranting more research attention.

Our study expands on the conceptualization of the consumer animosity construct, which has been previously explored in economics, politics, culture, and religion, but has never been applied to a pandemic health crisis before, especially since people had a tough time during the COVID-19 pandemic two years ago. Moreover, several research (e.g., Riefler and Diamantopoulos [2], Hoffmann, et al. [3]) noted that previous studies on consumer animosity used to limit the conceptualization of consumer animosity from one home country and one target country, which means that animosity depends on the unique relationship between a particular home country and a specific target country. Few studies have explored customer animosity outside of the context of traditional enemies or country-specific causes of animosity, and little research has taken a general approach to the study of tourist animosity in foreign tourist destinations.

The COVID-19 pandemic has transformed the way people choose tourist destinations, with digital information playing a crucial role in this process [4, 5]. Studies have shown that tourists heavily rely on digital platforms such as social media, travel blogs, and online reviews to gather information about potential destinations [5, 6]. This information helps them make informed decisions, especially regarding travel restrictions and safety measures. Additionally, personalized digital experiences that offer tailored recommendations based on interests and preferences have been found to be influential. It is crucial for tourism organizations to prioritize their digital presence and ensure the provision of accurate and up-to-date information to attract tourists in the post-COVID-19 era. However, a study into the relationship between tourist animosity and their destination choices and the role of digital information after the COVID-19 is still missed in the literature of tourism.

To address this gap, this study explores tourist animosity from one country to different countries and its effects on tourist destination choices before and after a holiday, aiming to enrich the literature on tourist animosity and destination choice. Additionally, this study also aims to explore the role of digital information in tourist destination choices in the post-COVID-19 era. Thus, q better understanding of the concept will bring benefits for tourism businesses and agencies to better understand tourist destination choices.

2. Literature Review

2.1. Customer animosity

In 1998, Klein, et al. [7] discovered that some consumers avoid buying products from a specific country due to their negative feelings towards that country. Klein, et al. [7] conducted a significant study that provided evidence that many Chinese consumers continue to have negative feelings towards Japan due to the Nanjing massacre during World War II. As a result, these negative feelings reduce their willingness to purchase products made in Japan. Subsequent studies confirmed a strong link between animosity towards a country and consumers' unwillingness to purchase products made there. Maher and Mady [8] confirm the negative effect of Kuwaiti customers’ animosity on their willingness to buy Danish goods. This negative effect was also confirmed in other studies such as Harmeling, et al. [9] study on Chinese and US customers, Lee, et al. [10] on Chinese and Japanese customers, Muposhi, et al. [11] on South African customers toward Chinese goods, and Antonetti, et al. [12] on Chinese customers toward Japanese goods. As a result, multinational companies should assess consumer antipathy towards the country of origin or manufacture before entering new markets. Thus, identifying potential animosity is crucial for effectively communicating a product's country of origin. If there is strong antipathy towards the manufacturing country or brand, companies should avoid emphasizing the origin in their advertisements or packaging.

In the literature of customer behavior, customer animosity refers to customers' unfavorable attitude towards a country [7]. Consumer animosity can be antipathy [3, 7], negative emotion, dislike, and enmity towards a country [13-16]. Consumer animosity stems from various sources, such as economic disputes, personal interaction with the people from the animosity country, political incidents, religious, historical events and wars and military conflicts [17]. Jung, et al. [16] categorized animosity into different types based on whether it is national or personal in nature. National animosity arises from the perception of a threat to the home country's national superiority, sovereignty, or competitiveness by the target country. On the other hand, personal animosity stems from negative personal experiences with the foreign country, its culture, or its people. In terms of the second dimension, this typology distinguishes between situational animosity, which is a reaction to a specific provocation, and stable animosity, which aligns with the original concept of animosity as a long-lasting antipathy resulting from military, economic, and political provocations over time. However, these studies mostly focused on customer animosity from one specific country toward a given country. Therefore, customer animosity from one country to different countries or universal animosity had not received enough research attention.

2.2. The applicant of animosity construct in tourism

Recently, tourist animosity has attracted attention from some researchers. The tourism literature has explored the impact of negative individual attitudes towards specific countries that are perceived as hostile. However, most of these studies have focused on the interaction between tourists and hosts, and the potential for the tourism experience to change attitudes [18-21]. The concept of consumer animosity as a negative feeling towards certain countries that can influence purchase decisions has only recently been introduced to the tourism industry. The resulting conflicts can lead to animosity towards a particular country if the consequences of the crisis persist over time, which can negatively affect the image and intention to visit the destination, even after the critical event has ended. Guo, et al. [20] confirmed that the Chinese people's animosity towards Japan due to the events of World War II affects their willingness to visit Japan as a tourism destination. Similarly, Stepchenkova, et al. [22] analyzed animosity in the context of strained US-Russia relations and confirmed that it indirectly impacts visitation intentions mediated by destination and country image. Recent studies [21, 23] have also established that animosity towards immigrants and political animosity respectively predict the intention to visit a country.

Table 1 Recent publications related to tourist animosity

Author/s (Year)	Methods/Sampling data	Key findings
Josiassen, et al. [24]	Quantitative study with 378 US respondents: + Tourist affinity toward Ukraine: sympathy, attachment and admiration; + Tourist animosity toward Russia: accommodating and contending	Tourist affinity and tourist animosity are important drivers of place solidarity, which in turn plays an important role in explaining concrete accommodation intentions.
Siyamiyan Gorji, et al. [25]	Quantitative study with 378 US respondents: + Tourist animosity toward Iran	Tourist animosity affects travel boycott intentions
Josiassen, et al. [1]	Quantitative study with 323 US respondents: + Tourist affinity and tourist animosity toward Germany	Tourist affinity positively affects tourism-related outcomes, e.g. word of mouth and resident hospitality. Tourist animosity affects intention to visit and provides word of mouth but is a barrier to closer interactions
Abraham, et al. [26]	Quantitative dominant concurrent mixed methods: +20 semi-structured interviews + 227 female millennial tourists	Tourist animosity is a mediator of the relationship between past travel experience, perceived cultural dissimilarity, perceived risk, and behavioural intentions
Shi [27]	Multi-layer regression analysis, using a fourteen-item scale of consumer affinity developed by Yang et al. (2018) to investigate Chinese tourists' perception of Thailand	Cultural affinity and people affinity have a significant positive impact on short-term revisit intention; Cultural affinity has a significant positive impact on mid-term revisit intention; Landscape affinity and people affinity have a significant positive impact on long-term re-visiting intentions.
Abraham and Poria [28]	Quantitative dominant concurrent mixed methods: + Quantitative (n=330) + Qualitative (n=20)	Tourist animosity is a predictor of critical tourism-related behaviours: + Positive impact on risk perception + Negative impact on the willingness to engage in tourist activity, to learn about the local culture, to pay for

	Tourists to visit the West Bank	accommodations in the holiday destination, to visit a destination
Yu, et al. [29]	+ Using narratively identified boycott events; + Analysing seven events involving Chinese tourism boycotts during the past decade.	Boycotts can significantly decrease visitor numbers. Non-political animosity boycotts and political animosity boycotts differ in their intensity and impact: + Non-political animosity exerts immediate short-term impacts; + Political animosity has enduring effects. Tourism boycotts as a key risk factor in destination management.
Stepchenkova, et al. [30]	Methods of analysis from distinctly different repertoires of techniques, such as traditional statistical and data-mining approaches, and apply them to each scenario.	Animosity and ethnocentric tendencies in addition to country image and bilateral relation variables influence tourists' decision-making
Campo and Alvarez [31]	Mixed methods: + Quantitative (n=229) + Qualitative (n=36) Animosity countries: North Korea, Venezuela, Iraq, and China.	+ Tourist animosity toward a given country is a multidimensional construct formed by various causes, such as the country's perceived human rights violations and political system, its people and culture, its history and military interventions, and its economic relations with other countries. + Tourist animosity influences the intention to visit the place directly and indirectly through the evaluation of the country as a tourist destination.

As can be seen from Table 1, recent studies on tourism management, similar to customers buying other products, documented that tourists not only choose tourist destinations based on objective quality criteria. Rather, tourist animosity has a negative impact on critical tourism-related behaviours [28], i.e. the willingness to engage in tourist activity, to learn about the local culture, to pay for accommodations in the holiday destination, to visit a destination. Moreover, recent studies, as seen in Table 1, focused on investigating the effects of tourist animosity on place and tourist intention from tourists of a specific country towards a given country.

Studies on tourist animosity are not only limited in number but also have primarily focused on "traditional enemies," which may result in a stronger effect of animosity in this specific context only [32]. As a result, there is a need to have a study focusing on exploring tourist animosity that is outside of the context of traditional enemies or bilateral incidents between nations, outside of the country-specific causes of animosity, but are universal drivers of animosity [3, 31, 33, 34]. Little research has taken a more general approach to the study of tourist animosity in the context of foreign tourist destinations, as well as their impacts on foreign tourist destination choice process, from before to after a tourist holiday, especially the impacts of these feelings outside of the context of traditional enemies or bilateral incidents between nations [31, 33, 34]. To address the research gap, this study explores tourist animosity from one country to different countries, and the effects of tourist animosity on tourist destinations from before and after a holiday. As such, this study aims to enrich the literature on tourist animosity as well as tourist destination choices' process.

3. Methodology

3.1. Research Method

The purpose of this study is to explore tourist animosity, that is outside of the context of traditional enemies or bilateral incidents between nations, outside of the country-specific causes of animosity, but from one country to various countries, to find out universal animosity. In addition, this study also aims to find out the effects of tourist animosity on tourist destination choices from before to after a holiday. Therefore, this research study required collecting and analysing qualitative data. In-depth interviews were conducted to comprehensively understand tourist animosity perceived by Vietnamese independent tourists and the effects of tourist animosity on Vietnamese choices of foreign tourist destinations, intention to visit, revisit and word-of-mouth (WOM).

Boyce and Neale [35] suggest that in-depth interviews are useful when detailed information about an individual's beliefs and behaviors is needed. In-depth interviews can take on different forms such as highly structured, semi-structured, and low-structured interviews. Semi-structured interviews differ from low-structured interviews in that the conversation revolves around the topics on the agenda but can also delve into unforeseen issues [36]. Conversely, highly structured interviews stick to verbatim questions. A semi-structured interview was chosen to allow the researcher to probe for detailed and deep information concerning the research question. Conversations in semi-structured interviews tend to be relatively focused but still open, enabling new ideas and unexpected information to be brought up by interviewees [37]. This information can lead to new themes and ideas, thus generating new knowledge [38]. Following this research study's objectives, rich information about tourist animosity and the effects of tourist animosity on tourist destination choices from before to after a holiday are required. Therefore, the adoption of a semi-structured interview was deemed appropriate for this study.

To ensure the effectiveness of the interview guide, a pilot test was conducted. The pilot test aimed to assess the interviewer's ability to obtain the required information by asking the questions in the interview guide, review the clarity of the language used in the guide, and evaluate the sequencing of questions and timing [39]. Five Vietnamese tourists participated in the pilot interviews as interviewees, while the researcher acted as the interviewer. During the pilot interviews, the researcher took note of the time spent, asked interviewees to provide feedback on the clarity and sequencing of questions, and evaluated the effectiveness of both the questions and probing questions.

The interview guide for this study was divided into three main parts. Firstly, participants were asked about their travel experiences as a warm-up. Secondly, they were asked to recall their animosity or unfavorable feelings towards various foreign countries and to explain their specific reasons and considerations for visiting or not visiting those countries. The Critical Incident Technique was used at this stage to encourage participants to recall their unfavorable feelings towards foreign countries. The Critical Incident Technique is a well-established technique used to resolve practical management problems and develop new theories [40-42]. It is also used to recognize "blurred real-world phenomena" in tourism literature. Participants were asked to recall the reasons and considerations they had before a foreign trip, including why they chose one country over another, and focused on exploring the reasons why tourists decided not to visit certain countries. The study also explore the role of digital information to tourist decision on destinations in the post-COVID 19 era. Finally, participants were asked to provide their demographic information at the end of the interview.

3.2. Data Collection and Analysis

According to Vietnam National Administration of Tourism [43], the number of Vietnamese tourists choosing foreign countries as their preferred tourist destination is on the rise due to their increasing income levels. With more disposable income, Vietnamese tourists are now able to afford international travel and explore new destinations. The trend is expected to continue as the country's economy grows and more people enjoy higher levels of income. This increase in outbound tourism from Vietnam is also expected to have a positive impact on the economies of the countries being visited, as it brings in more revenue from tourism activities.

Moreover, Vietnamese tourists are known to have characteristics of collectivistic tourists, which means that they tend to make travel decisions based on the opinions and preferences of their social groups [44]. Therefore, research on the influence of tourist animosity and affinity on Vietnamese tourist destination choices can be highly beneficial for Vietnam's outbound tour operators, travel agencies, and other tourism businesses in collectivistic countries such as Southeast Asian and other Asian countries. By understanding the factors that drive Vietnamese tourists' destination choices, tourism businesses can tailor their marketing strategies and product offerings to better cater to the needs and preferences of this segment. This can ultimately lead to increased tourism revenue and economic growth for these countries.

In this study, 17 interviews were conducted, with each interview lasting between 25 minutes to almost an hour. The interviews were conducted in public places such as coffee shops or restaurants. In some cases, tourists were not available for an interview immediately after the initial contact with the interviewer. In such cases, they were encouraged to provide their phone number or Skype account for a later interview. Follow-up interviews were arranged as soon as possible and took place within the same week as the initial contact.

The researcher transcribed interview recordings into text data and analyzed them early to identify gaps and explore new or unexpected findings. Early analysis, while data collection is still in progress, is beneficial to recognize gaps and explore new or unexpected findings [45]. In addition, this early analysis contributed to the researcher’s understanding of the richness of data and data saturation. Manual coding techniques were used to analyze data from 12 interviews, and data saturation was not met due to new themes still emerging [45]. The sample size was extended to strengthen the reliability and validity of data [45], and no new themes emerged from the additional interviews between the 14th and 17th interview and thus, no new interviews were conducted. The researcher followed six thematic analysis phases recommended by Braun and Clarke [46] to analyze and interpret textual data from transcripts. The first phase was familiarizing with the data, creating an initial list of ideas and noting down words, phrases or sentences relating to animosity, affinity, reasons for choosing or not choosing a foreign destination, intentions to revisit, and WOM. The second phase involved identifying initial codes across the entire data set, with a code understood as the basic element of raw data that provides meanings regarding the phenomenon [47].

3.3. Sample

Seventeen Vietnamese independent tourists participated in interviews. Almost two-thirds of the interviewees were aged from 25 to 34 years old. Two-thirds of the interviewees had college or university degrees. More than half of the interviewees were single, or not married. Details of the interviewees' demographic information are presented in Table 2 below.

Table 2 Profile of Interviewees

Demographic data			
Characteristics	**Frequency**	**Characteristics**	**Frequency**
Age	**(n = 17)**	**Marital status**	**(n=17)**
18–24 years old	2	Single, Not married	10
25–34 years old	10	Married	7
35–44 years old	3	Monthly personal income	
45–54 years old	2	Less than 5 million VND	0
55–64 years old	0	5-9 million VND	4
65 or Above	0	10-14 million VND	7
		15-19 million VND	3
Education		Over 20 million VND	3
High school graduate or Less	1	**Employment status**	
College or University Degree	12	Student	0
Post-graduate degree	4	Businessperson	6
Gender		Teacher	2
Male	7	White-collar worker	8
Female	10	Retired	1

Regarding their travel experience, twelve of the interviewees travelled independently while others (5) travelled with friends or family members (see Table 3). All of them organized their holidays by themselves. Most of the interviewees travelled mainly for holidays, and the length of their holidays that the interviewees had varied from five to fourteen days.

Table 3 Profile of Tour Information

	Frequency (N=17)
Length of interviewees' holidays	
5 days	9
6 days	1
7 days	4
12 days	1
14 days	2
Respondents' travel companions	
Independent	12
Travel with companions	5
Main purpose of the travelling	
Holiday	14
Adventure	3

4. Findings and Discussion

4.1. Tourist animosity

The results show that tourist animosities, those are war animosity and the pandemic of COVID-19 animosity negatively influence tourist intention to visit, revisit and provide WOM. These findings support previous study in consumer marketing literature [1, 13, 14, 16] that animosity is complex and multidisciplinary. However, the findings of the current study on the prevalent conceptualization of tourist animosity are not derived from bilateral conflicts or events, but from pandemic and war animosity. This study also found that general animosity and personal negative experience animosity affect negatively on tourists' intentions to visit, revisit and WOM.

In this study, general animosity, war and the pandemic of COVID-19 were argued to have a negative influence on tourists' intention to visit, revisit and WOM. First, many of the interviewees (7) do not recall a specific reason why they dislike visiting a country, but they think they will never visit a country because they generally do not like to visit those countries.

I do not know exactly why I think that I should not choose that country to visit, but I never think that I should have a holiday in that country. There are so many interesting countries to visit (*Interviewee_No1*).

Or:

Overall, I dislike visiting America. No specific reasons, just never think to travel to there (*Interviewee_No6*)

Two specific components of tourist animosity were recalled which are the pandemic of COVID-19 and war animosities. Seven interviewees told that they really consider COVID-19 and the policies that a country confronts with the pandemic before deciding to visit that country. Among many countries, China and Taiwan have not opened completely (at the time of the data collection) to international tourists because of COVID-19. So, the interviewees agreed that they will not have plans to visit those countries in the next coming months.

Now, we do need to consider the COVID-19 pandemic and each country's policy with the pandemic. I think I might not travel to China now as their borders are not open for international tourists yet. The policy of the country to the pandemic is strict (*Interviewee_No11*).

Taiwan. Yeah, the country has still applied some strict rules and regulations for international tourists. Yeah they did it for our safety. So, I do not plan to visit this country in the near future, at least next two years (*Interviewee_No17*).

Other interviewees said that war animosity, such as Ukraine-Russia war, makes them not plan to visit Ukraine although they have relatives there.

I think many of us will not intend to visit Ukraine as the Russia-Ukraine war is still going on. I should not suggest Ukraine for anyone to visit now. Actually, no flights there… yeah (*Interviewee_No2*).

Taiwan, I really love this country. I love Taiwanese food and sightseeing too. I have visited this country twice already. But now I think I do not plan to visit there, nor recommend this country for any potential tourists this year. Actually, I checked EVA air (the official airline of Taiwan), they often cancel flights from Da Nang to Taiwan (*Interviewee_No11*).

Only one interviewee has social animosity when she told that she had a negative experience with people from a country.

My experiences with people from this country (China) are quite negative. They are quite talkative in public spaces *(smile) (Interviewee_No8)*

In short, the consumer animosity model, originally developed by Klein, et al. [7], and later expanded by Kalliny, et al. [48] consists of four dimensions: war animosity, economic animosity, political animosity, and cultural and religious animosity. However, the Covid-19 pandemic has given rise to a new type of animosity called pandemic animosity [49]. Pandemic animosity refers to the remnants of hostility and antipathy towards other countries due to its alleged responsibility for causing and spreading the pandemic. Similar to the brand-new research, that is [49], this study also found that the COVID-19 pandemic is a new animosity. As such, this study confirms that tourist animosity, similar to customer animosity, really depends on situations and scenarios, thus warranting further research to adopt changes.

4.2. The role of digital information in the post-COVID-19 era for tourists' destination choices.

The findings of the study confirm that tourist information on online digital channels such as governments' and travel agencies' websites, social media platforms are really important for tourists' decision to visit or revisit a foreign country [4, 5]. The COVID-19 outbreak has had a severe impact on various industries, including the travel and tourism industry [4]. Despite the world's gradual recovery, the travel and tourism industry is still struggling to recover due to people's concerns about safety and their new cautious purchasing behavior, which prioritizes essential products over non-essential ones like travel and tourism products [49].

Fifteen interviewees agreed that tourists' online information is the most common channel for them to access and consider visiting a country. The other two interviewees agreed about the importance of digital information to their decisions to visit a country but they commonly referred to their children's opinion to update information about the country they would like to have holidays. As an interviewee said:

I do think that accessing information about a country before visiting is really highly recommended. Even though I booked a tour via Saigon tourist travel agency, the biggest travel agency in Vietnam, I did access Thailand tourism information and Thailand travel policy for tourists. You know, the policy for tourism in general, for tourists after the pandemic, is varied among countries and time. We do need to know, to find out,… yes, when deciding to book a tour, right before to visit the country *(Interviewee_No3).*

Other interviewee also said:

Definitely, you must check information on the government's website, the official channel information for tourists for sure. Each country has a different policy for tourism after the COVID-19, for your own safety, also… So, we should check to know *(Interviewee_No10).*

The COVID-19 pandemic has significantly impacted the tourism industry, and digital information has become increasingly important for tourists' destination choices in the post-COVID-19 era [6, 50]. The findings of the current study confirm that, tourists, with travel restrictions and safety concerns still in many countries and changes in travel policies in other countries in the post-COVID-19 era, are relying more on digital information to make informed decisions about their travel destinations [4, 5]. Tourist animosity, especially the COVID-19 pandemic animosity makes tourists rely on digital information to find information about travel policies and safety concerns. Social media platforms, review websites, and travel blogs also become essential sources of information for tourists, providing them with insights into the safety measures and hygiene practices of different destinations [5]. As such, the findings of this study support the opinions of recent studies [50, 51] about the importance of digital information for tourists in the post-COVID-19 era.

5. Conclusion

By taking a more general approach to the study of tourist animosity in the context of countries as tourist destinations and explaining their impacts when the products concerned are tourist destinations, the current study enriches and advances the literature on general consumer animosity. Studies on animosity in tourism are scarce in number [1]. Furthermore, animosity in general consumer marketing might also be different from affinity and animosity in tourism, especially because tourist destinations also refer to places, and thus have a great link with its geographical origin. The current study expands on the prevalent conceptualization of consumer animosity as being derived from bilateral conflicts or events, but derived from threats such as the pandemic and war, thus enriching the literature on consumer animosity.

This study explores the concept of consumer animosity from one country to different countries, which means that animosity does not depend on the unique relationship between a particular home country and a specific target country, explores the feelings outside of one specific country to a given country, outside of the context of traditional enemies or bilateral incidents between nations. As such, the current study also responds to calls from several researchers [1, 31, 33, 34].

This study explores the impacts of tourist animosity on the tourist destination choice process, from before to after a holiday. The current study found that tourist animosity influences tourist intentions to visit, revisit and WOM. Moreover, this study expands on the prevalent conceptualization of tourist animosity as not being derived from bilateral conflicts or events, but from threats from war and the COVID-19 pandemic. Therefore, this study also contributes to the literature on animosity in tourism and further documents that tourist animosity varies according to situations and scenarios, especially after a large event like the COVID-19 pandemic.

Besides, the current study also provides a better understanding of Vietnamese tourist destination choices. Vietnamese tourists choose foreign destinations and consider safety concerns and travel restrictions after the COVID-19 pandemic, decide to not visit a country if they feel threats from war and the COVID-19 pandemic. As such, the current study advances previous studies on tourist animosity by exploring the existence of the COVID-19 pandemic as a type of animosity. The findings of the current study support previous studies that animosity is complex and multidisciplinary, thus, animosity has various types depending on situations and scenarios.

Similar to any research, the current study also has limitations. The current study explores tourist animosity in the context of Vietnamese outbound tourists. In this regard, the research context and sample may limit the representativeness and generalisability of the findings. Vietnamese culture has been described as collectivist in outlook [52]. The research findings might differ if the research context is in different cultures, especially individualistic cultures. Thus, the findings cannot be generalised to all other contexts. Thus, the findings of the qualitative study in the current research also provide some suggestions for future work by investigating tourist animosity in other contexts, especially in individualistic countries. Moreover, the current study only investigates the impacts of tourist animosity on tourist destination choices while having not yet other tourism-related outcomes (i.e., willingness to pay, loyalty). Thus, future research is encouraged to investigate the impacts of tourist animosity on other tourism-related outcomes.

This study explored tourist animosity and its effects on tourist destination choices from before and after a holiday. The current study expands on the prevalent conceptualization of consumer animosity as being derived from bilateral conflicts or events, but derived from threats such as the pandemic and war, thus filling the research gap. The current study also advances previous studies on tourist animosity by exploring the existence of the COVID-19 pandemic as a type of animosity. The findings of the current study support previous studies that animosity is complex and multidisciplinary, depending on situations and scenarios. To respond to calls from several researchers [1, 31, 33, 34], this study explores the concept of consumer animosity from one country to different countries. This study found that animosity does depend on not only the unique relationship between a particular country and a specific target country, but also universal animosity such as the pandemic animosity remains, and that animosity affects tourist destination choices.

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Factors Influencing the Intention of International Tourists to Choose Homestays as Accommodation When Traveling in Vietnam

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ABSTRACT

The research aims to provide homestay owners with a comprehensive understanding of the factors influencing the intention of international tourists to choose homestays as their accommodation when traveling. Based on that, the authors propose management implications that homestay owners can refer to in order to enhance their homestay services. Drawing on theories, domestic and international research models, qualitative research was conducted through interviews with 12 international tourists who have used homestays to assess the appropriateness of the measurement scales for international tourists traveling in Vietnam. A formal quantitative study with 380 observations was conducted, and a structural equation modeling (SEM) was used to test the research hypotheses. The results of the study showed that advertising has the greatest impact on the intention of these tourists to choose homestays, followed by price, motivation, natural characteristics, and finally, physical facilities. Several management implications are proposed to create favorable conditions for the increasingly developing homestay operations.

Keywords: Intention to choose, Homestay, Accommodation, International tourists.

1. Introduction

The report on the Economic and Social Situation in March and the first quarter of 2023, released by the General Statistics Department on March 29th, states that in March, international tourists to Vietnam reached an estimated 895,400 arrivals, an increase 21,5 times compared to the same period in 2022. In the first quarter of 2023, international visitors to Vietnam reached over 2,699,500 arrivals, an increase 29,7 times compared to the same period in 2022. However, this figure is only 60% of the same period in 2019, a year before the COVID-19 pandemic occurred. This indicates the need for solutions to attract international tourists in the coming time. In this regard, it is necessary to focus

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on leveraging the existing tourism potentials and diversifying new forms of tourism to attract adventure-seeking travelers. Nowadays, international tourists want to experience new lifestyles, visit new destinations, and learn about the people and life in the places they visit. One of the best ways to explore the culture and life of a local destination is to stay at local residents' homes that offer rooms for rent (homestays).

The concept of homestay tourism began to emerge in Vietnam around 2017, and the number of tourists opting for homestay accommodations has gradually increased over the years. According to statistics from the Vietnam National Administration of Tourism, Vietnam has 781 homestays. However, most homestay businesses are still in their early stages, and the information about homestays available to international tourists is limited. Among various accommodation options such as villas, resorts, and hotels, making international tourists think of and choose homestays as their preferred accommodations is not an easy task. There are several factors that influence the intention of tourists to choose homestays, such as the quality of facilities, convenient location, cleanliness and ventilation of the rooms, reasonable prices that align with the room quality, enthusiastic and attentive hosts, beautiful landscapes, etc. So, how can international tourists choose homestays as their accommodations instead of other options? This study will provide information on the intention of international tourists to choose homestays, thereby suggesting proposals to help homestay owners better understand tourists' behavior, needs, and how to attract and promote their intention to choose homestays as their accommodations while traveling.

2. Theoretical Basis

2.1. Concept of Homestay Tourism

Homestay is a form of tourism originating from the West that has been strongly introduced in Vietnam. Decree 168/2017/ND-CP detailing certain provisions of the Tourism Law 2017 provides the following concept: "*Homestay refers to accommodation facilities with designated areas equipped with amenities for tourists to rent and stay, where guests coexist with the host family*". Homestay tourism involves community-based travel, living, and sleeping at the homes of local residents, where tourists visit. Staying in the homes of local residents allows tourists to learn about the culture and lifestyle of the local people. This type of tourism is favored for its novelty and interest, particularly in regions with diverse cultures like Vietnam. The main difference between homestay tourism and other forms of tourism is the host family. The host acts as a welcoming person, providing accommodation, meals, and recreational activities, enabling tourists to easily access the distinctive cultural and culinary aspects of the region. A significant advantage of homestay tourism is the range of prices available, from normal to luxury, suitable for various types of tourists. Homestay businesses require a relatively low investment compared to hotels or resorts, making it accessible for many individuals to start their own ventures. Additionally, homestay tourism promotes the unique cultural features of the local area to visitors, contributing to poverty reduction and socioeconomic development for the local population.

2.2. Concept of Behavioral Intention

Behavioral intention is a crucial concept in the field of business and various other disciplines. In business, behavioral intention helps managers predict the subsequent behavior of customers, enabling the formulation of appropriate and timely policies. Ajzen and Fishbein (1975) define behavioral intention as the expression of an individual's willingness to perform a predefined behavior, considered a direct precursor to actual behavior. Ajzen (1985) introduced the additional factor of perceived behavioral control, indicating that individuals have pre-planned their behavior, providing a measurement scale for the factors leading to behavioral intention. The scale measuring behavioral intention was further developed by Taylor and Todd (1995) based on Ajzen's (1985) concept. Taylor and Todd (1995) state that behavioral intention is demonstrated when customers intend to use a product or service in the near future.

2.3. Concept of Intention to Choose Homestay

According to Mohd Noor Ismawi Ismail et al. (2015), behavioral intention in homestay refers to the intention to consider homestay as a destination and the willingness to recommend it to friends and relatives. Lam & Hsu (2004) define behavioral intention in tourism as motivational factors that influence tourists' attitudes and lead to the choice of a particular travel destination. Therefore, the intention to choose homestay is measured by a scale comprising 3 factors: *tourists' intention to continue choosing homestay as their accommodation option when traveling, their intention to share positive experiences about homestay with family, friends, and colleagues; and their intention to recommend homestay to those in need of accommodation information for their trips*. Nguyen Ngoc Thuc (2021) and Phan Thi Thuy Duyen (2021) also verified these measurement scales in their studies.

3. Research Methodology:

3.1. Research Model and Hypotheses:

There have been many studies on the field of homestays both domestically and internationally. However, when studying the intention to choose homestays for accommodation during travel, the author found that the research by Parasuraman and colleagues (1988) is relevant to the content of this article. According to their research, the economic aspect, facilities, and natural conditions have the greatest impact on tourists' intention to choose homestays. Cathy H.C. Hsu & Songshan (2010), Gunashekharan and Anadkumar also have similar findings. However, Cathy H.C. Hsu & Songshan additionally emphasize the impact of the "Attitude" factor on travel behavior. According to the author's analysis, this attitude represents the desires and expectations of tourists towards the services they use, or in other words, the motivation that leads to consumer behavior. Shree Bavani and colleagues (2015) also add the factor of marketing and service advertising. This is an essential factor for any type of business. To make the research model more applicable to the reality in Vietnam, based on a survey of 12 international tourists staying at homestays, they stated that the cultural identity and natural conditions are the main attractions of homestays in Vietnam. Additionally, homestay tourism is primarily developed in mountainous provinces, where the terrain and cultural identity are unique. Therefore, the author supplements the factors of geographical location and natural conditions into the practical research model.

Research Hypotheses:

Hypothesis H1: The suitability of geographical location and natural characteristics has a positive impact on the intention to choose homestays as an accommodation for travel.

When choosing homestays for accommodation, tourists often consider (1) whether the geographical location of the homestay is convenient for transportation; (*2) whether the surrounding scenery creates a comfortable and friendly atmosphere; (3) whether the climate is suitable for the purpose of* *exploration or relaxation; (4) whether the surrounding terrain is suitable for the purpose of the trip; (5) whether there are tourist attractions and interesting landmarks around the homestay*. Based on the interview results of international tourists, the author establishes the hypothesis that the suitability of geographical location and natural conditions affects the intention to choose homestays.

Hypothesis H2: The quality of facilities has a positive impact on the intention to choose homestays as an accommodation option for travel.

In the field of accommodation services, facilities play an important role in creating customer satisfaction, thereby influencing their intention. In this study, in addition to the dimensions inherited from the research by Parasuraman and colleagues (1988), Nguyen Ngoc Thuc , Nguyen Thi Phuong Trinh (2021), the author adds the factor of ensuring safety and security for tourists. Thus, the dimensions of the "facility" factor include: (1) Interior design of the room; (2) Convenience and completeness of equipment and amenities in the room; (3) Neatness, tidiness, and cleanliness of the host's place; (4) Regular maintenance of facilities; (5) Reasonable room size, ensuring security and safety for tourists.

Hypothesis H3: The suitability of service prices has a positive impact on the intention to choose homestays as an accommodation option for travel.

The model by Parasuraman and colleagues (1988) addresses the economic aspect, with dimensions related to price and price fairness. Additionally, there is a dimension of "Bringing income to the locals." Nguyen Ngoc Thuc , Nguyen Thi Phuong Trinh (2021), also includes this dimension in the research model. However, the author recognizes that “bringing income to local residents” does not measure the economic aspect from the perspective of tourists, as it is a subjective factor from the host's point of view - the homestay service provider. Therefore, in this research model, the author adjusts the factor name to 'Price'. Accordingly, price suitability is a factor that positively impacts the intention to choose a homestay service. Price suitability of the service is measured by: (*1) Accommodation at a reasonable price, (2) Helping you save costs compared to staying at a hotel, (3) Service quality is corresponding to the price.*

Hypothesis H4: Consumer motivation has a positive impact on the intention to choose a homestay as a place to stay when traveling.

Motivation is the driving force behind all human actions. It is an internal state that provides energy and directs individuals towards behaviors. The foundation of motivation is emotions, specifically based on avoidance, negative emotional experiences, and the search for positive emotions. Agyeiwaah, Elizabeth (2013) found in a study on the intention to choose Homestay by international tourists visiting Ghana that tourism motivation is an important factor influencing the choice of homestay. Additionally, according to Cathy H.C. Hsu & Songshan (2010) and Nguyen Ngoc Thuc , Nguyen Thi Phuong Trinh (2021), tourism motivation is also defined as a combination of needs and desires that influence travel tendencies. Consumer motivation is measured as follows: (1) *Choosing a homestay will help you understand the local culture at the travel destination; (2) Choosing a homestay will allow you to visit unique scenic spots; (3) Choosing a homestay will let you experience a different lifestyle; (4) Choosing a homestay will enable you to enjoy local cuisine; (5) Choosing a homestay will provide relaxation and comfort*. In this study, the author adds one measurement scale for this factor that aligns with the business goal of local indigenous people in mountainous regions of Vietnam, which is generating additional income from farming. Some tourists choose homestays for accommodation, not only to satisfy their personal needs but also with the desire to contribute to the community, which is *(6) choosing a homestay will contribute to bringing income to local residents.*

Hypothesis H5: Advertising has a positive impact on the intention to choose a homestay as a place to stay when traveling.

Advertising is an important factor in creating attraction for customers. In the study by Shree Bavani et al. (2015), Nguyen Ngoc Thuc (2021), and Phan Thi Thuy Duyen (2021), advertising, while not highly significant, is considered a necessary element to attract tourists. Nowadays, with the development of technology and communication, including social media platforms such as Facebook, Zalo, Instagram, it has become easier to reach customers. This allows homestays to be easily known and chosen by many people. All information about homestays is updated on social media platforms for customers to easily grasp the information. Therefore, advertising has a positive impact on the intention to choose a homestay as a place to stay when traveling. The measurement scale for this factor includes: *(1) You can see advertisements about homestays on social media, (2) You can see introductions about homestays on online news websites, (3) You can see reviews and evaluations about homestays on travel forums, (4) You can find homestays on large and reputable online booking websites.*

The formal proposed research model is as follows:

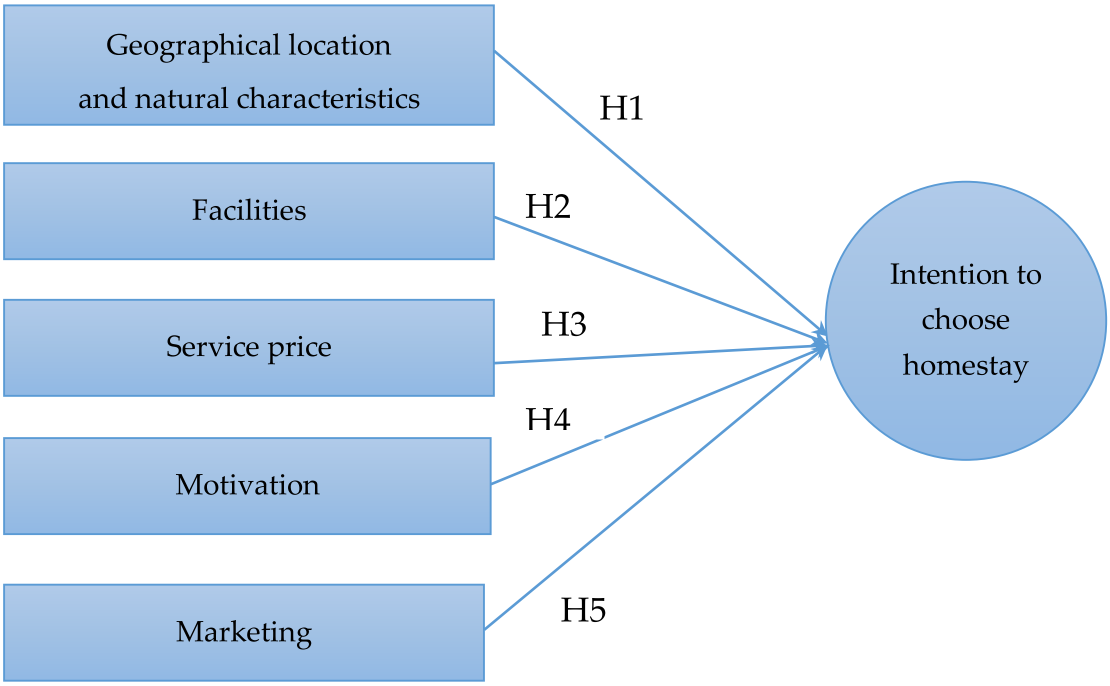

Diagram 1: Research model

Source: [3] [4] [5] [7] [9] [11] and developed by authors

3.2. Research Methodology

The research methodology is conducted in two steps: qualitative research and quantitative research. The qualitative research is carried out with a sample of 12 international tourists who have used homestay accommodations to examine the appropriateness of the measurement scales for international tourists when traveling in Vietnam and to explore the perception of factors influencing the intention to choose homestay as an accommodation during travel. The results of the qualitative research help the author establish the quantitative measurement tool.

The quantitative research is conducted in two stages. In stage 1, the author conducts a pilot study with a small group to identify any flaws in the questionnaire. Stage 2 is the formal research conducted using the modified questionnaire after the pilot study. The survey was conducted in March 2023.

According to Nguyen Dinh Tho (2011), the sample size required to achieve the research objectives depends on various factors, such as the chosen method for data analysis and specific statistical indicators. Currently, researchers believe that the sample size to meet the analysis requirements can be determined using empirical formulas based on the selected data processing methods. The sample size applied in this study is based on the requirements to meet the indicators of Exploratory Factor Analysis (EFA) and Multiple Regression Analysis according to Nguyen Dinh Tho (2011). For the EFA analysis, the minimum sample size is 5 times the total number of observed variables in the proposed model. This is considered appropriate for cases where EFA analysis is applied with n = 5*m (n: sample size, m: the number of questions in the proposed model). Applying this formula, the sample size for the study is n = 5*27 = 135.

For cases where Multiple Regression Analysis is applied, the minimum sample size needs to be determined using the formula n = 50 + 8*m, with m being the number of independent factors. In this case, m is equal to 5. Applying this formula, the sample size for the study is n = 50 + 8*5 = 90. Therefore, to determine the sample size, it needs to satisfy both formulas above, which means a minimum of 90 survey questionnaires should be answered. It is even better if the sample falls within the range of 90 < n < 135 or, ideally, exceeds 135.

To meet the sample size requirement, the quantitative research method was carried out with 380 survey questionnaires to test the measurement of concepts in the research model. This sample size fulfills the requirements for the analysis sample, as discussed above. The research subjects were asked to respond to the questions on a 5-point Likert scale (ranging from 1 - strongly disagree to 5 - strongly agree). The questionnaire served as the primary tool for data collection.

The SPSS 20.0 software and AMOS 20.0 were used for data processing and statistical analysis. Confirmatory Factor Analysis (CFA) was used to screen the measurement scales of the concepts. Subsequently, the Structural Equation Modeling (SEM) was utilized to test the research hypotheses and build the SEM regression model.

- Measurement scales of research concepts: There are 27 observed variables (corresponding to 5 independent factor groups and 1 dependent factor group).
- Sample statistics: The number of survey questionnaires sent was 420, and the number of valid questionnaires used for analysis was 380. The survey participants were international tourists who have used homestay services when traveling in Vietnam.

3.3. Quantitative Analysis Results

3.3.1. Statistical Sample Characteristics

Territory: The survey respondents came from various continents around the world. Among them, 63% of respondents were from Asia, 15% were from Europe, 11% were from the Americas, 8% were from Australia, and only 3% were from Africa.

Gender: The survey respondents were predominantly female. Specifically, 54.08% were female and 45.92% were male.

Age: There is a noticeable difference in age distribution. The majority of survey participants were in the age range of 24-29, accounting for 45%, followed by the age range of 29-35, accounting for 29%, and finally the age range of 18-23, accounting for 26%.

Occupation: Based on the survey results, the distribution of occupations was almost equal. The business group accounted for the highest proportion at 30%, followed by the arts group at 26%, the student group at 24%, and finally the office staff group at 20%.

Marital Status: The majority of respondents were unmarried, accounting for 65%, while the married group accounted for the remaining 35%.

Income: The group with incomes ranging from $1000 to $3000 accounted for the highest proportion at 48%, followed by the group with incomes ranging from above $3000 to $6000 at 17%, the group with incomes ranging from $6000 to $10,000 at 16%, the group with incomes above $10,000 at 11%, and finally the group with incomes below $1000 at 8%.

Frequency: The group of survey respondents who frequently choose homestay accommodations accounted for the highest proportion at 56%, followed by the occasional group at 20%, the always group at 18%, and finally the rarely group at 6%.

3.3.2. Cronbach's Alpha reliability test

The Cronbach's Alpha reliability test results for independent variables and dependent variables are shown in table 1 listed below.

Table 1. Scale's reliability analysis results

Factors		**Variable**	**Source**	**Corrected Item-Total Correlation**	**Cronbach's Alpha if Item Deleted**
Geographical location and natural characteristics **Cronbach's Alpha 0,807**	LOCA1	Convenient location for transportation	Author	.575	.781
	LOCA2	The surrounding landscape creates a comfortable and friendly atmosphere		.590	.775
	LOCA 3	The weather climate is suitable for the purpose of the trip		.693	.723
	LOCA4	Tourist attractions and appealing landmarks		.644	.749

Factors		Variable	Source	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
	LOCA5	The surrounding terrain is suitable for the purpose of the trip		.030	.207
Facilities Cronbach's Alpha 0,806	FUR1	Beautiful interior design of the homestay rooms	Mohd Noor Ismawi Ismail et al(2016)	.619	.764
	FUR2	Convenient and easy-to-use facilities and amenities in the rooms		.581	.773
	FUR3	Household items are organized, tidy, and clean.		.508	.790
	FUR4	The facilities at the homestay are regularly maintained		.528	.785
	FUR5	Reasonable room size for tourist activities		.548	.780
	FUR6	Homestay has a security system, ensuring safety for tourists		.607	.767
Price Cronbach's Alpha 0,742	P1	Affordable accommodation	Parasuraman et al (1988) Nguyen Ngoc Thuc (2021), Phan Thi Thuy Duyen (2021)	.617	.708
	P2	Helps you save costs compared to staying in hotels		.707	.688
	P3	Service quality matches the price		.618	.704
Motivation Cronbach's Alpha 0,726	MO1	Choosing a homestay will help you understand the local culture at the travel destination	Cathy H.C. Hsu, Songshan (2010) Phan Thi Thuy Duyen (2021)	.723	.827
	MO2	Choosing a homestay will allow you to visit many unique and beautiful sceneries		.695	.835
	MO3	Choosing a homestay will give you the experience of a different lifestyle		.674	.840
	MO4	Choosing a homestay will allow you to enjoy local cuisine		.686	.837
	MO5	Choosing a homestay contributes to the income of local residents		.656	.845

Factors		Variable	Source	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
	MO6	Choosing a homestay will provide relaxation and comfort		.706	.835
Marketing **Cronbach's Alpha 0,772**	MAR1	You can see advertisements about homestays on social media	Shree bavani et al(2015) Phan Thi Thuy Duyen (2021)	.554	.727
	MAR2	You can find introductions about homestays on online news websites		.578	.714
	MAR3	You can read reviews and feedback about homestays on travel forums		.582	.711
	MAR4	You can find homestays on reputable and large online booking websites		.579	.712
Intention to choose homestay **Cronbach's Alpha 0,867**	PI1	You will continue to choose homestays as your accommodation in future trips	Mohd Noor Ismawi Ismail et al. (2015), Lam & Hsu (2004) Nguyen Ngoc Thuc (2021)	.479	.684
	PI2	You will continue to choose homestays as your accommodation in future trips		.580	.669
	PI3	You will recommend homestays to those who need information about accommodation in their trips		.637	.783

(Source: Processing by A mos software)

The results show that except for the variable LOCA5: "The surrounding terrain is suitable for the purpose of the trip," which has a Cronbach's Alpha reliability coefficient of <0.6, all the remaining measures have Cronbach's Alpha reliability coefficients >0.6, and all the remaining observed variables have a total variable correlation >0.3. Therefore, the measures are reliable, and 26 variables are retained for exploratory factor analysis (EFA) to validate the scales.

3.4. Exploratory factor analysis

Exploratory factor analysis (EFA) was conducted using the principal axis factoring method with Promax rotation. The results yielded a KMO coefficient of 0.901 > 0.5, and Bartlett's Test statistic was 4803.028 with a significance level of 0.000 < 0.05, indicating that the data analysis is completely appropriate. All factor loading coefficients are greater than 0.5, explaining more than 50% of the variance, and the observed variables are grouped correctly according to the initial scales.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.901

Bartlett's Test of Sphericity	Approx. Chi-Square	4803.028
	df	325
	Sig.	.000

(Source: Processing by SPSS software)

After exploratory analysis of EFA, it can be seen that the model has no difference compared with the research model, no observed variable is excluded from the research variable. There is no new group of factors shown in Table 3.

Table 3: Pattern Matrix

	Factor					
	1	2	3	4	5	6
FUR6	.806					
FUR1	.752					
FUR5	.712					
FUR3	.673					
FUR2	.647					
FUR4	.622					
MO3		.814				
MO5		.783				
MO2		.753				
MO6		.685				
MO4		.631				
MO1		.601				
LOCA1			.893			
LOCA2			.883			
LOCA3			.657			
LOCA4			.628			
MAR3				.833		
MAR4				.784		
MAR2				.764		
MAR1				.710		
P3					.836	
P1					.773	

P2					.651	
PI3						.967
PI2						.745
PI1						.564

(Source: Processing by SPSS software)

3.5. Confirmatory factor analysis

Based on the results of the Exploratory Factor Analysis (EFA), six key concepts have been identified in the research model. To evaluate the model fit, several measures have been used, including the Chi-square command (CMIN), Chi-square adjusted for degrees of freedom (CMIN/df), GFI index, TLI, CFI, and RMSEA index. The model is considered suitable for market data when it meets the following criteria: GFI, TLI, CFI values ≥ 0.9 (Bentler & Bonelt, 1980), CMIN/df ≤ 3 (Carmines & McIver, 1981), and RMSEA = 0.041 ≤ 0.08 (Steiger, 1990).

The results of the Confirmatory Factor Analysis (CFA) indicate that the research model is appropriate (Figure 2. . The observed variables representing the factors have a significant value of 0.00, indicating that they have a good representation for the CFA model factor. Additionally, statistical indicators of normalized weights all show high values and statistical significance (p-value = 0.000), indicating that the concepts have achieved discriminant value.

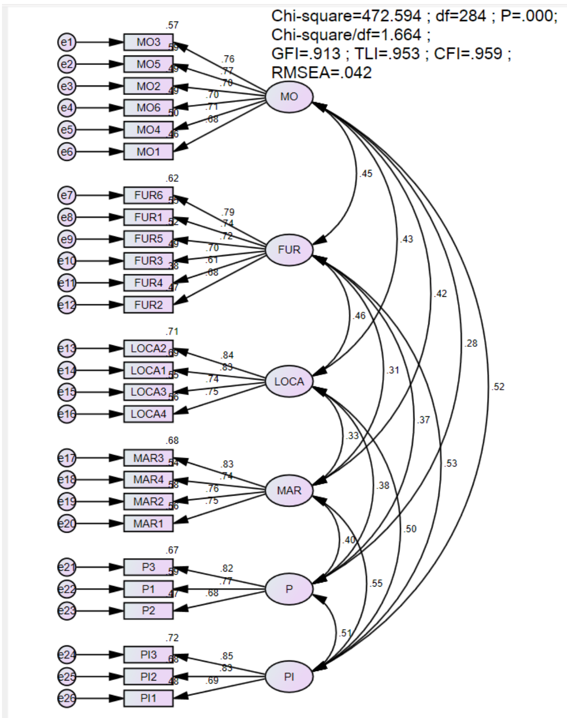

Figure 2. CFA normalization diagram of research model

(Source: Processing by Amos software)

The standardized weights are more than 0.5 and the unstandardized weights are statistically significant (sig.<0.000), so the concepts are convergent. This measurement model is appropriate for the research data and there is no correlation among the measurement errors, therefore achieving the property of unidimensionality.

Table 4 shows that the Convergent Validity (CR) and Discriminant Validity (AVE)

Table 4. Results of composite Reliability and Average variance extracted

Factors	CR	AVE
P	0.786	0.553
MO	0.836	0.506
FUR	0.858	0.504
LOCA	0.869	0.625
MAR	0.808	0.513
PI	0.827	0.617

(Source: Processing by Amos software)

3.6. Structural equation modeling (SEM)

The study utilized SEM to evaluate the fit of the research model and test the relationships within the initial model. The SEM analysis result of the model with df = 284, Chi-square = 472.594 with a p-value = 0.000 < 0.05, Chi-square/df = 1.664< 3, GFI = 0.913, TLI = 0.953, CFI = 0.959; RMSEA = 0.042 < 0.08 confirms that the model is suitable for market data (Figure 3).

Table 5 shows that the Convergent Validity (CR) and Discriminant Validity (AVE) of the factors in the model are suitable.

Table 5. Results of composite Reliability and Average variance extracted

	CR	AVE
MAR	0.885	0.690
MO	0.865	0.517
FUR	0.839	0.531
LOCA	0.816	0.505
P	0.822	0.526

(Source: Processing by Amos software)

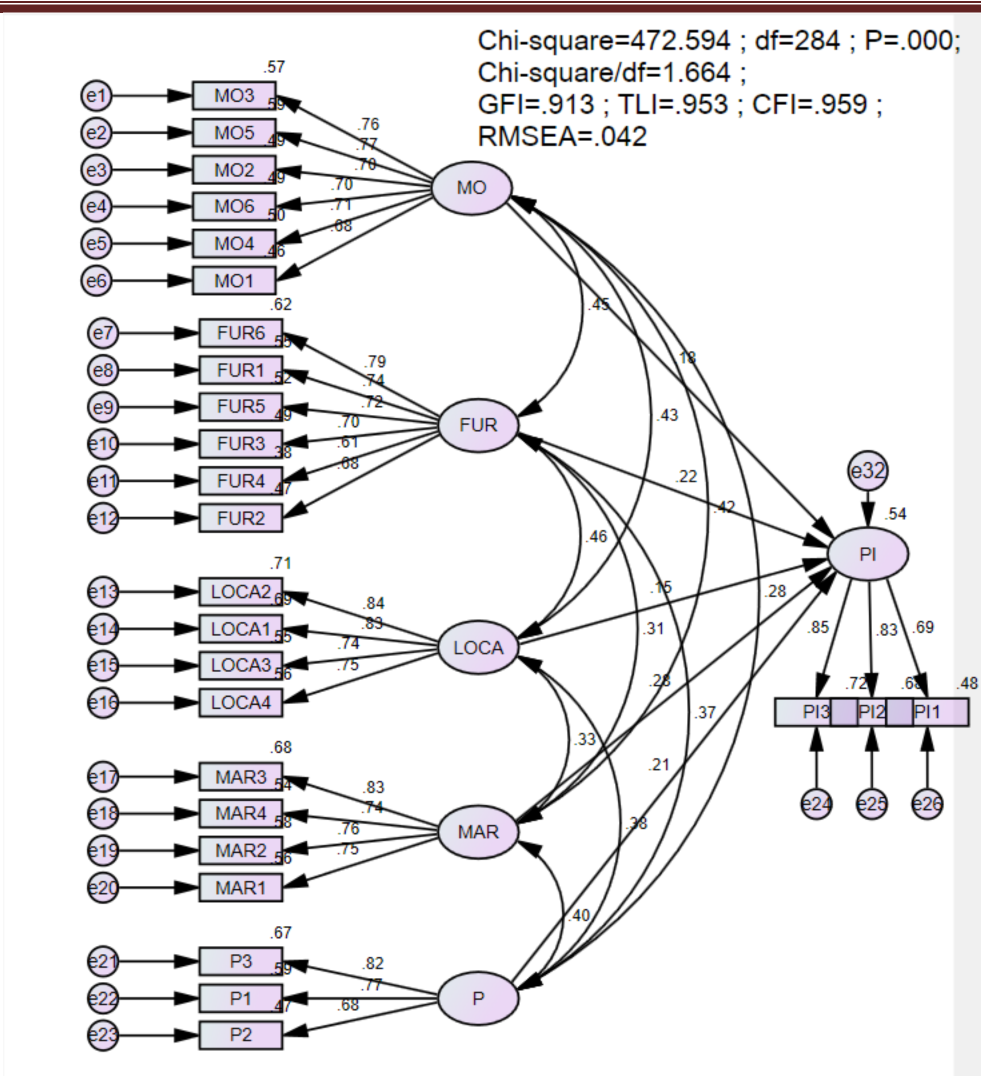

Figure 3. Linear structural model (SEM)

(Source: Processing by Amos software)

The results of the regression coefficients in the model show that all factors have a positive impact on the intention to choose Homestay as an accommodation option for international tourists during travel. (Table 6)

Table 6. Coefficients of the SEM regression model and the results of testing the model's hypotheses

Relation			**Estimate**	**S.E.**	**C.R.**	**P**	**Conclusion**
PI	<---	MO	.199	.065	3.064	.002	Accepted
PI	<---	FUR	.216	.058	3.716	***	Accepted
PI	<---	LOCA	.151	.056	2.707	.007	Accepted
PI	<---	MAR	.292	.060	4.870	***	Accepted
PI	<---	P	.230	.063	3.645	***	Accepted

(Source: Processing by Amos software)

The standardized estimates of the SEM regression model (Table 6) indicate that the MAR factor, "Marketing," has a positive and the strongest impact on the PI factor, "Intention to choose Homestay as an accommodation option for international tourists. The results of the study have some similarities with previous research: Nguyen Ngoc Thuc & Nguyen Thi Phuong Trinh (2021) and Phan Thi Thuy Duyen (2021). This indicates that the focus on marketing activities of tourism businesses is the most influential factor in the intention to choose a homestay of foreign tourists. The next influential factors are the Price Appropriateness factor; followed by "Furniture" factor. As the result of Hsu & Lin (2011), the finding confirmed that affordable price is a relatively important factor affecting the intention to choose a resting place. Subsequently, MO: Consumer motivation, is observed, followed by the factors of Location and Natural conditions.

4. Conclusion

Homestay is a type of accommodation that is suitable for the current trend and meets the needs of many tourists who want to explore the traditional cultural identity of ethnic communities. Through this unique form of tourism, the strengths of localities rich in cultural traditions and pristine natural beauty can be highlighted, attracting tourists to experience and explore. Additionally, homestays contribute to the income generation for local residents, promoting socio-economic development in the area. However, the tourism infrastructure for homestays in many places is still limited, and local residents have limited knowledge about operating homestays. It is important for the local community to be proactive, actively learn, invest in infrastructure, and acquire necessary skills to better serve the tourists. Therefore, to make homestays truly attractive to tourists and contribute to the development of tourism, appropriate attention and investment are required.

For community-based tourism to thrive, it is crucial to preserve the unique local culture, which is also the desire of tourists when choosing this form of tourism. Research helps homestay owners better understand the psychology and intentions of international tourists, allowing them to develop appropriate solutions to meet the needs and desires of tourists when choosing homestays as their accommodation option. This includes implementing policies and management practices that ensure hygiene, safety, and create favorable conditions for the continuous development of homestay operations.

Furthermore, the study has utilized demographic analysis methods, revealing differences among international tourists based on their marital status. This finding helps business owners focus their efforts on specific market segments and make appropriate investment plans. Additionally, it is noteworthy that while international studies have often overlooked advertising as a significant factor, this research in Vietnam has demonstrated that advertising is the most influential factor in tourists' intentions to choose homestays. Therefore, advertising is essential to attract international tourists. Given that many homestay businesses are run by households, including those in remote areas, they often lack the means to promote their homestays. Hence, advertising plays a crucial role in the future development of homestays.

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PART 8.
ECONOMICS, BANKING & DEVELOPMENT

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Does The Discipline of Subordinated Debt Holders in Banking?

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ABSTRACT

The study selected the model with the lowest error outcomes and observational data from 325 banks in the Asia-Pacific area from 2016 to 2021. The study used the Lasso regression method to give accurate results with the lowest error when using small observational data with a large number of features. The study reached the following outcomes: (i) The study shows that subordinated debt holders will take disciplinary action against banks with high risk, especially credit risk and market risk; (ii) Our research shows signs of a decline in discipline under regulatory scrutiny, particularly in emerging market banks. (iii) In particular, the findings of the study point to the reasons why banks do not disclose bank risks in compliance with the third pillar of the Basel III framework. Our research has implications for bank supervisors, policymakers, and bank managers. Overall, this study is the first attempt to assess the discipline of subordinated debt holders under new capital and liquidity regulations using the Lasso regression model. This is also the first study to examine the impact of four different risk categories on the discipline of subordinated debt holders (as required by the Basel regulatory framework to improve disclosure).

Keywords: market discipline, bank risk, bank regulations, Lasso regression

1. Introduction

Market discipline is seen as a market-based driver for transparency and disclosure of banking-related risks, along with regulatory systems that improve the safety and soundness of the market. Thus, the role of market discipline in controlling banking risk is emphasized by numerous studies conducted in both developed and emerging countries [15,27], and its role in bank efficiency or performance has been studied by [22, 26 and 33]. Currently, the banking regulatory and supervisory authority specifically proposes to rely on market forces to protect banks from uncertainties and crises [4, 6 and 8]. That is to say, market forces will play a central role in providing early signals for a true safety net in the financial sector, impacting performance, and also requiring bank supervisors

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to use market information to examine bank risk and other financial conditions in order to control the behavior of banks [20, 33].

According to previous studies and limited access to market discipline, there are three market participants that can cause banks to behave in a safe way. It is the supervisory and disciplined behavior of depositors, subordinated debt holders, and equity holders. In general, there are many studies that focus on analyzing market discipline but mainly approach and consider depositor discipline, ignoring the discipline of the other two members. The significant proportion of s subordinated debt in the capital structure of banks is a prerequisite for market discipline to take effect. However, research by [6] and even the Basel Committee do not mention subordinated debt as a potential market discipline tool. Therefore, the study will focus on showing the role of subordinated debt holders' discipline for banks. In addition, the literature on market discipline is dominated by studies in advanced economies in the United States and Europe [10, 11]. Market discipline in the Asia-Pacific region is limited and mainly practiced within a single country, with the exception of [1], which compares Pakistan and India.

This study contributes to the literature in a number of ways. Firstly, studies in developed countries in the US and Europe predominate in the literature on the market discipline [10, 11 and 17]. Evidence of market discipline in the Asia-Pacific region is limited. Besides, there are also some studies in this area, but they are only conducted within one country, such as [14] in Indonesia or [23] in Vietnam. Secondly, compared with previous studies, our study focuses on four types of risks that the Basel regulatory framework requires to improve information disclosure: credit risk, market risk, operational risk, and counterparty credit risk. From there, explain the behavior of banks in delaying disclosure of risks when implementing the Basel framework. Thirdly, this study is the first attempt to assess market discipline under the new capital and liquidity regulations using the Lasso regression model as suggested by [31, 32, 18 and 19]. In particular, the study will demonstrate the role of subordinate debt holders' discipline in banks' excessive risk-taking behaviors that previous studies have overlooked.

The remainder of this paper is structured as follows: Section 2 provides a literature review. Section 3 discusses the methods and data used. Section 4 discusses the findings while section 5 concludes.

2. Literature review

Official regulation and supervision by national and international regulators for banks have the purpose of ensuring safety and creating financial stability. However, banks may not be disciplined enough through formal oversight. This may arise because of an information asymmetry between the bank and its supervisor, because of the prohibition of political policies, or for other reasons (e.g., legal protection weakness for supervisors). The existence of market participants with the resources, expertise, and incentives to supervise banks provides an additional disciplinary tool that complements formal supervision and can also limit prohibition. Taken together, appropriate regulations can enhance market discipline, while market signals can provide relevant information and impetus for the actions of banks and regulators.

As [12] suggests, a key aspect of the market discipline process involves the actions in which fund providers engage to exercise market influence. Besides primary debts (depositors), subordinated debts can also act as bank custodians. Subordinated debt holders are those who lose shares when the bank defaults, but they do not have any benefits when the bank increases profits by taking excessive risk. Subordinated debt holders can signal awareness of a bank's difficulties by expressing a willingness to keep bank debt at current levels only when a higher debt level is imminent or by reducing their holdings of bank loans. Thus, subordinated debt holders have even stronger incentives than equity holders to supervise banks to limit risk-taking. Some empirical studies show evidence that subordinated debt holders will punish poor-performing banks, such as [29].

The significant proportion of subordinate debt holders in the capital structure of banks is a prerequisite for the effective use of cash flow. However, the study of [6] and even the Basel Committee did not mention subordinated debt as a potential financial tool. [7] used the data of major US banks from 1985 to 2002 through the subordinated debt differential measure to represent the market discipline variable. The results indicate that discipline is currently being applied to banking institutions in the subordinated debt market. In other words, investors can and do monitor and influence banking institutions even without a formally mandated secondary debt policy. The results also suggest that the risk sensitivity of the subordinated debt arbitrage can be influenced by the financing manager's decisions. [33], using data from Japanese banks for the period 2000–2005, show that depositors are the main providers of capital for banks, which can play an important role in banking regulations without showing the disciplinary role of subordinated debt holders. Mendonça (2009) uses data including banks in Brazil for the period 1995–2006 using least squares (OLS), general least squares (FGLS), and GMM regression methods. [2], This is one of the few studies that approaches monetary policy from the perspective of the disciplinary behavior of subordinate debt holders. Subordinated debt holders are considered to be the most active private body for disciplining financial institutions. However, the results show a weak presence of market discipline in Brazil. In addition, the financial variables and the Basel index are significant in all models, revealing the relevance of the factors to the return on investment. This result is similar to the study [13] using data from 706 commercial banks in 20 emerging countries and 14 developed countries in the period 2000–2014.

Measures of the disciplinary behavior of subordinate debt holders are mentioned in Table 1. The study will inherit from the study of [33] and use the ratio of subordinated debt to total liabilities. This variable represents the return on investment of subordinated debt holders because it shows the strong and direct reactions of this group of members when the bank's performance deteriorates. Measures such as dummy variables on subordinated debt or credit ratings only show indirect effects, and the credit ratings of each country will be inconsistent and difficult in terms of data collection.

In summary, starting from the gaps of previous studies, the research will focus on: (i) expanding the scope of research in the Asia-Pacific region; (ii) using the LASSO regression method to increase convenience and improve the reliability of the model's variable selection; (iii) Access to market discipline through disciplinary behavior of subordinate debt holders; (iv) Access to the bank's risk profile according to Basel's disclosure recommendations, including credit risk, counterparty credit risk, market risk and operational risk; (v) access to capital and liquidity regulations under Basel III; (vi) compare results with previous studies and compare results across country groups in the study area.

Table 1. Measures of the disciplinary behavior of subordinate debt holders

Measures	Athours
Subordinate debt spread	Covitz et al. (2004) [7]
Subordinate debt spread is paid with liabilities (Assets increase in the last day of the quarter divided by the increase in assets for the previous day of the quarter)	Mendonça (2009) [24]
Ratio of subordinate debt /total assets	Uchida & Satake (2009) [33]
Ratio of subordinate bonds/total assets	Uchida & Satake (2009) [33]
Ratio of outstanding bonds/total assets	Uchida & Satake (2009) [33]
Long-term credit rating	Godspower-akpomiemie & Ojah (2021) [13]
Dummy variable for subordinate debt	Godspower-akpomiemie & Ojah (2021) [13]

Source: Authors' own compilation

3. Methodology

The study will use a lasso regression model, which is a selection procedure that performs both transformation and regularization selection to improve prediction accuracy and interpretability. It combines the least square method with a constraint on the sum of the absolute values of the coefficients [31, 32, 18 and 19]. Lasso can be useful in estimating regression coefficients and performing variable selection. This method is useful when demonstrating the presence of market discipline through a selection of factors. By using Lambda penalties to select a suitable model with minimal risk, the prediction accuracy will be increased compared to previous traditional models. In addition, it is suitable for factor analysis with many endogenous factors and big data.

Applications of the models take the following form:

$$\hat{\alpha}^{lasso} = argmin_{\alpha} \sum_{i=1}^{N} \left(Subordinated\ debt\ holders's\ discipline_i - \alpha_0 - \sum_{j=1}^{4} \alpha_{\mathrm{j}} Bank\ risks_{ij} - \sum_{j=5}^{9} \alpha_{\mathrm{j}}\ \mathrm{Bank} - specific\ variables_{ij} - \sum_{j=10}^{12} \alpha_{\mathrm{j}} Macro\ variables_{ij} \right)^2 + \lambda \sum_{j=1}^{12} |\alpha_j| \quad (1)$$

$$\hat{\beta}^{lasso} = argmin_{\beta} \sum_{i=1}^{N} \left(Subordinated\ debt\ holders's\ discipline_i - \beta_0 - \sum_{j=1}^{4} \beta_{\mathrm{j}} Bank\ risks_{ij} - \sum_{j=5}^{7} \beta_{\mathrm{j}}\ Capital\ and\ liquidity\ regulatory\ variables_{ij} - \sum_{j=8}^{12} \beta_{\mathrm{j}}\ \mathrm{Bank} - specific\ variables_{ij} - \sum_{j=13}^{15} \beta_{\mathrm{j}} Macro\ variables_{ij} \right)^2 + \lambda \sum_{J=1}^{15} |\beta_j| \quad (2)$$

where α_0, β_0 an intercept; α_j, β_j the corresponding coefficient and $\widehat{\alpha}^{lasso}$, $\widehat{\beta}^{\text{lasso}}$ represents the vector of fitted regression coefficients on factors. λ is a positive weighting parameter on the L1 penalty, which encourages sparsity in the resulting set of fitted regression coefficients.

MD - the ratio of subordinate debt to total debt, showing the discipline of subordinate debt holders. This ratio will decrease as the bank's fundamentals deteriorate. Or subordinate debt holders will react strongly by reducing the ratio of subordinated debt to limit banks' taking on excessive risk. Therefore, the lower the ratio, the stronger the discipline of subordinate debt holders.

Bank risks include Credit Risk (CR), Market Risk (MR), Operational Risk (OR) and Counterparty Credit Risk (CCR) with observation i. According to the provisions of the 3 pillars in the Basel framework, those types of risks are the four types of risks that need to be fully informed[1]. Therefore, the study will mainly focus on the types of risks the discipline of subordinate debt holders and expect a positive sign [1, 14 and 23].

Bank-specific variables: CAP (bank capital), equity to assets ratio. High-capital banks tend to have better access to low-cost and lower-risk sources of finance and better access to higher-quality asset markets than low-capital banks [1]. In contrast, [3] demonstrated that higher capital is also associated with a higher cost of bank equity. An increase in equity reduces the efficiency of financial leverage, and banks have a lower chance of effectively owning assets. HQLA: high-quality liquid assets; ratio of high-quality liquid assets to total assets. Banks are required to have good liquidity management capabilities. Liquidity is used as collateral for possible payment obligations. Some banks implement the strategy of excess liquidity as a signal to the market that the bank has strong liquidity. However, such high liquidity can also be understood as a result of banks' poor liquidity management, resulting in their failure to optimally manage their asset and debt portfolios [34]. LNTA is the natural logarithm of total assets, used to control for the effect of bank size on the presence of liquidity. Results on this relationship have been mixed in previous studies. LA (loans to total assets) is a type of financial leverage ratio to determine and measure the capacity of a business. The higher the LA ratio, the more leverage the bank uses and, therefore, the greater the financial risk. However, if this index is low, it means that the enterprise has not taken advantage of the debt mobilization channel. That is, financial leverage in business has not been exploited well [25]. CIR (Cost to income ratio). CIR shows how much a bank's total operating expenses account for in total revenue, thereby showing the bank's operational efficiency. CIR is considered a measure for banks to evaluate, in general and in many aspects, their business results. With a certain amount of costs, how does the business achieve business efficiency? Adding costs will increase income, and vice versa. The lower the CIR ratio, the better, demonstrating that the bank is more efficient than [14].

Capital and liquidity regulatory variables: Banks are increasingly complying with regulations, indicating that banks are healthy; it is a measure of the bank's health. Therefore, meeting the regulations under the Basel framework will create positive signals about the bank's operations to market participants, and liquidity will tend to decrease. In addition, a bank that meets the

[1] Credit risk (CR) is "the possibility that the bank borrower or counterparty will not meet its obligations under the agreed terms". Counterparty credit risk (CCR) that one party to a financial transaction will default. Market risk (MR) is "the risk of loss in on-balance sheet and off-balance sheet positions arising from fluctuations in market prices". Operational risk (OR) is "the risk of loss due to inadequate or failed internal processes, people and systems, or from external events". BIS (2008)

regulations will create a healthy banking system capable of developing and competing domestically and internationally [28, 30]. The study will use the regulated variables according to the Basel III framework, including: (i) CAR(≥10.5), dummy variable if the minimum capital adequacy ratio (including capital buffer) is equal to 1 if the ratio is large, more than or equal to 10.5%, and zero otherwise; (ii) LCR(≥100), dummy variable if liquidity coverage ratio is greater than or equal to 100%, and zero otherwise. This ratio requires banks to hold enough high-quality liquid assets to cover 30-day total net cash flows under the stress scenario; (iii) NSFR(≥100) is a dummy variable if net stable funding ratio is greater than or equal to 100% and zero otherwise. This ratio requires banks to keep a stable source of capital to overcome the amount of stable capital needed during a prolonged stress year.

General macroeconomic conditions, including gross domestic product growth rate (GDP), inflation rate (INF), and national disclosure index (DI), were also used as control variables. Since studies conducted for Asia-Pacific countries differ in the characteristics and variability of the indicators, the specific expected signs for these variables are not clear.

4. Empirical results and diagnostic test

4.1. Data

The dataset used in this thesis is compiled from two main sources: (1) a database of banks from https://www.bankerdatabase.com; and (2) a database of macroindicators from https://www.worldbank.org.

The research sample includes 325 banks with the largest tier-1 capital in the Asia-Pacific region in the period 2016–2021. The study limits the sample to banks with large tier-1 capital due to the following reasons: (i) are banks that are qualified and capable of meeting Basel III regulations; (ii) banks provide quite complete data, so it is convenient for analysis and evaluation; (iii) select banks with large Tier 1 capital in the region of emerging and developed countries for the purpose of considering this variable in the study. From there, it is possible to compare and evaluate two different sectors of the economy. In addition, the selection and filtering of 325 banks from 689 banks in the region for the period 2016–2021 will ensure that the panel data is balanced, serving the research process with accurate results. Specifically, according to the ranking of large Tier 1 capital from the dataset https://www.bankerdatabase.com, the study selected 325 commercial banks in the Asia-Pacific region. including banks in 7 developed countries (Australia, Hong Kong, Japan, New Zealand, Singapore, South Korea, and Taiwan) and 7 emerging countries (China, India, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam).

Table 2 presents the descriptive statistics for the raw variables, and Table 3 reports the Pearson correlation coefficient during the study period. To ensure that these correlations will not lead to multicollinearity, we proceed with the variance inflation test (VIF). The VIFs of the variables are below 10, and the mean VIF of the model regression is below 2, indicating that multicollinearity is not serious problem[2].

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[2] (Gujarati, 2003) indicates the VIF cut-off is 10. If the calculated VIF is more than 10, it can be an indication of multicollinearity.

Table 2. Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
MD2	1950	1,013	7,659	0,005	334,513
CR	1950	89,019	23,816	0,672	865,5
MR	1950	2,969	3,378	0,002	32,1
OR	1950	7,310	4,381	0,105	111,2
CCR	1950	0,400	1,475	7,6E-05	26,4
LNTA	1950	10,921	1,280	8,013	15,524
CAP	1950	7,293	2,740	2,6	24,6
HQLA	1950	15,344	6,918	0,5	57,3
CIR	1950	47,326	22,124	0,74	569,1
LA	1950	59,481	13,666	6,37	201,3
GDP	1950	3,499	3,690	-9,5	9,2
INF	1950	1,807	1,914	-3	9,6
DI	1950	8,650	1,543	2	10
CAR(≥10.5%)	1950	0,647	0,478	0	1
LCR(≥100%)	1950	0,425	0,494	0	1
NSFR(≥100%)	1950	0,246	0,431	0	1

Note: This table presents the correlations between the variables included in this study. The dependent variable is the discipline of subordinated debt holders (MD). The bank risk variables include: Credit risk (CR), Market risk (MR), Operational risk (OR), Counterparty credit risk (CCR). The bank – specific variables include: the natural logarithm of total assets (LNTA), bank capital (CAP), high-quality liquid assets (HQLA), Cost to income ratio (CIR), loans to total assets (LA). Control variables for general macroeconomic conditions include: Gross domestic product growth rate (GDP), Inflation rate (IMF), national disclosure index (DI). The bank regulation variables are CAR(≥10.5) - the minimum capital adequacy ratio, LCR(≥100) - liquidity coverage ratio, NSFR(≥100) - net stable funding ratio.

Source: Authors' own estimation

Table 3. Correlation matrix

	MD	CR	MR	OR	CCR	LNTA	CAP	HQLA	CIR	LA	GDP	INF	DI	CAR	LCR	NSFR
MD	1,00															
CR	-0,02	1,00														
MR	-0,02	0,28*	1,00													
OR	0,00	0,18*	0,12*	1,00												
CCR	-0,01	-0,09*	0,18*	0,34*	1,00											
LNTA	-0,01	-0,10*	-0,001	-0,05	0,34*	1,00										
CAP	0,05*	-0,03	-0,02	0,16*	-0,12*	-0,22*	1,00									
HQLA	-0,11*	0,09*	0,14*	0,07	0,23*	0,03	0,05	1,00								
CIR	-0,04	0,08*	0,11*	-0,002	0,08*	-0,19*	-0,26*	0,26*	1,00							
LA	0,03	0,06*	-0,03	0,25*	-0,09*	-0,14*	0,13*	-0,19*	0,13*	1,00						
GDP	0,02	0,001	-0,05	-0,05	-0,14*	0,02	0,15*	-0,18*	-0,42*	-0,16*	1,00					
INF	0,06*	0,29*	0,12*	0,23*	-0,13*	0,009	0,21*	-0,01	-0,30*	-0,01	0,56*	1,00				
DI	0,07*	-0,11*	-0,18*	-0,03	-0,17*	0,12*	0,31*	-0,13*	-0,51*	-0,14*	0,33*	0,25*	1,00			
CAR	0,04	-0,10*	0,08*	0,15*	0,13*	0,14*	0,40*	0,20*	-0,08*	0,09*	-0,05*	0,04	0,11*	1,00		
LCR	0,02	0,06*	-0,001	0,10*	0,09*	0,37*	0,17*	0,02	-0,27*	-0,10*	0,15*	0,25*	0,41*	0,20*	1,00	
NSFR	0,02	-0,14*	-0,18*	0,02	0,03	0,24*	0,18*	-0,02	-0,27*	-0,03	0,13*	0,05*	0,33*	0,16*	0,61*	1,00

Note: *significant at 5% level

This table presents the correlations between the variables included in this study. The dependent variable is the discipline of subordinated debt holders (MD). The bank risk variables include: Credit risk (CR), Market risk (MR), Operational risk (OR), Counterparty credit risk (CCR). The bank – specific variables include: the natural logarithm of total assets (LNTA), bank capital (CAP), high-quality liquid assets (HQLA), Cost to income ratio (CIR), loans to total assets (LA). Control variables for general macroeconomic conditions include: Gross domestic product growth rate (GDP), Inflation rate (IMF), national disclosure index (DI). The bank regulation variables are CAR(≥10.5) - the minimum capital adequacy ratio, LCR(≥100) - liquidity coverage ratio, NSFR(≥100) - net stable funding ratio.

Source: Authors' own estimation

4.2. Diagnostic test

This study divides the dataset into two parts: using 80% for training and 20% for testing. The training split is used to fit the model (i.e. estimate the parameters of the model for a fixed set of tuning parameters). The test split is used to estimate the performance of the final chosen model

Figure 1 shows the statistical sample of model 1 showing the discipline of subordinated debt holders when not considering Basel III regulations and model 2 showing the discipline of subordinated debt holders when considering Basel III regulations. there is a clear tendency to increase the error level with increasing lambda penalty. Therefore, the statistical model eliminates the case of the “underfitting” model. In addition, statistical models can only choose one model with the lowest error level. This eliminates the case where a statistical model is deemed "overfit" - there are many options for building a model based on a dataset [9][3]. As such, this result is consistent and reliable. To get a good fit, we will stop at a point just before the error starts to increase. At this point, the model is said to have good skills on both the test and training datasets. Table 4 shows the selected models.

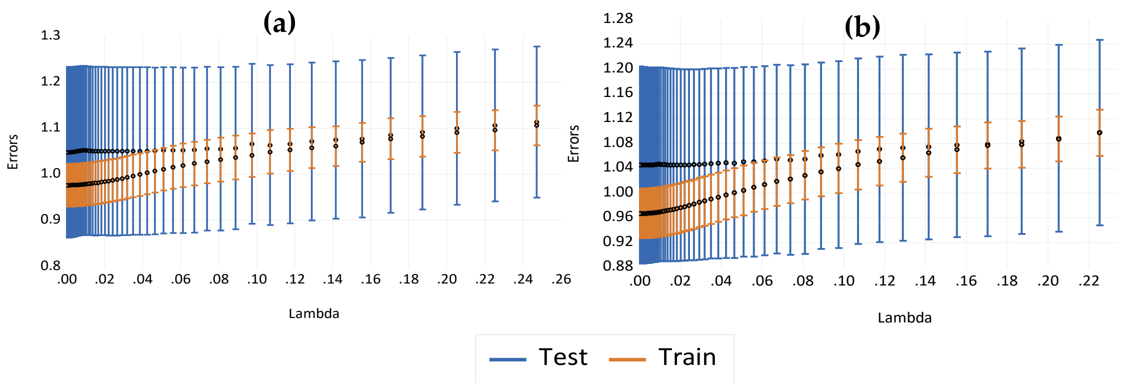


Fig. 1.

Training/ Test error evolution (a) model 1; (b) model 2

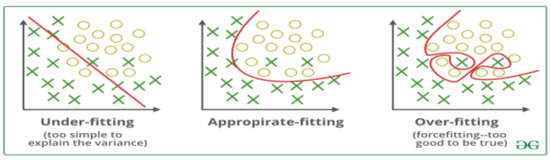
Source: Authors' own estimation

4.3. Empirical result

The study examines the presence of market discipline in the Asia-Pacific region using Lasso regression. We use 2 models to test our hypotheses. After meeting the requirements for the diagnostic test and performing the selection of Lamdba fines, the study selected 2 models with the lowest error level and the regression results are reported in Table 4. Model 1 shows the discipline of subordinated debt holders when not considering Basel III regulations and model 2 shows the discipline of subordinated debt holders when considering Basel III regulations.

Table 4. The result of lasso regression

Dependent variable	**Discipline of subordinated debts holders (MD)**	
	Model 1	**Model 2**

3 

Lambda	*(minimum) 0,015*	*(+1SE) 0,2473*	*(minimum) 0,0005*	*(+1SE) 0,2473*
Variable	**Coefficients**			
CR	-0,073	-2,54E-09	-0,083	-0,0093
MR	-0,041	0,0000	-0,066	0,0000
OR	0,000	0,0000	0,000	0,0000
CCR	0,000	0,0000	0,000	0,0000
LNTA	0,004	0,0000	0,023	0,0000
CAP	-0,053	0,0000	-0,048	0,0000
HQLA	-0,007	0,0000	-0,006	0,0000
CIR	-0,004	0,0000	-0,005	0,0000
LA	0,005	0,0000	0,006	0,0000
GDP	0,000	0,0000	0,008	0,0000
INF	-0,049	0,0000	-0,068	0,0000
DI	0,000	0,0000	0,000	0,0000
CAR(≥10.5%)			0,136	0,0000
LCR(≥100%)			0,254	0,0199
NSFR(≥100%)			0,043	0,0000

Note: This table presents the correlations between the variables included in this study. The dependent variable is the discipline of subordinated debt holders (MD). The bank risk variables include: Credit risk (CR), Market risk (MR), Operational risk (OR), Counterparty credit risk (CCR). The bank – specific variables include: the natural logarithm of total assets (LNTA), bank capital (CAP), high-quality liquid assets (HQLA), Cost to income ratio (CIR), loans to total assets (LA). Control variables for general macroeconomic conditions include: Gross domestic product growth rate (GDP), Inflation rate (IMF), national disclosure index (DI). The bank regulation variables are CAR(≥10.5) - the minimum capital adequacy ratio, LCR(≥100) - liquidity coverage ratio, NSFR(≥100) - net stable funding ratio.

Source: Authors' own estimation

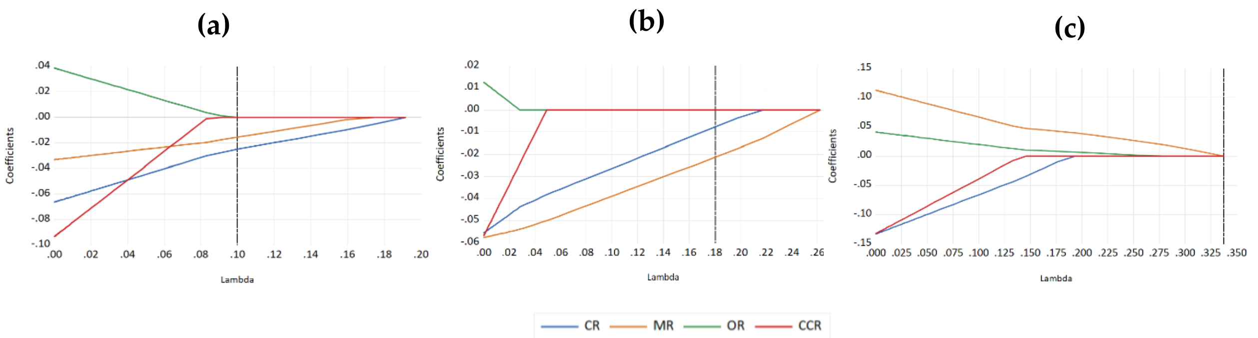


Fig.2. Comparison of the discipline of subordinated debt holders on bank risks variables with (a) all sample; (b) emerging countries and (c) developed countries

Source: Authors' own estimation

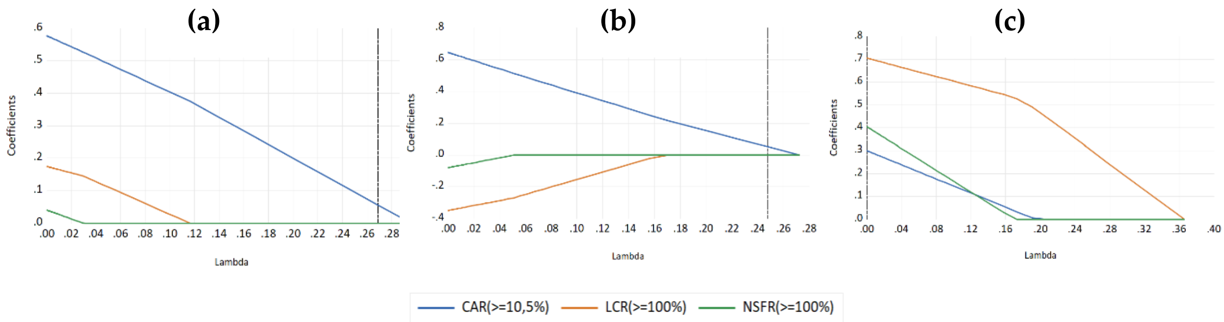


Fig.3. Comparison of the discipline of subordinated debt holders under Basel III regulations variables with (a) all sample; (b) emerging countries and (c) developed countries

Source: Authors' own estimation

Effect of bank risk variables (the Basel III framework requires information disclosure) on subordinate debt holders' discipline

Based on models 1 and 2, credit risk and market risk have an inverse relationship with the MD index. That is, as credit risk (CR) and market risk (MR) increase, the subordinate debt ratio will decrease relative to total debt. This shows that when these two types of risk increase, it will cause subordinate debt holders to be disciplined. This result is consistent with previous experimental evidence [29]. For the remaining two types of risks, there is no sign of them affecting the discipline of subordinate debt holders. In particular, when considering the capital and liquidity regulations under Basel III, subordinate debt holders will react more strongly to the bank's risk profile. This result has also been mentioned in previous studies on depositor discipline but has not been examined from the perspective of subordinate debt holders' discipline.

When comparing banks in the two groups of emerging and developed countries (Fig. 2), for the group of developed countries, the results do not indicate the presence of market discipline among subordinate debt holders for the group of developed countries. with the bank's risk profile. This result is quite consistent with the studies of [6,24] and even the Basel Committee did not mention subordinate debt as a potential market discipline tool. However, for the group of emerging countries, subordinate debt holders have played a role in penalizing banks with high risk profiles, especially for credit risk and market risk.

Influence of the capital and liquidity regulations of the Basel III framework on subordinate debt holders' discipline

Based on models 1 and 2, it shows that when banks meet the requirements of a minimum capital adequacy ratio (CAR > 10.5%), the higher the ratio of subordinate debt to total debt (MD) is, the weaker the discipline of the subordinate debt holders is. This result shows the role of meeting capital and liquidity regulations under Basel III in increasing the confidence of subordinate debt holders in banks, and previous studies have mentioned but not shown the role of formal regulations under Basel III.

When comparing banks in two groups of emerging and developed countries (Fig. 3), In contrast to the group of emerging countries, subordinate debt holders are only interested in meeting the CAR; In developed countries, subordinate debt holders reduce their disciplinary behavior when banks meet capital and liquidity requirements under the Basel III framework. This result shows that meeting Basel III regulations in both groups of countries helps increase banks' confidence in subordinate debt holders.

Differences between the group of developed countries and the group of emerging countries in the discipline of subordinated debt holders

Fig. 4 shows the level of subordinate debt holders’ discipline between developed and emerging countries. While the disciplinary behavior of subordinated debt holders tended to increase (MD decreased) during the study period in the developed countries, the disciplinary behavior of subordinated debt holders in the emerging countries tended to decrease (MD increased) during the study period. Especially in the period 2020–2021, there is a sharp increase in the ratio of subordinated debt in emerging countries, but there is a sharp decline in developed countries.

Fig. 5 shows the level of compliance with capital and liquidity regulations under Basel III in two groups of countries. In general, both groups of countries show an increasing trend toward meeting capital and liquidity regulations under Basel III. However, the graph shows that since 2017, banks in the group of emerging countries have tended to increase their responsiveness, especially for two liquidity indicators according to the Basel III regulatory framework.

Fig. 6 shows the average of credit risk (CR), market risk (MR), operational risk (OR), and counterparty credit risk (CCR) between developed and emerging countries. Of the four types of risk, we find that the ratio of operational risk (OR) to total risky assets of the group of emerging countries is generally higher than that of the group of developed countries, while the ratio of the remaining type of risk is lower. For the group of developed countries, the counterparty credit risk ratio is somewhat higher than that of the emerging countries compared to the other three types of risks.

In general, the results show that the level of compliance with Basel III in terms of the minimum capital adequacy ratio of banks in the two groups of banks is quite similar. However, the level of meeting liquidity regulations in the short and long term for the two groups of countries is different. While banks in emerging countries following the Basel III framework have tended to increase strongly in recent years, those in developed countries have tended to remain the same or even reduce their compliance with regulations. In parallel with the group of emerging countries, subordinated debt holders have reduced discipline towards banks. In contrast to the slow move to meet the regulations of the developed countries, the subordinated debt holders have taken strong disciplinary action against these banks. This proves that maintaining standards under Basel III is essential, and research strongly supports banks' compliance with Basel III regulations, especially the importance of meeting the Net Stable Funding Rate (NSFR).

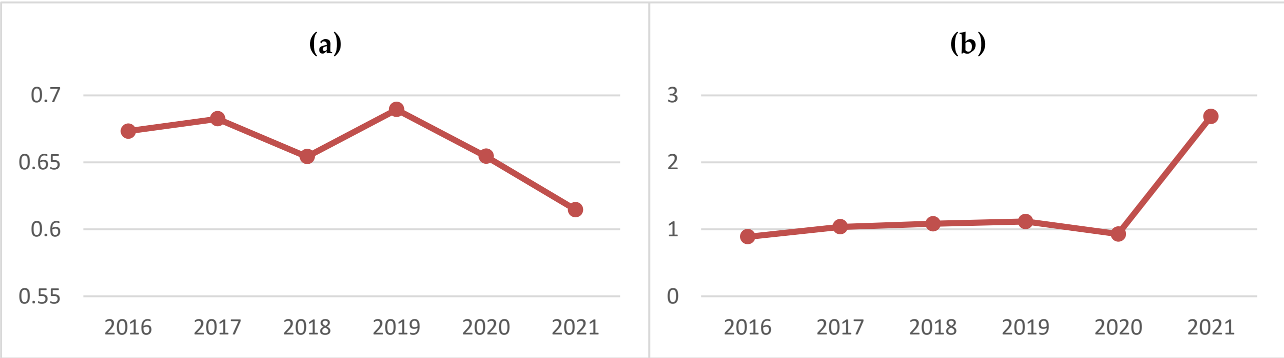


Fig.4. The discipline of subordinated debt holders between developed (a) and emerging (b) countries (2016–2021)

Source: Authors' own estimation

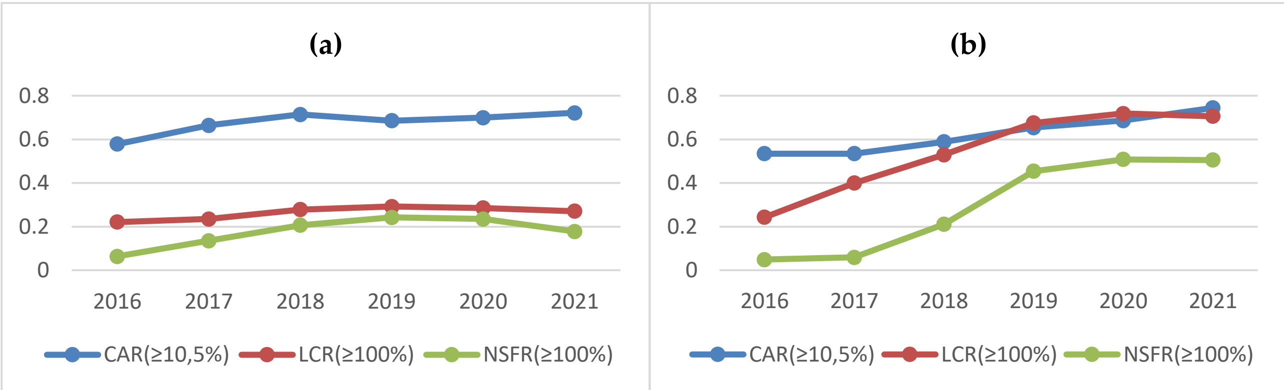


Fig.5. The level of compliance with capital and liquidity regulations under Basel III between developed (a) and emerging (b) countries (2016–2021)

Source: Authors' own estimation

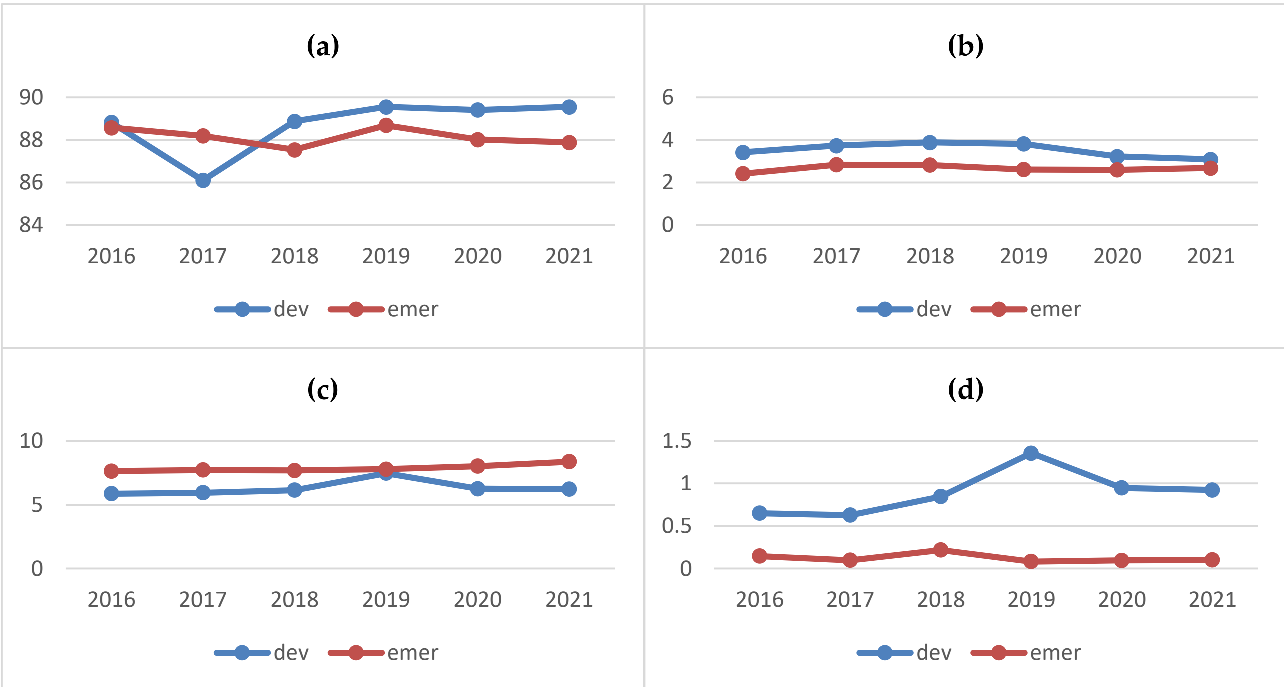


Fig.6. Average bank risks developed and emerging countries (2016–2021) with (a) Credit risk; (b) Market risk; (c) Operational risk and (d) Counterparty credit risk

Source: Authors' own estimation

In addition, the study also shows some results about other characteristics of banks and macro characteristics related to subordinated debt holders' discipline (table 4). Subordinated debt holders' discipline is strengthened by reducing the ratio of subordinated debt to total debt as the bank's capital (CAP), liquid assets (HQLA), and cost-to-income (CIR) ratios are higher. Conversely, the larger the bank size (LNTA) and debt-to-assets (LA) ratio, the lower the discipline of the subordinated debt holders. The study shows that the higher the inflation rate, the lower the ratio of subordinated debt to total debt, or the higher the subordinated debt holders' discipline. In particular, GDP and DI ratios do not create the presence of subordinated debt holders' discipline, but when viewed under the provisions of the Basel III framework, it shows that the higher the GDP ratio, the lower the discipline of subordinated debt holders.

5. Conclusion

We examined the presence of subordinated debt holders' discipline for a number of Asia-Pacific banks between 2016 and 2021 and the impact of capital and liquidity regulation under the Basel III framework. Using a balanced panel of 325 commercial banks, we find evidence of market discipline because subordinated debt rates are associated with bank risks such as CR, MR, OR, and CCR (these are the types of risks that Basel III requires banks to disclose).

The results indicated by the study include: (i) subordinated debt holders will take disciplinary action against banks with higher risk levels, which are risks included in Basel's recommendation that require the bank to fully disclose information (credit risk, market risk, operational risk, and counterparty credit risk). Therefore, this result is one of the reasons banks delay meeting information disclosure requirements for these four types of risks. The result is also consistent with the signaling theory that banks will signal to stakeholders, but which tools tend to be used to provide the most beneficial information about the bank for investors? (ii) Compliance with the capital and liquidity framework under Basel III affects the discipline of subordinated debt holders. In general, the higher the number of banks that meet the minimum capital adequacy ratio prescribed by the Basel III framework, the weaker the discipline of subordinated debt holders. This shows that this is one of the important ratios that help banks increase their confidence in secondary creditors, thereby reducing their disciplinary behavior towards banks. In addition, two liquidity indicators, LCR and NSFR, also help to increase confidence and reduce the discipline of subordinated debt holders. (iii) There is a difference in the level of influence between the group of developed and emerging countries in the Asia-Pacific region. In general, the analysis results show that there are similarities and differences between banks in the group of emerging and developed countries when looking at the discipline of subordinated debt holders. However, it can be seen that for the group of emerging countries, the subordinated debt holders have stronger reactions than the group of developed countries to the risk profile of banks. In addition, for the group of emerging countries, meeting the capital and liquidity regulations under the Basel III framework in general has a rather positive impact and increases the confidence of subordinated debt holders more than for the group of developed countries. This result shows the role of Basel III enforcement and compliance in both groups of countries, especially emerging countries, in increasing confidence and reducing the discipline of subordinated debt holders.

Our findings have several important implications: (1) Help regulators devise policies to manage banks' risk and meet liquidity and capital requirements according to the Basel III framework. The effectiveness of market discipline has been reduced, and banking regulators need to compensate by strengthening their supervisory functions. (2) In particular, the results of the study show the reasons why banks ignore the disclosure of bank risks according to the provisions of the third pillar of the Basel III framework.

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Social Overload on Social Networking Sites: Explaining the Discontinuous Usage Intention from Facebook Users

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ABSTRACT

Social networking sites have been growing rapidly, especially Facebook, which has become a useful tool to help businesses reach their target customers through live stream, interacting on the fan page, blog, etc. Therefore, Facebook seems to be an online store of businesses in providing information, interacting, and receiving feedback from customers. In this study, drawing on social support theory, we conceptualized a research model to unpack the mechanisms through facebook interaction, relationship characteristics influence user's discontinuous usage intention. We conducted a survey with 567 people Facebook users in Danang city and used the PLS-SEM analysis method to evaluate the research model. The results of the data analysis support several findings: (1) Facebook interaction, relationship characteristics are found to have significant effects on social overload on Facebook. (2) Social overload has effects on discontinuous usage intention of Facebook users. (3) Social overload was considered as a bridge between Facebook interaction, relationship characteristics and discontinuous usage intention. This study provides insights for both academics and practitioners regarding the potential implications, which serve as useful sources for researchers and managers to understand how the social overload led to the discontinuous usage intention of users on social network websites.

Keywords: Social support theory, social network sites (SNSs), Facebook Interaction, Relationship characteristics, Social overload, Discontinuous usage intention.

1. Introduction

Social network sites (SNSs) can be defined as individual web pages which enable online human-relationship building by collecting useful information and sharing values with specific or unspecific people (Kwon and Wen, 2010). Among SNSs, Facebook is the most popular tool that has over 2.27 billion monthly active Facebook users and over 1.49 billion people on average log onto

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Facebook daily (Facebook, 2018). Currently, most businesses own a separate social networking site, particularly Facebook given that businesses can access and interact with their customers easily, directly and effectively. However, Facebook users are likely to face too much information or interaction, statistically, averaging 60 seconds on Facebook have 510,000 posted comments, 293,000 statuses are updated, and 136,000 photos are uploaded (Zephora, 2018), whether this issue has a direct influence on the user's output - the discontinuous usage intention? Therefore, it is a challenge for researchers and operators to understand what factors and reasons that affect the use of Facebook and how to improve it.

What factors affect the intention of individuals in the discontinuous usage in the SNS and especially in the context of Facebook? Previous studies in the context of SNS found that the stress-strain-outcome model is commonly used to explain the cause of discontinuous usage intention (Shuwei et al., 2016; Chaeyoung, Jaehyun, and Junichi, 2017; Amandeep et al., 2018). Drawing on the social support theory, Amandeep et al. (2018) and Maier et al. (2015) has determined that the components of stimulus aspects include Facebook interaction, relationship characteristics does not directly influence the users' outcome but through intermedia factors. Specifically, social overload is examined in terms of when an individual perceives that others demand too much attention, the probability of the user's perceiving the stressor factors increase (Maier, 2012).

The above discussion highlights the detrimental effects of social overload to explore users' outcomes. To fill these gaps, the aim of this research is to explore the correlation of social overload, and its effect on discontinuous usage intention of Facebook users through factors Facebook interaction, relationship characteristics.

This study may contribute to Facebook literature in several ways. First, the stimulus variables in the form of Facebook interaction, relationship characteristics were employed to predict an individual's overload on Facebook and with other users. Second, from the perspective of strain variables, this study demonstrates how social overload affects individuals' discontinuous usage intention. Third, this study shows the users social overload in the Facebook environment was employed to be a bridge between the drivers and discontinuous usage intention. In short, this study provides a richer model to better examine the drivers and effects of social overload in social network sites.

2. Theoretical framework

2.1. Social support theory (SST)

Social support theory (SST) is identified by three types of social support. First, social embeddedness covers the actual connections among individuals in the social environment (Thoits, 1995). It focuses on the structure of the social network of individuals in terms of size or density, in detail, in the context of SNS that is showed like Facebook interaction, relationship characteristics. Second, perceived social support is used to explain the effects on those individuals confronted with negative events. It focuses on an individual's beliefs about whether or not members of one's social network provide support and the positive as well as negative consequences of these beliefs (Thoits, 1995; Cohen et al, 2000). And in this study, it will explain the effect of social overload to discontinuous usage intention. Third, enacted social support is used to explain behavioral actions and their consequences performed by others to provide social support (Thoits, 1995). It focuses on network members who perform behavioral actions when giving assistance to a certain individual in their networks. This concept evaluates an individual's actual behavior when providing support and the associated consequences (Goldsmith et al, 2000).

Social support theory (SST) evaluates the influence of social network characteristics on an individual's capacity to cope with negative life events (Caplan, 1974; Cassel, 1976; Cobb, 1976). SST emphasizes that enacted social support from members of social networks is beneficial for network members confronted with negative life events (Thoits, 1995). However, the theory is largely silent about the burden of giving social support that might, in fact, strain network participants especially in larger networks with more requests. SNS that embed social relationship are thus technologies that might lead to negative effects of social support (Koroleva et al, 2011). In detail, more social support requests can be communicated to more individuals embedded in an individual's social network (Amichai Hamburger et al, 2013) as SNS users' networks have grown larger (Manago et al, 2012). Hence, more enacted social support is required to provide the amount of support needed to constitute positive effects on the receiver's side; but an individual demanding more support from network than it supplies might strain the network by overburdening, or overloading, network contacts with postings and support requests. Consequently, we suppose that the concept of social overload is considered in terms of crowding as too much friends requests, messages, notification to respond and build a social relationship in a social circle. And social overload on SNS is a negative consequence of technology usage.

SST describes relationship types as important social relationship characteristics that predict both perceived and enacted social support (Wellman & Wortley, 1990). According to Amichai-Hamburger et al (2013), the type of relationship is defined as the extent to which SNS friends are also embedded in a user's offline network. Most of the research shows that SNS users connect with existing friends and family members on these platforms (Subrahmanyam et al, 2008). And mainly individuals with shared interests in particular topics, or interested in online dating, are found to have more online-only friends in their SNS-enabled social network. Thus, relationship types are regularly included in lists of friends in SNS. However, social support requests by close friends and family members also known from the offline world are often perceived to be more important as the simplest and most powerful measure of social support appears to be whether a person has an intimate, confiding relationship or not (Thoits, 1995, p. 64). Consequently, as users receive social demands from all members of a social network embedded in SNS, increasing social overload will happen when a higher number of SNS friends.

2.2. Facebook interaction

Facebook interaction is defined as how frequently users interact with other individuals or groups through symbolic exchanges of information and emotion such as sharing, liking, and commenting on Facebook (Chen and Lee, 2013). This typically refers to the size of a user's social network, the amount of time spent on Facebook, and the number of Facebook interactions a person has (Ellison et al., 2007). Moreover, with the statistic in the end of 2011, Facebook users uploaded 250 million photos and they clicked the like button 2.7 billion times every day, this makes the Facebook interaction increase lead to increasing the volume, sources, and complexity of communication (Chen and Lee, 2013).

2.3. Relationship Characteristics

Some previous studies have examined how the association varies by type of support and provider as a function of the characteristics of the relationship. Social support theory (SST) describes network cohesion and types of relationships as main factors of social relationship characteristics (Caplan, 1974; Cassel, 1976; Cobb, 1976; Maier, 2015), it predicts both perceived and enacted social support (Wellman & Wortley, 1990). Types of relationship, as one pivotal characteristic of social relationships embedded in SNS, is defined as the extent to which SNS friends are also embedded in a user's offline network (Amichai-Hamburger et al, 2013). Accordingly, participants can connect and reconnect with their friends and family through SNS platforms (Subrahmanyam et al, 2008) and can establish new relationships in online sites (Amichai, Hamburger et al, 2013). Based on SNS usage and disclosed social requests, a subjective social support norm is defined as individuals perceiving different degrees of whether or not one's social environment expects a reaction to this form of disclosed information. In other words, social subjective norm refers to the perceived pressure to perform a behavior that comes from observing what important others say or do, whereas social support implies the perception of assistance in performing the behavior (Courneya et al., 2000). The control of perceived behavior refers to the perception of whether the action is easy or difficult in a given situation and is supposed to reflect past experiences also as obstacles (Ajzen 1991, 1992).

2.4. Social overload

Social overload appears when individuals are cognitively able to control a limited number of relationships simultaneously, and once the upper limit of number is exceeded (Dunbar, 1992). It is usually occurring when the environmental situation poses demands which exceed the individual's capabilities for meeting or is the level of interaction which an individual needs to engage in exceeds their communicative and cooperative capacity (Lee et al., 2016; Cao and Sun, 2018). According to Maier (2015), social overload is the negative perception of SNS usage when users receive too many social support requests and feel they are giving too much social support to other individuals embedded in their virtual social network. To explain clearly, social overload is described in terms of crowding, as too much friends' requests, messages to respond, time and attention needed to respond and maintain a social relationship in an ever-growing social circle (Maier et al., 2012).

2.5. Discontinuous usage intention

Discontinuous usage intention is defined as the individual user's decision to stop using an information system in support of a work task (Maier et al., 2014). Specifically, Ravindran et al. (2014) classified three types of discontinuous behaviors in social network sites: short breaks, control activities and suspend behavior. Similarly, in the SNS context, discontinuous usage intention could be such as an individual's intention to decrease SNSs use intensity, stop SNSs use temporarily or permanently, or switch to other alternative SNSs (Maier et al. 2015, Ravindran et al. 2014). On the other hand, discontinuance behavior of users can be a serious threat for SNSs, as users are the most valuable assets of SNSs. The activeness and loyalty of user's impact on the survival and development of SNSs (Chiu and Huang 2015; Chesney and Lawson 2015). As an example, My Space, the second largest SNS in the world, lost many users in 2011, and then confronted lots of crippling problems and substantial financial losses (Chiu and Huang 2015).

2.6. Research model and hypotheses

Facebook interaction and social overload

Facebook is one of the key tools on social networking sites to connect networking users with others (Koroleva et al, 2011) through message, comment, like, share information, and chat online together on Facebook. Accordingly, Facebook interaction is considered as interaction of users with other individuals or groups through symbolic exchanges of information and emotion on Facebook (Chen and Lee, 2013). However, when Facebook interaction among users with individuals and organizations increases, it could rise the volume, sources, and complexity of communication which lead to social overload. According to Chaeyoung, Jaehyun and Junichi (2017), social overload arises when users feel too much enacted social support, made from other users who also expect responsive support. Hence, social overload is considered in terms of crowding, as too many friends requests, messages to respond, time and attention needed to respond and maintain a social relationship in an ever-growing social circle (Maier et al., 2012). Thus, Facebook interaction will increase social overloads for Facebook users. Therefore, the following hypothesis is proposed to examine the effects of Facebook interaction with social overload.

H1: Facebook interaction is positively related to social overload.

Relationship characteristics and social overload

On the theoretical background of social overload, many factors have a strong effect on the user’s experience. Specifically, in terms of social relationship characteristics, it has directly influenced the user's perception of the SNS (Siibak, 2009). In this regard, Maier et al. (2015) supposed that characteristics of relationships (i.e., types of relationship, subjective social support norm) as the antecedent, have a strong impact on social overload. Hence, this article demonstrates whether the relationship’s type and social support norms affect the level of social overload or not. Accordingly, Amichai-Hamburger (2013) has pointed out that the type of relationship behavior as a significant source of characteristics of social relationships embedded in SNS that the embedding of users with online friends in the user’s offline network. Users receive social requests from all members of social network embeddedness, the probability of social overload increases when it has a higher number of SNS friends than offline network friends that makes the user will limit the willingness of support on each request (Maier, 2015). Therefore, types of the relationship in this study are defined that the extension of embedded SNS friends in the real life which is described by how many of the Facebook friends are also friends in real (offline) life, it means the number of online only friends as compared to contacts that are offline friends as well. While the type of relationship plays a pivotal characteristic of social network relationships, in this model, social overload is a mediator that affects directly to the user's experience which is measured by too much friends’ requests, messages to respond, time and attention needed to respond and maintain a social relationship in an ever-growing social circle (Maier et al., 2012). Accordingly, the following hypothesis is proposed to examine the effects of relationship characteristics on social overload.

H2b: Relationship characteristics is positively related to social overload.

Social overload and discontinuous usage intention

As mentioned above, Facebook is one of the main tools of SNS that has enabled people to connect with others regardless of location and time, thus, people tend to devote more time to use the social network. However, pervasive social network access has forced people to pay continuous attention to the overwhelming volume of information and social demand, which is cause lead to social overload. Social overload is described in terms of crowding, as too many friends' requests, messages to respond, time, and attention needed to respond posts of friends and maintain a social relationship in an ever-growing social circle (Maier et al., 2012). Thus, social overload is resultant of unwanted social interaction, this induces psychological distress (Evans & Lepore, 1993; Maier et al., 2014). Furthermore, people tend to get rid of the negative consequences induced by technology, as well as to restore emotional stability. That can lead to reducing usage intensity, or even quitting social media platforms or is called discontinuous usage intention (Maier et al. 2015). To explain discontinuous usage intention, it could be defined as an individual's intention to reduce facebook use intensity, stop use temporarily or permanently, or switch to other alternative forms of SNS (Maier et al., 2015; Ravindran et al., 2014). Therefore, the research suggested the hypothesis of the relationship between social overload and discontinuous usage intention.

H6: Social Overload is positively related to discontinuous usage intention.

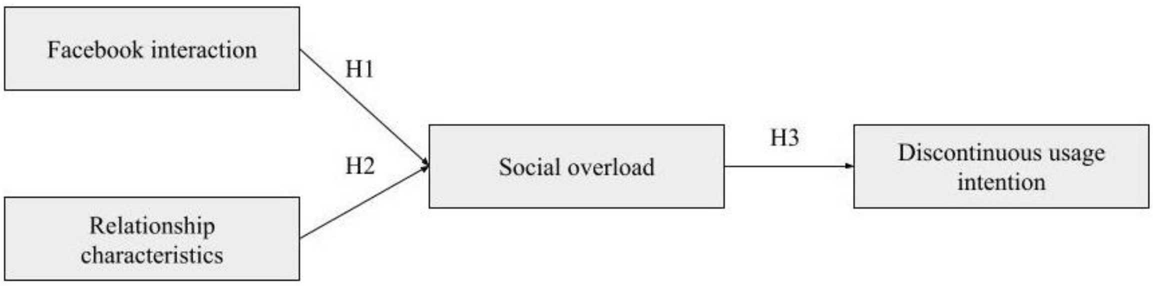

Fig 1. Proposed research model

3. Research method

3.1. Sampling method

We employed non-probability sampling method in which 567 facebook users in Danang city were conveniently surveyed. 451 out of 567 questionnaires meet the threshold and were selected for data analysis. The average daily time spent on Facebook is 1 -2 hours, but there aren't too many differences than other options. 51% respondents log on to Facebook frequently during the day, but only shortly each time. Mostly they have more 350 friends on Facebook, 78.8 % have more than 3 years using experiences.

3.2. Measurement

The scale items were adapted from prior studies and translated, and back-translated and pretested with respondents from the same population. All scale items were measureed by a five - point Likert scale anchored with "strongly disagree" to "strongly agree" or with "never" to "always" for Facebook interaction items from 1 to 5 respectively. Specifically, this study has 26 items divided into 4 variables, including 08 indicators of facebook interaction (Chen and Lee, 2013), 4 items from Christian Maier (2015) for relationship characteristics, 10 indicators of social overload (Maier et al. 2014), and 4 items of discontinuous usage intention (Maier et al. 2014; Ravindran et al. 2014).

3.3. Data analysis

The data analysis was performed using Smart Partial Least Squares (PLS) version 4.0 software. The SEM method is widely used in behavioral science, many researchers propose this model is suitable for testing the influence and relationship of the factors in the model. The SEM method has two main approaches including CB (Covariance Based) and PLS (Partial Least Squares). The philosophical distinction between CB-SEM and PLS-SEM is straightforward. If the research objective is theory testing and confirmation, then the appropriate method is CB-SEM. In contrast, if the research objective is prediction and theory development, then the appropriate method is PLS-SEM (Hair et al., 2011, p.140). PLS-SEM also provides R2 values and indicates the significance of relationships among constructs to demonstrate how well the model is performing. CB-SEM on the other hand only provides path modeling (coefficient and CR). PLS is the best for prediction-based research, while CB-SEM is more on model fit. One of the main advantages of PLS-SEM over CB-SEM is that PLS-SEM can handle numerous independent variables at the same time, even when these display multicollinearity (Hair, Ringle, & Sarstedt, 2011). In addition, PLS-SEM is largely focused on research with long-term and effective studies of businesses (Birkinshaw et al., 1995). Studies using PLS-SEM have been reported to increase (Bliemel et al., 2005). In recent years, PLS-SEM has been prioritized in studies in the areas of customer behavior and organization, strategic management, especially marketing studies on the analysis of impact factors. The model in this study, proposed by the authors themselves is new and consistent with the objectives of PLS-SEM, is to predict, develop theory and model. From the above reasons, it is appropriate to verify that the model using PLS-SEM is suitable for using data analysis.

4. Results and discussion

4.1. Measurement model

To identify the reliability, we used Composite reliability (CR), Cronbach's alpha (CA), average variance extracted (AVE), and rho_A. The criteria for all indexex including: (1) CR is higher 0.7, (2) CA is not less than 0.7, (3) AVE must exceed 0.5, (4) rho_A is more than 0.7 (Hair et al., 2014). In this study, Composite reliability is computed from 0.870 – 0.903, C ronbach's alpha coefficients ranges from 0.760 – 0.876, average variance extracted (AVE) lies in the range of 0.540 – 0.627, rho_A is 0.763 at least. This result proved that the measurement of constructs had a high degree of reliability. They are described in Table 1.

In terms of validity, we examined the convergent validity and discriminant validity. Two measures of constructs should be tested through four criteria: (1) items loading larger than 0,5, (2) CR is higher than 0,7, (3) AVE must exceed 0,5. On the other hand, discriminant validity is accessed by the square root of AVE for a construct that should be higher than its correlation with all other constructs (Hair et al, 2014; Fornell and Larcker, 1981). This study showed that almost all outer loadings were larger than 0.6, except for FI04, FI07 for facebook interaction; SO017, SO08 for social overload which were less than 0.6, thereby being removed (see in Table 1). Also, every single root-squared of the AVE (darkened in bold) exhibits larger magnitudes than the correlations between each pair of latent factors, as referenced in Table 2.

To sum up, this study possesses an elevated extent of discriminant validity, and reliability, thus we could use those data to measure the structural model.

Table 1: Assessment of measurement model.

	Factor Outer Loading	Cronbach's Alpha	rho_A	Composite Reliability	AVE
FI		0.861	0.872	0.898	0.598
FI01	0.715				
FI02	0.925				
FI03	0.623				
FI05	0.726				
FI06	0.773				
FI08	0.841				
RC		0.760	0.763	0.848	0.584
RC01	0.758				
RC02	0.828				
RC03	0.775				
RC04	0.687				
SO		0.876	0.883	0.903	0.540
SO01	0.816				
SO02	0.708				
SO03	0.787				
SO04	0.783				
SO05	0.822				
SO06	0.641				
SO09	0.645				

SO10	0.649				
DU		0.806	0.834	0.870	0.627
DU01	0.787				
DU02	0.761				
DU03	0.856				
DU04	0.759				

Table 2: Discriminant validity of the measurements

	1	2	3	4
1. DU	(0,792)			
2. FI	0,045	(0,773)		
3. RC	0,088	0,205	(0,764)	
4. SO	0,122	0,320	0,323	(0,735)

Note: FI: Facebook interaction; RC: Relationship characteristics; SO: Social overload; DU: Discontinuous usage intention.

4.2. Structural model and hypothesis testing

Using the Path Coefficient and the significance levels of each factor, models and hypotheses are tested. Additionally, according to Henseler (2014), the goodness of fit index of the PLS-SEM model helps prevent parameter variation in the model's SRMR. Standardized Root Mean Square Residual (SRMR) should be taken into account less than 0.1, and NFI value is ablove 0.8 when evaluating the model's applicability to the data (Henseler et al., 2016). In this study, the model satisfies the criteria with SRMR = 0.059 < 0.1; NFI value is 0.851 > 0.8 (see in Table 3).

Table 3: Model fit

	Criteria	Value
SRMR	< 0.1	0.059
NFI	> 0.8	0.851

The percentage of variance (%) in the dependent variable that can be explained by the independent variable is known as the R-squared (also known as the coefficient of determination). Consequently, as a general guideline for determining the strength of a link based on its R-squared value (make all values positive by using the absolute value of the R-squared value). The accuracy of the prediction was further tested by evaluating the Q2 values, which were all greater than zero, as presented in Table 4.

Table 4: R^2, Q^2:

	R^2	Q^2
SO	0.171	0.155
DU	0.015	0.005

All hypotheses have encountered support, as indicated in Table 5 or in Fig 2. The study concluded that Facebook interaction affects social overload (β = 0.264, p = .000 < 0.05, t-statistics = 6.015 > 1.96, H1 supported), Relationship characteristics has a positive direct impact on social overload (β = 0.269, p = .000 < 0.05, t-statistics = 6.068 > 1.96, H2 supported). Also, Hypothesis 3: Social overload affects Discontinuous usage intention is supported (β = 0.122, p = .006 < 0.05, t-statistics = 2.77 > 1.96). Therefore, three hypotheses in the research model are accepted.

Table 5: Results of path analysis.

Hypothesis	Path coefficient	Standard deviation	t-statistics	P-value	VIF	Result
Facebook interaction → Social overload	0.264	0.044	6.015***	0.000	1.044	Accepted
Relationship characteristics → Social overload	0.269	0.044	6.068***	0.000	1.044	Accepted
Social overload → Discontinuous usage intention	0.122	0.044	2.77**	0.006	1.000	Accepted

** p-value < .05. ** p-value < .01. *** p-value < .001*

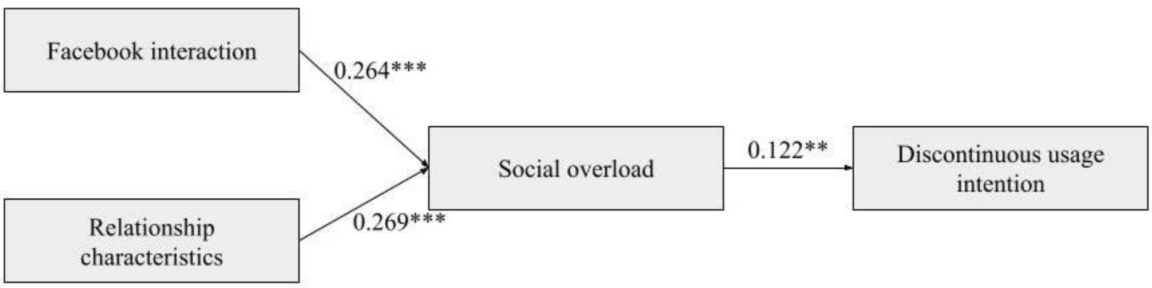

Fig 2. Path coefficient results

Besides examining direct relationships, indirect relationships are also tested. Social overload acts as an intermediate variable in the relationships between facebook interaction, relationship characteristics and discontinuous usage intention. Two hypotheses are accepted (FI → SO → DU: β = 0.032, p = .013 < 0.05, t-statistics = 2.471 > 1.96; RC → SO → DU: β = 0.033, p = .018 < 0.05, t-statistics

= 2.367 > 1.96), as given in Table 6. Thus, there were mediation relationships between facebook interaction, relationship characteristics and discontinuous usage intention through social overload.

Table 6: Results of indirrect effects analysis.

Hypothesis	Path coefficient	Standard deviation	t-statistics	P-value	Result
Facebook interaction → Social overload → Discontinuous usage intention	0.032	0.013	2.471*	0.013	Accepted
Relationship characteristics → Social overload → Discontinuous usage intention	0.033	0.014	2.367*	0.018	Accepted

** p-value < .05. ** p-value < .01. *** p-value < .001*

5. Discussion

Research results have depicted direct and indirect influence; in which facebook interaction and relationship charateristics have an impact on social overload and discontinuous usage intention on Facebook.

Firstly, Facebook interaction, relationship characteristics are found to have significant effects on social overload on Facebook. The reason might be that these factors appeared and affected the awareness and emotion of Facebook users when they interacted with others, which is consistent with the findings of Chaeyoung, Jaehyun and Junichi (2017); Siibak (2009); Maier et al. (2014), who found that individuals are likely to feel uncomfortable or even stop using Facebook if they feel social overload on Facebook. As Facebook becomes an important part of daily life for users, Facebook users may treat Facebook as their virtual friend and willing to establish closely related to Facebook. The main argument in this essay is that Facebook interaction and relationship characteristics facilitate the social overload on Facebook.

Moreover, social overload gained from the Facebook user, our study showed that has a positive impact on discontinuous usage intention, which is consistent with the findings of Maier et al., (2015), Chaeyoung, Jaehyun and Junichi (2017), Shuwei Zhang (2016). Unlike prior studies (Guo et al., 2020; Lin et al., 2020), who found that the impact of social overload on information avoidance behavior is accepted through a mediation variable. In this study, we have shown that the positive effect between social overload and discontinuous usage intention is supported given that users have too much information on social network sites, feel their privacy risk, they tend to decrease their usage frequency on social media (Zhang, 2023).

Last but not least, this study highlights that social overload acts as the mediation effect between facebook interaction, relationship characteristics and discontinuous usage intention. This hypothesis was not tested in prior studies. Via social media, particularly Facebook, users have to interact with too many people requests, information to resolve, and perceive their private security, thus they are more likely to discontinue to use social media sites.

5.1. Research implications

This research has a few interesting contributions. First, this study contributes to the understanding of social overload and how it affects discontinuous usage intention. This study considered different manifestations of discontinuous usage intention, such as intention to control activities or switch to other alternative SNSs. Second, this is one of the few studies in Vietnam unpacking the mechanism inducing discontinuous usage intention through facebook interaction and relationship characteristics. Third, this study differs from other prior studies when exploring social overload as a mediator variable between facebook interaction, relationship characteristics and discontinuous usage intention. Therefore, this study will be a valuable source for future research in Vietnam and in the word.

5.2. Managerial implications

Based on our findings, this study offers the following practical suggestions with the aim of knowing how social overload affects the discontinuous usage intention. First, instead of focusing on the positive side of Facebook, this study extends the research on negative effects of using Facebook on users, particularly discontinuous usage intention. The research used outcomes to describe the users' behavioral response strategy to social overload situation and provides a clearer and more comprehensive understanding of the dark side of Facebook usage.

Second, as lots of studies focus on continuous usage of SNSs, this study also contributes to the understanding of discontinuous usage of Facebook and what factors induce such behavior intention. More psychological factors, such as social overload should be taken into consideration in future research.

Finally, on the business side, firms use Facebook as an online store to sell their products, it is also places to provide information about products, help customers have more information and get timely answers, thus, helping customers connect with firms. However, this can be the cause of social overloads but in our research, social overloads don't affect discontinuous usage intention so this will help firms retain existing customers and take care of customers better. According to the research, the care of customers is very important, there are many potential customers that firms cannot reach all, on the contrary, there are many customers who need products of the company, but both can not control and find each other. Therefore, through good carrying, firms will be transmitted by customers to unknown customers about the business, which helps firms have more potential customers and increase interaction with other customers through fan pages of the firms.

5.3. Limitations

This thesis uses a conceptual framework to explain the influence of social overload on discontinuous usage intention. This study provides some interesting findings. Although this thesis had taken an initial step in exploring the relationship of social overload to discontinuous usage intention. Nonetheless, several limitations remain and are worth to be exploring in future research.

First, the data came from Facebook users aged 15 and over in Da Nang city. This study can not claim that the results can be generalized to all user populations in Vietnam. This thesis collected some responds from university students and others aged over. To increase generalizability, future research needs to consider sampling views from more cities.

Second, although all participants are from Vietnam, but the causes of social overload may be differently perceived in other times because of user's purpose. Third, the research is based solely on evaluations at a single point in time, thus, it may not be suitable in different times.

Finally, the scale items are taken from foreign research so when they were applied in Vietnam, there are some unsuitable scale items.

5.4. Future research

The scope as well as the selection of samples for the research has not yet covered whole because of limitations in terms of time and resources. Therefore, in the future, the research team will investigate larger and more diverse sample sizes to achieve more results that are more intensive.

In this context, it might be also important to focus more on the interplay between SNS usage behavior, actual social support behavior, and the perception of social overload by SNS users, which has not been investigated by this study. To address this shortcoming, in addition to investigating the individual characteristics included in our study, future research should also investigate the influence of personality traits, such as extraversion or altruism, on social overload. In addition, there is a regular pattern in the occurrence of social network fatigue and discontinuous use, and what factors will motivate users who have experienced social network fatigue to stop suspending and reuse SNSs, are questions that provide potential research directions for future research.

APPENDIX

Appendix A. Measurement scales

Variables	*Items*	*References*
Facebook interaction (FI)		
FI01	How often do you update status?.	Chen and Lee (2013)
FI02	How often do you upload and share photos?	
FI03	How often do you share web links, news stories, blog posts, and notes?	
FI04	How often do you like or comment on people's status, wall, links, or photos?	
FI05	How often do you like or comment on Facebook pages of groups, events, organizations, or companies?	
FI06	How often do you click the like or share button on a non-Facebook website to share it on Facebook?	
FI07	How often do you play a social game (e.g. Caro chess, exciting farm etc.)?	
FI08	How often do you share one's location using Facebook places?	
Relationship characteristics (RC)		

RC01	Many of my Facebook friends are also friends in my real (offline) life.	Christian Maier (2015)
RC02	My Facebook friends expect me to assist them on Facebook.	
RC03	My close friends expect me to assist them on Facebook.	
RC04	My social environment expects me to assist them on Facebook.	
Social overload (SO)		
SO01	I receive too many friend requests from casual acquaintances.	Maier et al. (2014)
SO02	I take too much care of my friends' wellbeing on Facebook.	
SO03	I deal with my friends' problems too much on Facebook.	
SO04	My sense of being responsible for how much fun my friends have on Facebook is too strong.	
SO05	I am too often caring for my friends on Facebook.	
SO06	I pay too much attention to posts of my friends on Facebook.	
SO07	I congratulate Facebook friends as a consequence of the birthday reminder, although I would not congratulate them in real life.	
SO08	I receive more messages (chat, private messages), notifications and announcements (pin board, news-feed) on Facebook than I can respond to.	
SO09	I am overextended from the messages (chat, private messages), notifications and announcements (pin board, news-feed) I receive on Facebook.	
SO10	The amount of trivial communication on Facebook is too high.	
Discontinuous usage intention		
DI01	I am positive with online shopping.	Maier et al. (2014); Ravindran et al. (2014)
DI02	I intend to shop via Facebook Live.	
DI03	I can consider shopping through Facebook Live.	
DI04	I think it's a good idea to shop through Facebook Live.	

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The Effect of COVID-19 on Foreign Direct Investment Flows in ASEAN Countries

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ABSTRACT

The flow of Foreign direct investment (FDI) to any country is considered as an important factor for economic growth and development. This paper analyzes the motives of FDI inflows in ASEAN in the context of pandemic COVID-19 during the period 2019–2021. The findings show significantly negatively growth in FDI inflows in all ASEAN countries, however, the level of impact varies, depending on many factors such as the ability to control the epidemic in the country. In addition, GDP has positive impact on FDI while exchange rates and unemployment rate has a negative impact on FDI.

Keywords: Foreign direct investment, GDP, Covid-19

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Assessment of Factors Affecting The Choice of Investment Locations of Enterprises in Nghi Son EZ, Vietnam in The Post-Covid 19 Context

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ABSTRACT

Investment decisions are of utmost importance for businesses as they enable investors to venture into new markets or enable businesses to execute their strategies effectively. The article examines the investment choices made by enterprises in the Nghi Son Economic Zone from 2016 to 2022, utilizing both secondary data and primary data collected through a survey of 285 enterprises within and outside the Nghi Son Economic Zone. The study identifies various factors that influence investment choices, including available advantages, market factors, human resources, infrastructure, the dynamics of local leadership, preferential policies, and investment options. The analysis of the primary data reveals that, during the years impacted by the Covid-19 pandemic, there has been a stabilization in the number of enterprises investing in the Nghi Son Economic Zone. Building upon these research findings, the author puts forth recommendations to attract businesses to invest in both the Nghi Son Economic Zone and the Thanh Hoa Economic Zone.

Keywords: Economic zone, investment attraction, investment location selection

1. Introduction

The selection of a primary location refers to the strategic decision-making process involved in determining the ideal site for an enterprise's headquarters, branches, or offices. This decision holds significant importance as it sets the foundation for the enterprise and establishes its initial advantages. To determine the optimal business location, a comprehensive analysis is required to evaluate the various environmental factors that will impact the enterprise's operations in the future.

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The Nghi Son Economic Zone (Nghi Son EZ) boasts exceptional transportation advantages, including well-connected roadways, waterways, and railways, with close proximity to an airport. Additionally, Nghi Son EZ possesses the potential to develop a deep-sea port capable of accommodating vessels exceeding 30,000 deadweight tons, coupled with substantial investments in integrated technical infrastructure. This transformative development will position Nghi Son EZ as a modern industrial hub in the North Central region, serving as a key gateway to the Northern Economic Triangle within Vietnam. Recognizing its significance, Nghi Son EZ has been designated as one of the five economic zones with national priority for investment.

However, recent years have witnessed a notable slowdown in investment activity by enterprises in Nghi Son EZ, primarily due to the COVID-19 pandemic. In light of this context, the focus of this study revolves around assessing six key factors that influence enterprises' decisions when selecting the location within Nghi Son EZ. Subsequently, appropriate solutions will be proposed to address the unique challenges presented in the post-COVID-19 con text

2. Overview of factors affecting the choice of investment location of enterprises

B.L. MacCarthy, W. Atthirawong (2003) used a worldwide team of experts to investigate the factors influencing international venue decisions, finding that the top five key factors identified that can strongly influence international venue decisions are generally: cost, infrastructure, labour characteristics, government and political factors and economic factors. Fahri Karakaya, Cem Canel (2003) also confirms that most previous research on business location decisions has involved cost factors. And in the research, the author clarifies that proximity to input and output market factors is very important for businesses.

In the same view of cost reduction, Terry F. Buss (2016) emphasis on Regarding preferential policies, Specifically, the author has suggested the relationship between taxes, related factors and economic growth as well as the use of tax incentives to influence the place of business. Evidence from France's microscopic data Roland Rathelot, Patrick Sillard (2008) also found that there are factors that promote business establishment that are positively correlated with local tax rates. Dan Y. Dabney (2016) asserts that financial incentives, such as tax refunds, credits, and rebates, offered to new businesses through corporate sector programs have only a small impact on a company's location decisions and are not a major location factor. Timothy J. Bartik (2012), also argues that the company's decisions about the location of a new manufacturing plant in the United States are influenced by tariffs and other advantageous characteristics of the state Pamela J. Zelbst et al. (2010) affirmed that the formation of interconnected and supportive industrial clusters has an important influence on the choice of locations of enterprises.

Petroni Alberto (2010) asserts that logistical factors influence the choice of location. In the same vein, Jarosław M. Nazarczuk, Marlena Cicha-Nazarczuk (2021) surveyed two groups of companies of similar size and comparable: (i) in the EZ and (ii) operating outside the EZ. Research has confirmed that companies in EZs put tax exemption in EZs as the most important factor. Statistical trials have demonstrated significant heterogeneity between EZ and non-EZ entities, often signalling higher attention (in the former case) to proximity to output markets, FDI clusters, support for leaders, and the availability of low-skilled labour.

In Vietnam, Nguyen Dinh Tho (2009) studied factors affecting investor satisfaction including basic business infrastructure (basic infrastructure, labour, land grant, school quality), local government support (trade support, encouraging investment, public services) and quality of life. Thus, from the research overview, the author selects the factors influencing the decision to choose the location of the enterprise: Available advantages of the region, market factors, Human resources, infrastructure, administrative reform, the dynamism of local leaders, and preference policies. This study focuses on assessing the factors affecting the choice of enterprises to enter the EZ, so these factors are specified by the following scales: Availability advantage of the economic zone (using 4 scales LT1, LT2, LT3, LT4), market factors (TT1, TT2, TT3, TT4), Human resources (NNL1, NNL2, NNL3, NNL4, NNL5), Infrastructure (CSHT1, CSHT2, CSHT3, CSHT4, CSHT5), administrative reform (CCHC1, CCHC2, CCHC3, CCHC4, CCHC5, CCHC6), the dynamism of local leaders (LDDP1, LDDP2, LDDP3, LDDP4), Investment incentive policies (CS1, CS2, CS3, CS4, CS5).

Research Methodology

To assess the current situation of factors affecting the investment selection of enterprises in Nghi Son EZ, the authors sent a survey to all 185 investors who have enterprises operating inside the EZ and 160 investors outside the EZ through random selection and obtained 285 valid votes. The time to submit the survey is June 6-9, 2022. Survey results are compiled on SPSS 20.0 software and AMOS 20. In addition, the study also uses descriptive statistical methods, synthesizing primary data from the Management Board of Nghi Son EZ and Thanh Hoa Provincial Committee on investment projects in Nghi Son EZ.

Table 1: Survey sample statistics

Quota	Total number of survey samples submitted	Total number of valid survey samples obtained
Exterior of Nghi Son EZ	160	132
Inside the EZ	185	153
Sum	345	285

The proposed research model is as follows:

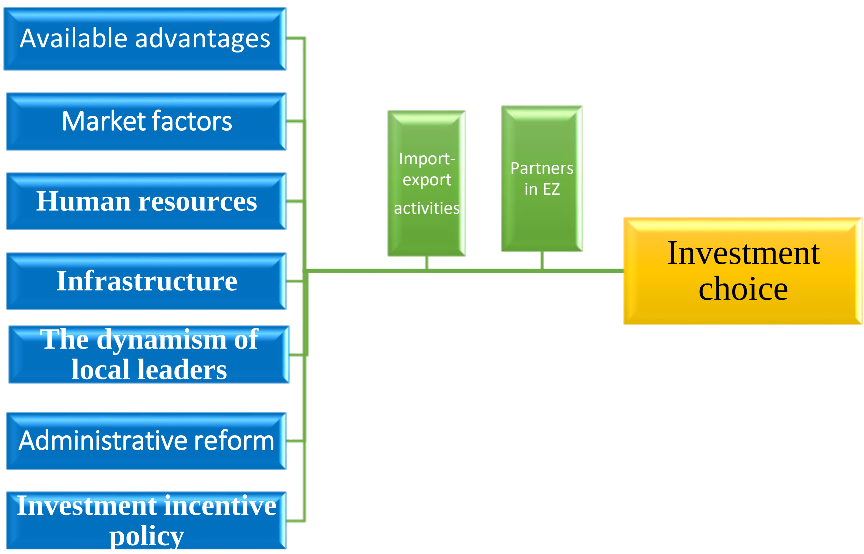


Figure 1. Proposed Research Model

From the research overview, it is shown that economic zones have favorable characteristics for import and export activities (World Bank Group, 2017). In addition, the economic zone is also more favorable for the development of a number of industries (Petroni Alberto, 2010). Besides, according to the theory of business clusters and value chains of enterprises, enterprises with large partners available in the EZ will prioritize investment in the EZ (Pamela J. Zelbst, 2010). Therefore, for the factors inside the business, the authors choose the following hypotheses:

Hypothesis H1.1: The available advantages of the EZ affect the investment choice of enterprises according to the status of import and export

Hypothesis H1.2: Market factors affect the investment choice of enterprises according to import and export status

Hypothesis H1.3: Human resources affect the investment choice of enterprises according to import and export status

Hypothesis H1.4: Infrastructure affects the investment choice of enterprises according to import and export status

Hypothesis H1.5: The dynamic of local leaders affects the investment choice of enterprises according to import and export status.

Hypothesis H1.6: Administrative reform affects the investment choice of enterprises according to import and export status

Hypothesis H1.7: Investment incentive policy affects the investment choice of enterprises according to import and export status.

Hypothesis H2.1: The available advantages of the EZ affect the investment choice of enterprises according to the status of partners

Hypothesis H2.2: Market factors affect the investment choice of enterprises according to import and export status.

Hypothesis H2.3: Human resources affect the investment choice of enterprises according to the status of partners

Hypothesis H2.4: Infrastructure affects the investment choice of enterprises according to the status of partners

Hypothesis H2.5: The dynamics of local leaders affect the investment choice of enterprises according to the status of partners

Hypothesis H2.6: Administrative reform affects the investment choice of enterprises according to the status of partners

Hypothesis H2.7: Investment incentive policy affects investment choice of enterprises according to the status of partners

3. Research results

3.1. Context of Nghi Son EZ and results of attracting investment in recent years

Nghi Son Economic Zone, Thanh Hoa province, was established in 2006 and the current area is 106,000 ha. The establishment and development of Nghi Son EZ have turned the arid southern land of Thanh Hoa, into white sand, making people here for many generations mainly living by fishing into a dynamically developing economic zone. Accumulated by 2022, Nghi Son EZ has 297 domestic investment projects with a total registered investment capital of VND 149,538 billion (accounting for 19% of the total investment capital of 18 EZs), implemented capital of VND 70,366 billion and 24 foreign investment projects with a total registered investment capital of USD 12,814 million, implemented capital reached 12,694 million USD (accounting for 31% of the total investment capital in Vietnamese EZs) [Nghi Son EZ Management Board, 2022].

Table 2: Investment projects of Nghi Son EZ, 2016-2022

Quota	Unit	2018	2019	2020	2021	2022	Growth 2022/2018
Total number of projects	Project	207	247	259	284	321	55,07
Number of domestic projects	*Project*	*188*	*225*	*240*	*264*	*297*	*57,98*
Registered investment capital	Billion VND	109.519	122865	136739	145.929	149.538	36,54
Realized capital	Billion VND	48.835	52651	54200	59.158	70.366	44,09
Number of foreign projects	*Project*	*19*	*22*	*19*	*20*	*24*	*26,32*
Registered investment capital	Million USD	12.863	12882	12725	12794	12814	(0,38)
Realized capital	Million USD	10.108	10426	10784	11218	12694	25,58

(Source: Compiled from reports of Nghi Son EZ from 2016-2022)

Table 2 shows that, total number of investment projects by the end of 2022 in the EZ Up to now, Nghi Son EZ 2022 has 297 domestic investment projects with a total registered investment capital of VND 149,538 billion (accounting for 19% of the total investment capital of 18 EZs), implemented capital of VND 70,366 billion and 24 foreign investment projects with a total registered investment capital of USD 12,814 million, implemented capital reached 12,694 million USD (accounting for 31% of the total investment capital in EZs in Vietnam). In 2022, the import value of enterprises in Nghi Son EZ is 8.391 billion USD, accounting for 90.66 export value of Thanh Hoa province (9.255 billion USD); creating jobs for 35,983 workers. (Table 3)

Table 3: Ratio of domestic and foreign investment projects

Quota	**Units**	**2018**	**2019**	**2020**	**2021**	**2022**	**Growth 2022/2018**
Total number of projects	Project	207	244	259	284	321	55,07
Number of domestic projects	Project	188	225	240	264	297	57,98

Proportion of DA numbers in the country	%	90,82	91,09	92,66	92,96	92,52	1,87
Number of foreign projects	Project	19	19	19	20	24	26,32
Proportion of foreign DA numbers	%	9,18	8,91	7,34	7,04	7,48	(18,52)

(Source: Compiled from reports of Nghi Son EZ from 2016-2022)

Domestic investment projects account for a large proportion (over 90%) of the total investment projects and grow well. Foreign projects investing in Nghi Son EZ are enormous projects, so they contribute to Thanh Hoa continuously holding the position of 8th FDI attraction in the country. These projects also create motivation and spillover in attracting investment and attracting auxiliary enterprises and businesses that are their partners to choose to invest in the EZ. However, from 2017 until now, the number of foreign investment projects in Nghi Son EZ has almost not increased. In 2019, there were 3 newly registered projects, but by 2020, 3 projects had their investment capital withdrawn. From 2020-2022, in the context of the epidemic, there are also few foreign investment promotion activities. Therefore, the number of foreign investment projects has almost increased insignificantly.

Besides, foreign investment projects in recent years have been small-scale. The implemented capital of the projects is still low compared to the total registered investment capital. It accounts for less than 50% and there is no upward trend of improvement. Investment projects in Nghi Son EZ are tending to decrease in both registered and implemented capital in terms of average investment capital of domestic investment projects. With the advantage of being a coastal EZ, Nghi Son does not have many large Logistic enterprises that are spread and enterprises in the EZ have not created a strong enough value chain.

3.2. Current situation of factors affecting investment choices of enterprises in Nghi Son Thanh Hoa EZ

For a qualitative analysis of factors affecting investment attraction in EZs, the author relies on statistics describing the assessment of investors inside and outside EZs about these factors in Table 4. At the same time, the author combines the analysis of opinions and judgments of experts to conclude:

Table 4 compares the difference between the assessment of investors inside the EZ and outside the EZ on the factors affecting investment attraction in the EZ.

Table 4: Differences between investors inside EZ and outside EZ about factors affecting investment attraction in EZ

Factor	Scale					
Available advantages of EZ	LT1	LT2	LT3	LT4		
Beyond EZ (N=132)	3,73	3,76	3,69	3,79		
In EZ (N=153)	3,76	3,85	3,76	3,83		
Differences	0,03	0,09	0,07	0,04		

Market factors	TT1	TT2	TT3	TT4		
Beyond EZ (N=132)	3,58	3,48	3,61	3,51		
In EZ (N=153)	3,63	3,52	3,72	3,58		
Differences	0,06	0,04	0,11	0,07		
Human resources	NNL1	NNL2	NNL3	NNL4		
Beyond EZ (N=132)	3,48	3,64	3,73	3,52		
In EZ (N=153)	3,54	3,63	3,78	3,43		
Differences	0,05	-0,02	0,04	-0,08		
Economic zone infrastructure	CSHT1	CSHT2	CSHT3	CSHT4	CSHT5	CSHT6
Beyond EZ (N=132)	3,67	3,75	3,67	3,67	3,73	3,73
In EZ (N=153)	3,82	3,62	3,61	3,75	3,65	3,75
Differences	0,14	-0,13	-0,07	0,08	-0,07	0,02
The dynamics of local leadership	LDDP1	LDDP2	LDDP3	LDDP4		
Beyond EZ (N=132)	3,82	3,78	3,87	3,73		
In EZ (N=153)	3,69	3,56	3,69	3,53		
Differences	-0,13	-0,22	-0,18	-0,20		
Administrative reform	CCHC1	CCHC2	CCHC3	CCHC4	CCHC5	CCHC6
Beyond EZ (N=132)	3,47	3,62	3,55	3,31	3,38	3,45
In EZ (N=153)	3,46	3,68	3,64	3,42	3,57	3,52
Differences	-0,01	0,06	0,10	0,11	0,19	0,07
Investment incentive policy	CS1	CS2	CS3	CS4	CS5	
Beyond EZ (N=132)	3,64	3,69	3,87	3,56	3,68	
In EZ (N=153)	3,64	3,75	3,79	3,70	3,75	
Differences	0,00	0,06	-0,08	0,14	0,06	
Investment options	QD1	QD2	QD3	QD4		
Beyond EZ (N=132)	3,67	3,66	3,86	3,75		
In EZ (N=153)	3,64	3,70	3,88	3,76		
Differences	-0,03	0,04	0,02	0,01		

Source: Compiled from the research results of the author

+ Available advantage factors of EZ

According to experts, investment advantages play an important role in investing in EZs. Enterprises investing in EZs appreciate more than investors outside EZs on the advantages of the investment industry in all aspects: EZs with abundant resources (LTDT1), convenient location in traffic (LTDT2), EZs with deep-sea ports (LTDT3), Favourable for trade between localities (LTDT4). However, the difference between investors' assessments inside the EZ and outside the EZ is not large. Because this is a natural advantage and CIs in the same geographical space can access the same. Representatives of the two interviewed infrastructure investors said that the EZs of Nghi Son EZ have a favourable location in terms of both traffic and access to input materials.

+ Market factors

According to the survey results, market factors are more appreciated by internal investors than investors outside the EZ. According to many previous studies, market factors such as market size, development potential, strong or weak competition, and economic growth in the place of investment play a positive role in attracting investment. However, the difference between investors' assessments inside the EZ and outside the EZ is not large. On the other hand, the survey results also show that investors believe that market factors affect the investment choices of enterprises in EZs.

+ Human resource factors

According to the survey results in the table below, investors in EZs rate the factors of human resources higher than non-EZ investors, including: in terms of abundant local unskilled labor resources (NNL1), and the locality has many training institutions suitable to the needs of enterprises in the EZ (NNL3). However, investors outside the EZ evaluate qualified labor to meet the needs of enterprises (NNL2); This is understandable because workers in Nghi Son EZ have an abundant force but mainly unskilled workers. Moreover, the access to labor of investors inside and outside the EZ is similar, so we also see that the difference between the assessment of human resources of these two subjects is not much. Investors inside and outside the EZ interviewed by the author all rated the fact that "it is easy to recruit high-quality workers in the EZ" is quite low.

+ Economic zone infrastructure factors

According to the comparison results in the table above, there are differences in the assessment of economic zone infrastructure of investors inside and outside the EZ. In general, investors in the EZ value infrastructure investment in the EZ higher than investors outside the EZ. Assessment of the convenience of transport infrastructure, stability of power supply infrastructure; water supply and drainage; trees, communications, and waste treatment systems of investors inside the EZ are all higher than those outside the EZ. however, the difference is not too big, because, it can be considered that the infrastructure outside the EZ serves investors as the same. EZs in Nghi Son EZ are established in convenient locations, moreover, the internal infrastructure is invested to serve the main and serve investors well, so it is more convenient for investors. Investors outside the EZ (in Nghi Son EZ, mainly small and medium-sized enterprises) must invest and connect infrastructure systems to serve production and business, so the level of modernity, synchronization and scale may not be equal to the infrastructure system invested inside the EZ.

+ *Management and support factors of local authorities*

According to the survey results, the following aspects: *Local leaders ready to support investors* (LDDP1); *The EZ Management Board* supports enterprises well (LDDP2) and is highly appreciated by investors inside the EZ than investors outside the EZ. As for the aspects: *Dialogue between enterprises in EZs and regular IZ* agencies (LDDP3), and "Local leaders promptly solve enterprises' proposals" *(LDDP4), investors* outside EZs are more appreciated. The results of qualitative analysis also show that investors have certain judgments about the impact of management and support of local authorities on attracting investment in EZs. Local leaders always consider Nghi Son EZ and industrial zones have really become an important driving force, spreading socio-economic development, so they are always interested in development.

+ *Factors of investment incentive policies*

According to experts, investment advantages play an important role in investing in EZs. Enterprises investing in EZs appreciate more than investors outside EZs on the advantages of the investment industry in all aspects: EZs with abundant resources (LTDT1), convenient location in traffic (LTDT2), EZs with deep-sea ports (LTDT3), Favourable for trade between localities (LTDT4). However, the difference between investors' assessments inside the EZ and outside the EZ is not large. Because this is a natural advantage and CIs in the same geographical space can access the same. Representatives of the two interviewed infrastructure investors said that the EZs of Nghi Son EZ have a favourable location in terms of both traffic and access to input materials.

+ *Market factors*

According to the survey results, market factors are more appreciated by internal investors than investors outside the EZ. According to many previous studies, market factors such as market size, development potential, strong or weak competition, and economic growth in the place of investment play a positive role in attracting investment. However, the difference between investors' assessments inside the EZ and outside the EZ is not large. On the other hand, the survey results also show that investors believe that market factors affect the investment choices of enterprises in EZs.

+ *Human resource factors*

According to the survey results in the table below, investors in EZs rate the factors of human resources higher than non-EZ investors, including: in terms of abundant local unskilled labour resources (NNL1), and the locality has many training institutions suitable to the needs of enterprises in the EZ (NNL3). However, investors outside the EZ evaluate qualified labour to meet the needs of enterprises (NNL2); This is understandable because workers in Nghi Son EZ have an abundant force but mainly unskilled workers. Moreover, the access to labour of investors inside and outside the EZ is similar, so we also see that the difference between the assessment of human resources of these two subjects is not much. Investors inside and outside the EZ interviewed by the author all rated the fact that "it is easy to recruit high-quality workers in the EZ" as quite low.

+ *Economic zone infrastructure factors*

According to the comparison results in the table above, there are differences in the assessment of the economic zone infrastructure of investors inside and outside the EZ. In general, investors in the EZ value infrastructure investment in the EZ higher than investors outside the EZ. Assessment of the convenience of transport infrastructure, stability of power supply infrastructure; water supply and drainage; trees, communications, and waste treatment systems of investors inside the EZ are all higher than those outside the EZ. Albeit, the difference is not too big as it can be considered that the infrastructure outside the EZ serves investors the same. EZs in Nghi Son EZ are established in convenient locations, moreover, the internal infrastructure is invested to serve the main and serve investors well, so it is more convenient for investors. Investors outside the EZ (in Nghi Son EZ, mainly small and medium-sized enterprises) must invest and connect infrastructure systems to serve production and business, so the level of modernity, synchronization and scale may not be equivalent to the infrastructure system invested inside the EZ.

+ Administrative reform factors

The survey results show that the administrative reform factor is also an important factor affecting investment attraction in the EZ. Investors in the EZ rated the administrative reform factors higher than investors outside the EZ, but with the insignificant difference, most of the opinions of enterprises said that Thanh Hoa province in general and Nghi Son town in particular over the past years have actively improved the investment and business environment, enhanced competitiveness to create a friendly and attractive business environment; creating motivation, a breakthrough in attracting investment resources into the EZ.

+ Management and support factors of local authorities

According to the survey results, the following aspects: Local leaders ready to support investors (LDDP1); The EZ Management Board supports enterprises well (LDDP2) and is highly appreciated by investors inside the EZ than investors outside the EZ. As for the aspects: Dialogue between enterprises in EZs and regular IZ agencies (LDDP3), and "Local leaders promptly solve enterprises' proposals" (LDDP4), investors outside EZs are more appreciated. The results of the qualitative analysis also show that investors have certain judgments about the impact of management and support of local authorities on attracting investment in EZs. Local leaders always consider Nghi Son EZ and industrial zones have really become an important driving force, spreading socio-economic development, so they are always interested in development.

+ Factors of investment incentive policies

According to the survey results, the aspects: enterprises in EZs are entitled to land rental tax reductions (CS1), enterprises in EZs are entitled to corporate income tax reductions (CS2) are highly appreciated by investors inside EZs than investors outside EZs. As for the aspect: Reasonable local investment incentives (CS5), investors outside the EZ appreciate them more. Enterprises investing in EZs enjoy the highest policy on investment incentives of the government. The remaining aspects are evaluated equally by enterprises inside and outside the EZ. Qualitative analysis results show that investment policy is an attractive factor for investors to invest in EZs. Investment incentive policies are very important for investors when investing in Nghi Son EZ. The facilitation of local authorities and management boards on site clearance, administrative procedures as well as cost incentives such as land rental costs, taxes, and fees. The GTTB of the variable "Investment policy" reached 3.71 points, which shows that investors all believe that investment attraction policy is a great factor affecting investment attraction in EZ

3.3. Research results on the influence of internal factors in enterprises on investment choice decisions

In this study, the multi-group analysis method is used to compare the official research model to determine the difference between enterprises' investment decisions in Nghi Son EZ according to the moderating variables: Import-Export activities; Partners in the EZ. According to the results of the difference test, there is a difference in the degree of influence of factors on the investment choice of enterprises in Nghi Son EZ according to the import-export status of the enterprise and the status of partners in the EZ.

In the analysis method, the moderator variable will be divided into two models: the variable model and the invariant model. In the variable model, the estimated parameters in each model of the groups are not constrained. In the invariant model, the measurement components are not constrained, but the relationships between the concepts in the research model are constrained equally for all groups.

Table 5: Results of testing the difference between the two invariant and variable models according to the Partner in the EZ

	Chi-square	Df
Variable model	1995,349	1130
Immutable model	2044,716	1165
Difference	8503,377	1260
Chi-Square test with P = 0.000		

Source: Authors' data analysis

The results of the analysis of differences between the two invariant and variable models show Chi-square = 8503,377, degrees of freedom Df = 1260 (table 6), p value = 0.000 < 0.05, so Ho is rejected, accept the hypothesis that there is a difference between the variable model and the invariant model. Therefore, the variable model was chosen because it has a higher compatibility with market data than the invariant model.

Based on the results of Table 6: Shows the relationship between the independent variables and the dependent variable (QD) in the official research model affected by the Partnership in the EZ. The degree of impact of the factors in the model on the investment choice of enterprises according to the partners in the EZ is also different. Specifically shows:

For enterprises with large partners, the enterprise's decision to invest in Nghi Son EZ is influenced by the following factors: CS; LTSC; NNL and TT. In which, the factor that has the greatest influence on the choice of enterprises to invest in Nghi Son EZ for enterprises without major partners is "Preferential policy" (CS) (standardized β coefficient = 0.271); followed by "Availability advantage" (LTSC) (normalized β coefficient = 0.238); "Human Resources" (NNL) (normalized β coefficient=0,198); and "Market factors" (TT) (normalized β = 0.167)

Variable model	Immutable model

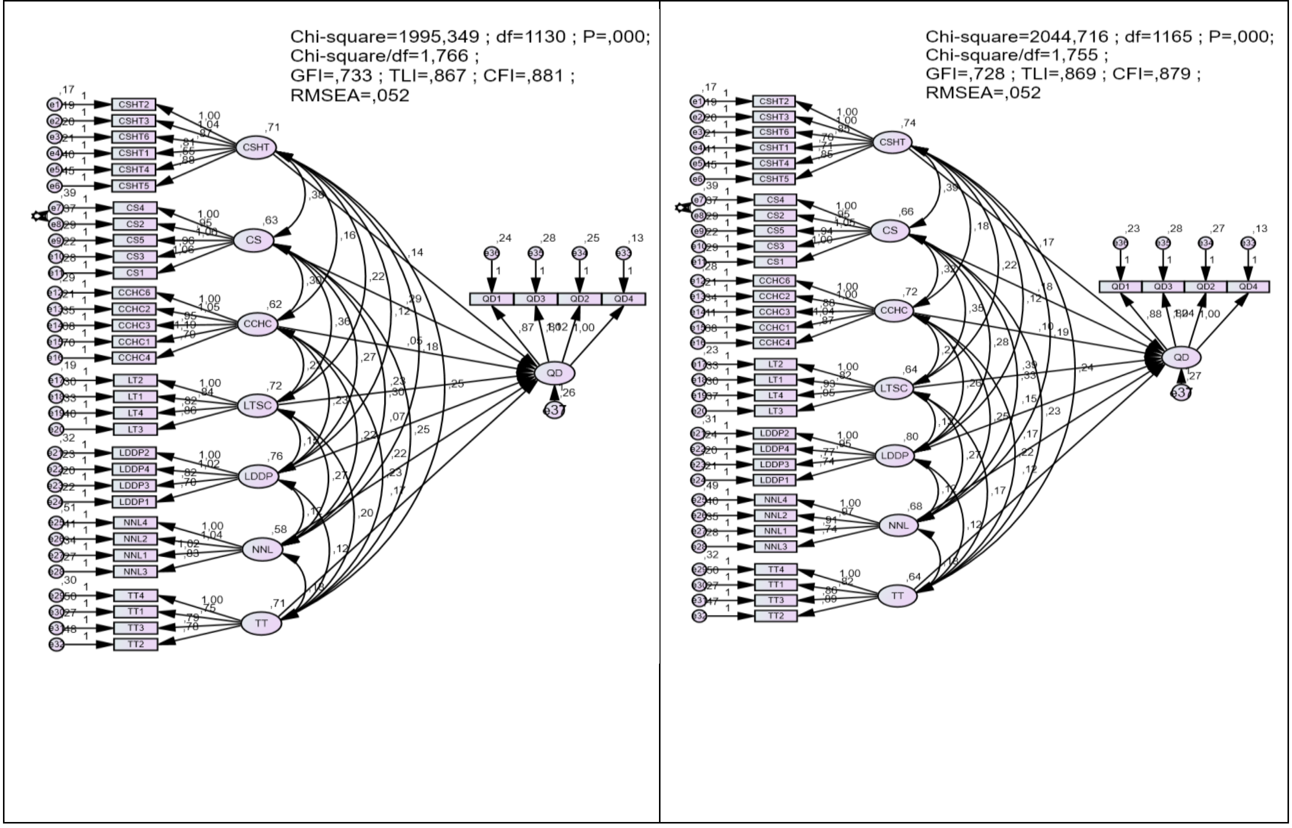


Figure 1: Variable and invariant structural model results according to Partners in the EZ

Source: Authors' data analysis results

Besides, according to the analysis results, for enterprises without major partners, the decision to invest in Nghi Son EZ of enterprises is also affected by the following factors: CSHT; CCHC; LTSC and LDDP. In which, the factor that has the greatest influence on the choice of enterprises to invest in Nghi Son EZ for those that do not have a large partner is the "available advantage of the economic zone" (LTSC) (standardized β coefficient = 0.464); followed by "Local advantage" (LDDP) (normalized β = 0.196); "Infrastructure" (CSHT) (normalized β coefficient=0.154); and "Administrative reform" (CCHC) (normalized β coefficient = 0.116).

Table 6: Results of the regression coefficient analysis of the variable model in the analysis of multi-group structure by Partnership in the EZ

Relationship			Variable Model (Standardized)							
			Having big partners				Without having big partners			
			E	SE	CR	P	E	SE	CR	P
QD	<---	CSHT	,137	,085	1,602	,109	,154	,061	2,517	,012
QD	<---	CS	,271	,123	2,317	,021	,129	,086	1,693	,090
QD	<---	CCHC	,051	,086	,632	,527	,116	,056	2,071	,038
QD	<---	LTSC	,238	,085	2,740	,006	,464	,098	5,793	***
QD	<---	LDDP	,072	,073	,939	,348	,196	,066	2,975	,003

QD	<---	NNL	,198	,097	2,241	,025	,123	,072	1,673	,094
QD	<---	TT	,167	,080	2,064	,039	,068	,068	1,094	,274

E: estimate: SE: standard deviation ; CR: Critical value: P is the significance level

Source: Author compiled from analysis of survey data

+ Analysis results of multi-group structure model according to import and export activities of enterprises

Table 7: Results of testing the difference between the two invariant and variable models according to the import and export activities of enterprises

	Chi-square	Df
Variable model	3210,945	1695
Immutable model	3366,401	1765
Difference	9970,253	1890
Chi-Square test with P = 0.000		

Source: Authors' data analysis

The results of the analysis of differences between the two invariant and variable models show that Chi-square = 9970.253, degrees of freedom Df = 1890 (Appendix), p = 0.000 < 0.05, so Ho is rejected, accept the hypothesis that there is a difference between the variable model and the invariant model. Therefore, the variable model was chosen because it has a higher compatibility with market data than the invariant model.

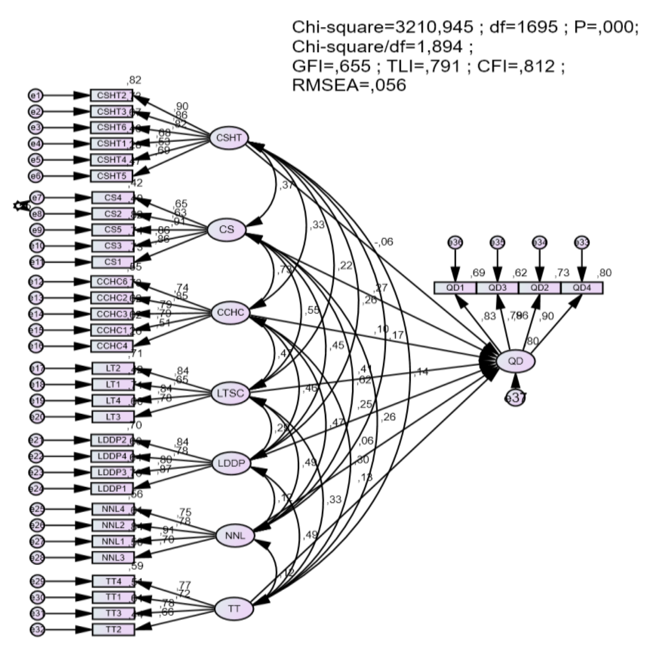
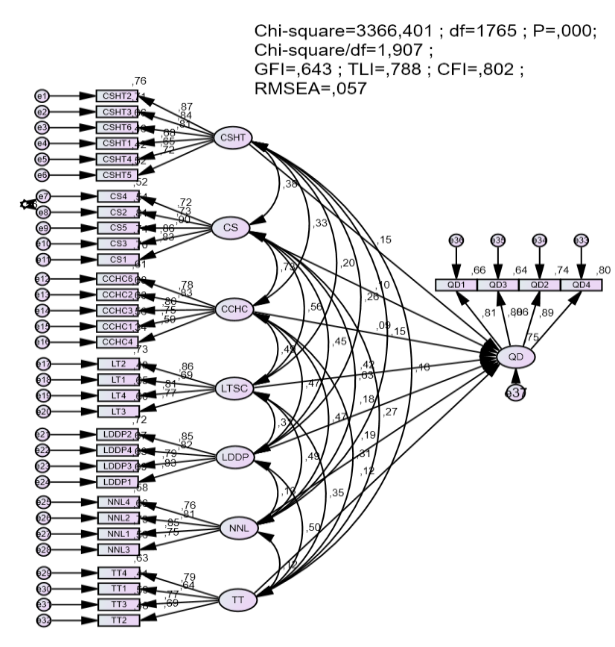
Variable model	Immutable model
	

Figure 2: Variable and invariant structural model results according to the import and export activities of enterprises.

Source: Authors' data analysis results

Thus, the influence between the factors in the model on the decision to invest in Nghi Son EZ of enterprises is different according to the import and export activities of enterprises. The results of the regression weighting in the structural model according to the import and export activities of enterprises show the difference as follows:

For the group of enterprises with import-export activities: The decision to invest in Nghi Son EZ of enterprises is only affected by the following factors: CS; LTSC; and LDDP. In which, the factor that has the greatest influence on the choice of enterprises to invest in Nghi Son EZ for enterprises with import-export activities is "Preferential policy" (CS) (standardized β coefficient = 0.450); followed by “Availability advantage” (LTSC) (normalized β coefficient = 0.346); and “Dynamics of local leaders” (LDDP) (normalized β coefficient = 0.272).

For the group of enterprises without import-export activities: The decision to invest in Nghi Son EZ of enterprises is only affected by the following factors: CSHT; CS and LTSC. In which, the factor that has the greatest influence on the choice of enterprises to invest in Nghi Son EZ for enterprises without import-export contracts is: "Preferential policy" (CS) (standardized β coefficient = 0.457); followed by “Availability advantage” (LTSC) (normalized β coefficient = 0.256) and “Infrastructure” (CSHT) (standardized β coefficient = 0.161).

For the group of businesses that will have import-export activities: The decision to invest in Nghi Son EZ of enterprises is only affected by the following factors: CSHT; CS and LTSC. In which, the factor that has the greatest influence on the choice of enterprises to invest in Nghi Son EZ for enterprises that do not have import-export activities is: "Infrastructure" (CSHT) (standardized β coefficient = 0.567); “Human Resources” (NNL) (normalized β coefficient = 0.255) and “Available advantage” (LTSC) (normalized β coefficient = 0.254).

4. Solutions to attract enterprises to invest in Nghi Son Economic Zone, Thanh Hoa province in the post-covid 19 context.

According to the survey results of enterprises, the available advantages of the EZ play an important role in attracting investment in the EZ. Therefore, it is necessary to further promote the advantages of Nghi Son EZ by promoting the available advantages of Nghi Son EZ to domestic and foreign enterprises. In addition, to strengthen the linkage of enterprises in the EZ, it is necessary to focus on investment promotion and investment management, focusing on corporations and auxiliary companies for large enterprises in Nghi Son EZ. In addition, to enhance the advantages of the EZ, it is also necessary to create conditions for businesses to develop logistics services to increase the advantages of the EZ. After the covid pandemic, businesses will continue to expand investment, especially foreign businesses will seek investment opportunities in economic zones, so it is necessary to have a key investment promotion solution to large and potential enterprises.

The results of the study of differences also show that for each different business object, it is also necessary to have key policies in attracting investment. Specifically: Enterprises with partners in Nghi Son EZ also prioritize investing in the EZ to create value chains for products as well as reduce transportation costs. In addition, the attraction of investment also prioritizes the selection of enterprises that are ancillary enterprises, suppliers of input factors or consumers of output products of large enterprises in the EZ. For the group of enterprises with import and export activities, it is necessary to emphasize the advantages of Investment incentive policies of the state; The available advantages of the economic zone (seaports, logistics activities; and the support of local authorities. For the group of enterprises that do not have import-export activities, besides preferential policies, it is necessary to emphasize the advantages of the completeness of the infrastructure of the EZ's infrastructure.

5. Conclusion

In the context of the years affected by the COVID-19 epidemic, activities to attract new businesses choosing to invest in Nghi Son and Thanh Hoa EZs were greatly affected. Especially large FDI projects are almost non-existent. The survey results of enterprises inside and outside the EZ also show that there are differences in the assessment of enterprises inside and outside the EZ about the factors affecting the decision to choose investment locations of enterprises. In the post-COVID-19 context, it is necessary to have more practical policies to attract businesses to choose investment locations inside Nghi Son EZ so that the EZ deserves to become a driving force for local economic development and the North Central region.

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The Impact of Foreign Ownership on the Profitability of Commercial Banks: An Empirical Study in Vietnam

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ABSTRACT

Profitability is one of the important factors in assessing the financial results of commercial banks, which is considered on the basis of a combination of business results and used resources. The study uses a panel data regression model on a dataset of 28 Vietnamese commercial banks in the period 2009–2022 to analyze the impact of foreign ownership on the profitability of commercial banks through ROA and ROE. Research results show that the higher the foreign ownership ratio, the higher the profitability. The regression methods used include the least squares method (OLS), fixed effects model (FEM), random effects model (REM), and general least squares method (GLS). The research model adds an interaction variable, which will help to more accurately reflect the role of the mediator, which is the leadership participation of foreigners, on the relationship between foreign ownership and the ability to bank profitability. The test results show that for banks with foreign members of the board of directors, the increase in the foreign ownership ratio will have a greater impact on profitability than for other commercial banks.

Keywords: Commercial Bank of Vietnam; Foreign ownership; Profitability; Vietnam.

1. Introduction

In order to properly perform the role of financial intermediaries and regulate the circulation of money, banks must fully meet the standards of reliability and, especially, profitability. It can be understood that profitability is the ability of a bank to generate income from the use of available resources to offset the expenses incurred for growth and expansion needs. Profitability is considered an important indicator to assess the effectiveness of a bank's management. In banking, return on assets (ROA) and return on equity (ROE) are commonly used to assess a bank's profitability.

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Foreign ownership is understood as the ownership of foreign private investors. When foreign investors are allowed to own equity capital in domestic companies, the company's performance will improve as foreign investors become more involved and responsible in the activities of the company. The performance of the company is also for the benefit of foreign shareholders who are contributing capital to the company [38].

Investment capital from foreign shareholders is expected to be an important channel to help banks expand their scale, improve liquidity, and improve their development level, thereby improving profitability. Several studies have focused on the impact of foreign ownership on profitability and showed that the role of foreign shareholders has become an urgent issue in practice for the banking system [20, 1, 36]. However, there are also studies that provide conflicting results [39, 29, 25]. In Vietnam, studies on this issue have also received the attention of a number of business-related researchers, but with little focus on the banking sector.

Thus, this topic has attracted the attention of many authors around the world as well as in Vietnam. Particularly for Vietnam, research on the influence of foreign ownership on the profitability of commercial banks is an urgent requirement in the current period for a number of reasons:

(i) There are different results on the impact of foreign ownership on the profitability of commercial banks in previous studies;

(ii) Through the interaction variable, this study adds empirical evidence to more accurately reflect the role of mediating factors in the relationship between foreign ownership and profitability. The mediating factor included in the study is the leadership participation of foreigners. Empirical evidence will be useful to state agencies, administrators, and investors in the context of restructuring the commercial banking system in Vietnam.

The main objectives of the paper include: Testing the impact of foreign ownership on financial stability in Vietnamese commercial banks; examining the role of foreign leaders in the relationship between foreign ownership and financial stability in Vietnamese commercial banks; and proposing some policy implications to enhance financial stability by adjusting the foreign ownership ratio in Vietnamese commercial banks.

2. Literature Review

2.1. Theoretical Framework

The Limited Global Advantage Hypothesis of Berger et al. (2000) argues that banks from some nations are able to overcome the diseconomies of cross-border operations due to various unspecified advantages. Hypothesis also suggests that additional cross-border consolidation may be in the offing and that financial institutions from some countries may capture disproportionate shares of the global market [6].

First, the finding that foreign banks are less efficient on average than domestic banks suggests that efficiency considerations may limit the global consolidation of the financial services industry.

Second, their finding that some banking organizations can operate in foreign countries at or above the efficiency levels of domestic banks suggests that additional global consolidation of financial markets may be in the offing.

Third, their finding that banking organizations from some countries, particularly the United States, are better able to operate efficiently across borders suggests that financial institutions from these countries may capture disproportionate shares of international financial services business in the future.

Fourth, if future research finds that U.S. banks derive their apparent efficiency advantage from U.S. regulatory or supervisory conditions (for example, easy geographic mobility) rather than from U.S. market conditions (for example, a well-developed securities market), then one might predict cross-border efficiency gains from similar liberalizations in other nations, such as the Single Market Programme in the European Union.

Finally, their results suggest that future empirical investigations in this area should include a substantial number of home countries and institutions from a substantial number of foreign nations.

2.2. Empirical Studies

Attracting foreign resources to invest in the banking sector is essential to enhance and improve access to capital, technology, and modern management skills from abroad. Most empirical studies show that foreign ownership has a positive impact on the profitability of commercial banks. Douma et al. (2006) studied emerging countries and showed a positive correlation [12]. The study by Shen et al. (2009) used the least squares dummy variable regression model with sample data including 48 Chinese banks during the research period from 1997 to 2007. Research results shows that the profits of domestic banks in China are increasing in proportion to the increase in foreign ownership of these banks [32]. Musah (2017) conducted a study of banks in Ghana and also found that the foreign ownership ratio has a positive impact on the economic performance of banks [22]. Ehsan & Javid (2018) and Hussain et al. (2018) find that foreign ownership has a significant positive effect on the Z-Score of banks in Pakistan [13, 17]. Musah et al. (2022) conducted research in banks in Ghana and found that foreign ownership is associated with lower risk-taking behavior than government ownership [23]. Many other studies also show that the role of foreign shareholders has become an urgent issue in practice for the banking system [20, 1, 36].

Although there is a positive relationship, some studies suggest that the foreign ownership ratio only up to a certain level will positively affect the profitability of enterprises, and even increasing the foreign ownership ratio does not increase the profit of the enterprise. Greenaway et al. (2014) find the relationship between foreign ownership and firms in China represented by an inverted U-shaped graph. Enterprise profitability increases as the level of foreign ownership increases to about 47%–64% and decreases thereafter [15]. This research result is also consistent with the conclusion in a study by Gurbuz & Aybars (2010) when studying listed companies in Turkey [14]. Phung & Mishra (2015) systematically examine the influence of foreign and state ownership on firm value in the Vietnamese context. The empirical results indicate that foreign ownership has an inverse U-shaped relationship with firm performance [28]. In addition, there are studies with mixed results, such as Nguyen's (2020), showing that foreign ownership affects bank risk-taking positively in high-risk banks but negatively in low-risk banks [24].

However, there are also some studies that give contradictory results. Wu et al. (2010) demonstrated that the rate of return on total assets in Chinese banks with foreign investment is lower than in banks without foreign capital [39]. Antonina (2010) studied the factors affecting the profitability of banks in Ukraine; the research results showed that foreign ownership has a significant negative effect on the profitability of Ukrainian banks when considered on an independent basis [3]. Rokhim & Susanto (2013) investigate the impact of increased foreign ownership on efficiency, competition, and risk in the banking industry in Indonesia. With sample data on 115 commercial banks from 2003 to 2008, the two researchers demonstrated that foreign ownership inflows reduce profitability [29]. Liu et al. (2020), studying banks in China, found that foreign ownership has a positive and significant impact on credit risk [21].

The influence of foreign management and administration also attracted the attention of researchers. Hambrick et al. (1984) and Shukeri et al. (2012) reported that firms with foreign board members often have better profitability (ROE) [16, 33]. Dhar et al. (1988), Oxelheim & Randoy (2003), and Choi et al. (2007) studied firms in different countries, but all showed that if the participation of the leadership team is multi-national, the ROA of the business will be higher [11, 27, 9]. This is explained by the fact that companies with foreign involvement in management and control will have technical cooperation, consulting and marketing arrangements, branding, patent obligations, and resource sharing [11]. In addition, national diversity promotes more effective global relationships. Thereby helping businesses increase their profits.

However, there are studies that show that foreign-owned banks often nominate more foreign managers to the bank's management apparatus. These managers may not fully grasp the information and actual conditions in the local market, so they may establish inappropriate standards and policies, thereby indirectly increasing risks [2]. The research results of Joenoes & Rokhim (2019) show that the presence of Asian nationality council members has a negative effect on the profitability of enterprises [19].

In addition, Rose (2007), when studying the relationship between foreign leadership and financial performance measured by ROA in listed companies in Denmark, did not find empirical evidence showing the relationship between these two factors [30].

3. Methodology

3.1. Data

Bank-specific data is collected from the audited financial statements of 28 Vietnamese commercial banks, and macroeconomic data is collected from the Asian Development Bank's statistical database system for the period 2009–2022. To test the impact of foreign ownership on bank profitability, the study uses the following models: OLS, FEM, REM, and GLS. Besides, some necessary tests are carried out to detect the model's hypothesis violations as well as to choose the most suitable and reliable model. The authors use Stata software to process the regression results.

3.2. Measure Variables

3.2.1. Foreign ownership

According to the provisions of Decree 01/2014/ND-CP, the share ownership ratio of a foreign strategic investor must not exceed 20% of the charter capital of a Vietnamese credit institution. The total share ownership ratio of foreign investors in a domestic credit institution must not exceed 30%. Similar to Vo & Mai (2017) and Nguyen et al. (2020), the study uses the foreign ownership ratio (FO) to represent the foreign ownership variable, which is calculated as the total shares held by foreign shareholders divided by the total number of outstanding shares [37, 26].

3.2.2. Bank profitability

There are many ways to measure a bank's profitability. Financial ratios are considered to be the most commonly used method. There are many financial ratios that can be used to gauge a bank's profitability. Various studies have used suggested financial ratios such as ROA and ROE to reflect the profitability of commercial banks [35, 4]. In this study, we use ROA and ROE to measure the profitability of Vietnamese commercial banks.

3.2.3. Interactive variable

To test the impact of foreign leaders on the relationship between foreign ownership and profitability, the authors add the interactive variable FO×FOREIGN_LEADER. The FOREIGN_LEADER variable receives a value of 1 for commercial banks whose board members are foreigners and zero for the opposite cases.

3.2.4. Control variable

Regarding control variables, the study uses a number of variables at the bank level and at the macro level that can affect the profitability of a bank, as follows:

- Bank size (SIZE): This study uses SIZE as the natural logarithm of total assets. Boyd & Runkle (1993) used the natural logarithm of total assets to represent bank size, and in the regression models, the authors found a positive relationship between bank size and profitability [7]. Berger & Humphrey (1997) argue that large banks achieve economies of scale [5]. Spathis et al. (2002) conducted a study of banks in Greece during the period 1990–1999 and found that large banks had better profitability [34];
- Capital ratio (EA): Demirguc-Kunt & Huizingha (1998) showed that banks with high equity are more profitable [10]. San & Heng (2013) also found that EA has a positive relationship with ROA [31]. The authors add to the model the variable EA, which is the ratio between capital and total assets, and predict that there is a positive relationship between EA and profitability;
- Economic growth (GDP): GDP growth rate. Evidence shows that GDP affects bank profitability through monetary policy shocks [18];
- Inflation (INF): Inflation rate. Boyd et al. (2001) showed the effect of inflation on lending and the financial market performance of a country [8].

3.3. Research Model

On the basis of an overview of previous studies and the current situation at Vietnamese commercial banks, the authors propose a specific research model as follows:

$$BP_{i,t} = \alpha + \beta FO_{i,t} + \eta' X_{i,t} + \rho' C_t + \chi_i + \varepsilon_{i,t} \quad (1)$$

In there:

i, t: Corresponding symbols for the bank and time (years);

α: Constant;

β, η', ρ' : Coefficients of the independent variables in the model;

$\varepsilon_{i,t}$: Random error;

$X_{i,t}$: A vector of control variables at the bank level, such as bank size and capital ratio;

C_t: A vector includes control variables at the macro level, such as economic growth and inflation;

χ_i: A set of interacting variables that are used to control for the fixed effects of banking factors.

Model (1) is to test the effect of foreign ownership on bank profitability. In which the dependent variable is BP, used to measure the bank's profitability, including the two variables ROA and ROE, which are financial ratios as described in Section 3.2.

To test the impact of foreign ownership on the financial stability of Vietnamese commercial banks, the authors put forward the following hypotheses:

H1: The higher the foreign ownership ratio, the higher the bank's profitability;

H2: The positive effect of foreign ownership on bank profitability will be stronger for banks with foreign board members.

4. Results and Discussion

4.1. Descriptive Statistics

Table 1 shows that the average ROA is about 0.928%, of which the maximum value is 2.36%. The average ROE is about 10.568%, of which the largest value is 24.632%. Considering the foreign ownership ratio, the average FO of banks in Vietnam is 9.994%. With regard to several control variables, sample statistics show that the mean of SIZE is 5,075. Banks hold an average of 9,139% equity in total assets. In the sample, the average GDP growth rate of Vietnam is 5.851%, with a corresponding inflation rate of 5.411%.

Table 1. Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	388	0.928	0.681	0.040	2.360
ROE	388	10.568	7.440	0.610	24.632
FO	388	9.994	11.668	0	30
SIZE	388	5.075	0.519	4.213	6.061
EA	388	9.139	3.643	4.670	17.920
GDP	388	5.851	1.476	2.560	8.020
INF	388	5.411	4.450	0.600	18.600

Source: Analysis results from Stata

4.2. Correlation Matrix

The study examined the correlation between the variables used in this model. Table 2 shows the correlation coefficients between the independent variables. We find that the correlation is low between the explanatory variables of the model. Therefore, multicollinearity is not a serious problem in this model. Notably, the correlation coefficient between ROA and FO is positive, consistent with hypothesis H_1. This result provides preliminary evidence that there is a positive relationship between state ownership and the profitability of Vietnamese commercial banks.

Table 2. Correlation matrix.

Variable	ROA	ROE	FO	SIZE	EA	GDPG	INF
ROA	1.0000						
ROE	0.8336	1.0000					
FO	0.2617	0.2897	1.0000				
SIZE	0.0772	0.4087	0.3873	1.0000			
EA	0.3036	-0.1349	-0.0854	-0.6651	1.0000		
GDP	-0.0579	-0.0471	-0.0380	-0.0116	-0.0614	1.0000	
INF	0.1935	0.0755	-0.1645	-0.2577	0.1925	0.0473	1.0000

Source: Analysis results from Stata

4.3. Foreign Ownership and Bank Profitability

Table 3 presents the estimated results of the study to test Hypothesis H_1. The results of the model selection test are suitable for the research sample through the F-test (p-value < 0.05), the Breusch-Pagan test (p-value < 0.05) and the Hausman test (p-value > 0.05), which show that the REM model is the best fit at the 5% significance level. Next, the author tests the defects of the research model. The results of the Wooldridge test and White's test (p-value < 0.05) show that there is autocorrelation and heteroskedasticity for REM. To minimize the influence of defects, we use the GLS model.

Research results in columns (2) and (4) show that FO has a positive and significant impact on bank profitability. The regression coefficients of the variable FO are 0.010 and 0.086 for ROA and ROE, respectively, and are statistically significant at the 1% level. This result supports our hypothesis that an increase in foreign ownership will have an effect on increasing bank profitability. To explain the above results, the following reasons can be mentioned: Firstly, the increase in foreign ownership has led banks to increase efficiency in some aspects, such as staff training, changing the work environment or culture, and introducing advanced technology. These activities increase costs in the short term, but in return, these costs can be offset by profits from foreign ownership in the long term. Second, along with the flow of foreign-owned capital, banks also take over experience and new technology from foreign experts and banks.

When considering the control variables, we find that banks with a large size and capital ratio will have higher profitability. Specifically, EA has a positive impact on the profitability of Vietnamese commercial banks. This result is similar to the study of Demirguc-Kunt & Huizingha

(1998) and San & Heng (2013), where the authors demonstrated that EA is an important determinant of bank profitability [10, 31]. Banks with high equity have the ability to withstand financial risk, reduce the risk of insolvency, reduce the cost of external capital, and thus achieve higher profitability. The variable SIZE is statistically significant and has a positive impact on ROA. The reason is that larger banks benefit in terms of size and diversified portfolios. Besides, large banks can lend more and have better market access than small banks.

Macro-economic conditions also significantly affect the profitability of banks. Specifically, INF has a positive effect on both dependent variables and has a statistical significance of 1%, indicating that an increase in the inflation rate will increase the profitability of Vietnamese commercial banks. This result can be explained by the fact that the State Bank (SBV) has given relatively accurate information about future inflation forecasts. This helps banks adjust interest rates in a timely manner. As a result, revenue grows faster than costs, which in turn has a positive impact on profits.

Summarizing all the results, we present solid evidence in favor of Hypothesis H_1. This result is consistent with the previous findings of Douma et al. (2006), Shen et al. (2009), Lensink & Naaborg (2007), Abraham (2013), and Tacneng (2015) [12, 32, 20, 1, 36]. This can be explained by the fact that foreign investors will help domestic banks have more working capital, improve management skills, and transfer technology. As foreign ownership increases, Vietnamese commercial banks can take advantage of foreign investors' experience in exploiting business strategies and thereby increase profitability.

Table 3. The impact of foreign ownership on bank profitability.

	ROA		**ROE**	
	REM (1)	**GLS (2)**	**REM (3)**	**GLS (4)**
FO	0.011***	0.010***	0.077*	0.086***
SIZE	0.588***	0.526***	7.976***	8.447***
EA	0.093***	0.099***	0.239*	0.347***
GDP	-0.012	-0.003	-0.193	-0.152
INF	0.036***	0.033***	0.344***	0.378***
F-test	0.000		0.000	
Breusch-Pagan test	0.000		0.000	
Hausman test	0.950		0.611	
Wooldridge test	0.000		0.000	
White's test	0.001		0.000	

*Note: *, ** and *** indicate statistical significance at the 10, 5, or 1% significance level, respectively.*

Source: Analysis results from Stata

4.4. The Influence of Foreign Leaders

The results of testing Hypothesis H_2 are presented in Table 4. To test this hypothesis, we add the interaction variable FO×FOREIGN_LEADER. The results of selecting a suitable model for the research sample through testing show that the REM model is the most suitable, with a 5% significance level. Next, the author tests the defects of the research model. The test results also show that there is autocorrelation and heteroskedasticity. To overcome these phenomena, we use the GLS model.

The results show that the regression coefficients of FO×FOREIGN_LEADER in columns (2) and (4) are both positive and statistically significant at the 1% level. This shows that the positive relationship between FO and bank profitability is more evident for banks with foreign board members. This hypothesis suggests that foreign leaders play an important role in enhancing the positive impact of foreign ownership on profitability. The presence of foreign members in the leadership team will increase the diversity of culture, knowledge, and experience. From there, there will be more accurate and reasonable choices in the management and investment of the bank.

Table 4. The impact of foreign leaders on the relationship of foreign ownership to bank profitability.

	ROA		ROE	
	REM (1)	**GLS (2)**	**REM (3)**	**GLS (4)**
FO	0.007*	0.008***	0.035	0.055*
FO×FOREIGN_LEADER	0.020***	0.025***	0.211***	0.301***
SIZE	0.468***	0.454***	6.671***	7.176***
EA	0.083***	0.088***	0.131	0.208**
GDP	-0.008	-0.0002	-0.147	-0.106
INF	0.036***	0.035***	0.350	0.399***
F-test	0.000		0.000	
Breusch-Pagan test	0.000		0.000	
Hausman test	0.259		0.292	
Wooldridge test	0.000		0.000	
White's test	0.002		0.000	

*Note: *, ** and *** indicate statistical significance at the 10, 5, or 1% significance level, respectively.*

Source: Analysis results from Stata

5. Conclusions and Policy Inferences

5.1. Conclusions

Research results imply that an increasing foreign ownership ratio has an impact on the profitability of Vietnamese commercial banks. This result is consistent with the studies of Douma et al. (2006), Shen et al. (2009), Lensink & Naaborg (2007), Abraham (2013), and Tacneng (2015) [12, 32, 20, 1, 36]. For banks with foreign board members, the increase in the foreign ownership ratio will have a stronger impact on profitability than for other banks.

In general, the research results on influencing factors are consistent with the research hypotheses. These hypotheses are developed based on relevant empirical studies and the actual situation in Vietnam. Therefore, the research results of the authors for the case of 28 commercial banks in Vietnam in the period 2009–2022 will contribute to supporting the previous economic views. In addition, the research results also provide practical and reliable assessments of the relationship between foreign ownership and the profitability of Vietnamese banks.

5.2. Policy Inferences

From the research results and the reality of Vietnam's economy, the study believes that increasing the foreign ownership ratio in Vietnamese commercial banks is completely grounded in the current period. However, the SBV needs to advise the government on a specific roadmap for each target group.

The foreign ownership limit can be flexibly adjusted according to the size and influence of each bank. For example, for a group of banks with a charter capital of over VND 10,000 billion, the maximum foreign ownership ratio may be only 49%, while for a group of less than VND 10,000 billion, it may exceed 51%, and in a group of weak banks, it is 100%. This can help small banks raise capital faster, thereby improving operational capacity and financial strength in the context of increasing competition. What is more important is that the operator can still maintain appropriate control and management to ensure national financial security.

Regarding the participation of foreigners in leadership, the bank's board of directors may consider allowing foreign investors more opportunities to participate directly in the governance of the bank. This not only helps increase capital, but the direct participation of foreign investors in the bank's governance also helps improve governance and competitiveness. Thanks to that, the bank has the opportunity to access the most scientific and technical advances and modern machines in the world.

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Factors Affecting the Quality of Accounting Information on Financial Statements of Administrative Units in Vietnam

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ABSTRACT

The study uses the regression analysis method to find out the influence of 5 factors affecting the quality of accounting information on financial statements of public entities in Vietnam, including: Compliance with legal regulations; Accountants' competence; Managers' participation; The effectiveness of the internal control system; Quality of accounting software. Based on the analysis results of 398 questionnaires collected from managers, chief accountants, and accountants of 180 public entities in Hanoi, Hai Phong, Bac Ninh, Bac Giang, and Ho Chi Minh City, the article has found a positive and statistically significant impact of both 5 above factors to the quality of accounting information on financial statements of public entities in Vietnam. From the research results the authors have made several recommendations to improve the quality of accounting information on financial statements of Vietnamese administrative entities.

Keywords: Quality of accounting information; Administrative unit; Financial statements.

1. Introduction

Vietnam has been entering the process of deep integration with countries all over the world. The ranking and credit assessment in establishing relations with international organizations, measuring Vietnam's economic development criteria compared to other nations requires accounting information on Financial statements of public units to ensure publicity, transparency, and resemble the Vietnamese environment and international accounting practices. In recent years, the financial management mechanism in Vietnam's public sector has been fundamentally renovated towards strengthening the assignment of autonomy and self-responsibility to units. Vietnam's public accounting system has also undergone drastic reforms to meet the requirements of international organizations and public finance managers. However, there have been still many cases related to

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fraud, and falsifying information on financial statements. As a result, it leads to loss of public property and other serious consequences. This not only negatively affects the trust of information users but also causes certain difficulties for State management agencies [1]. Therefore, improving the quality of accounting information on Financial statements of administrative units not only attracts the attention of researchers, organizations, and professional associations but also is a great requirement for policymakers in the process of developing and promulgating national public accounting standards. The accounting regime applies to public units and legal documents on accounting. To have a basis for making recommendations to improve the quality of accounting information on Financial statements of administrative units, it is necessary to identify influencing factors and determine the level of influence of factors on information quality.

2. Financial statements of administrative units and literature review about factors affecting the quality of accounting information on financial statements of administrative units

2.1. Financial statements of administrative units

Financial statements of administrative units are reports presented in a strict structure about the financial position, operating position, and cash flows of the entity. International Public Sector Accounting Standards (IPSAS) are high-quality accounting standards, which are intended to facilitate credible, high-quality financial reporting that is transparent and allows users the ability to hold governments and other public-sector entities to account. IPSAS distinguishes two kinds of Financial Statements for public entities: Special-purpose and General-purpose Financial reports:

General-purpose financial reports are financial statements released to users who are unable to request specific financial information to satisfy their individual needs. People who use General-purpose Financial reports may be citizens, representatives of the population, and other public objects.

Special-purpose reports are financial statements prepared for other objects such as legislative bodies, regulatory agencies, and supervisory agencies, who have the right to request that financial statements be prepared to provide information that satisfies their requirement.

In Vietnam, Financial statements of administrative units provide both information for general and special purpose, but most of the information serves budget finalization and is not publicly available to the public. Thus, it can be understood as financial statements for special purposes. After a series of accounting regimes were changed towards complying with the Accounting Law (2015) [2] and similar to international practices, Financial statements of administrative units in Vietnam now include 4 reports: (1) Statement of financial position; (2) Report on the results of operations; (3) Statement of cash flows; (4) Notes to financial statements. These reports may be separate reports or integrated into one report.

2.2. Theoretical basis and Literature review about factors affecting the quality of accounting information on financial statements of administrative units

2.2.1. Theoretical basis

Institutional Theory

From management perspective, institution is a structural system in which individuals with authority are committed to certain values or interests (Stinchcombe, 1968). With this approach, Jepperson (1991) said that institution is model of implementing regulations and rules in practice, in which, models are deployed through regulations on rewards and punishments, which are built by state authorities to build society and resist negative changes. This definition emphasizes the role of state power and agency in ensuring the values and interests of the nation. Accordingly, the existence of institution directly affects the behavior of individuals, organizations and society. In some cases, organizations operating in a social institution are subject to coercive pressure to comply with general rules and regulations. Donors and international organizations only carry out sponsorship activities when they are assured that the information on the financial statements of the countries is transparent and complete (Alon & Dwyer, 2014; Judge et al., 2010). In addition, external pressures, economic integration with the region and the world, and increased competitive pressure have pushed countries to prepare financial statements in accordance with international practices (Judge et al., 2010), in order to improve the performance of organizations in that institution. Also, according to institutional theory, each organization needs specific resources to survive such as human resources, physical resources, and financial resources. These resources will influence the application of accounting policies and regulations in organization.

New Public Management Theory

New Public Management (NPM) Theory was introduced in the late 1970s and early 1980s in the United Kingdom and the United States when the economic recession and tax problems became severe, leading to the introduction of new public administration methods to improve the performance of the public sector (Gruening, 2001; Ofoegbu, 2014). NPM includes a wide range of reform methods such as organizational structure, financial system innovation, budget management to more effectively run public service delivery organizations at both local and national levels. This theory focuses on efficiency, financial discipline, increased accountability and transparency for stakeholders (Chan, 2003; Gruening, 2001; Ofoegbu, 2014). As a result, public services in public units become more like businesses and benefit the people who directly benefit from public services. Improving the quality of information on the financial statements of public entities is one of the important solutions to reform the outdated and less transparent financial management system in the public sector. With NPM theory, scholars have emphasized the role of improving the quality of accounting information provided in order to make information transparent and increase the accountability of managers.

In recent years, Vietnam has made significant strides in research and development of regulations in the field of public accounting towards integration with international practices. Improving the quality of information on the financial statements of public entities is one of the top priorities to improve the operational efficiency of public accounting units. However, the quality of accounting information on the financial statements of an entity depends on many factors: legal background, qualifications of human resources, preparation of financial resources and commitment and support from administrators in public entities. Then, the process of preparing financial statements of public entities will be more effective.

Theories all show the importance of improving the quality of information on the financial statements of public entities and the accountability of managers. In the process of preparing financial statements, public agencies need to pay attention to the factors affecting the quality of information on financial statements in order for the implementation to be effective as expected'

2.2.2. Literature review about factors affecting the quality of accounting information on financial statements of administrative units

Factors affecting the quality of accounting information on financial statements of administrative units have been studied in many countries. In this research, the authors review several studies in Indonesia and Malaysia, that are located in Southeast Asia and have similar development characteristics to Vietnam:

In Indonesia, Afiah & Rahmatika (2014) [3] studied the factors influencing the quality of financial reporting and its implications on good government governance in districts, cities, and provinces in South Sumatra. The research results show that both the internal control system and human resource capacity positively affect the quality of financial reporting information of public entities in South Sumatra with the suitability of the study model being 50.4%. This means that these two factors only explain 50.4% of the variation in the quality of financial statement information of the survey units, the remaining 49.6% of the variation in the quality of information on the financial statements is determined by other factors not mentioned in this study. Five years later, research by Dewi, Azam, and Yusoff (2019) [4] on the impact of internal control systems and human resource capacity on the quality of information on financial statements and financial accountability of local governments was conducted in South Sumatra with similar results. The level of implementation of internal control and human resource capacity has a positive influence on the quality of financial reporting information of local governments, the quality of financial reporting information directly and positively affects financial accountability. However, the relevance of the 2019 study model was only 43.7%.

Also in Indonesia, in 2015, Suwanda [5] conducted a study on the impact of 5 factors on the quality of information on the financial statements of the local government of Java province, including the level of compliance with accounting standards, the quality of human resources, the internal control system, commitment to the organization, application of information technology. The research results show that all 5 independent variables of the model have a positive impact on the quality of financial reporting information of local government units.

In Malaysia, research by Hassan, E., Yusof, Z. M., & Ahmad, K. (2018) [6] was conducted to identify factors affecting the quality of accounting information in public organizations. The authors formulated 13 hypotheses to consider the influence of 13 factors on the quality of accounting information. Research results show that 10 out of 13 factors affect the quality of accounting information including (1) management commitment, (2) policy, (3) training, (4) records and information management, (5) employee engagement, (6) continuous improvement, (7) teamwork, (8) customer focus, (9) innovation, (10) information provider management. The research also suggests that organizational leaders should prioritize these 10 elements for information management, thereby improving the efficiency of public service delivery.

In Vietnam, before 2016, Public Sector Accounting Standards were quite unfamiliar to accountants. During this period, studies focused on clarifying the inadequacy of the accounting regime in units related to the state budget and proposing corrective solutions. There have been a few studies on the quality of accounting information and factors affecting the quality of accounting information on the financial statements of administrative units. Since 2016, the pressure of international economic integration has placed requirements on accounting information provided by public entities to be standard, comparable, and internationally recognized. In this context, The Ministry of Finance has issued the Vietnamese translation of the "International Public Sector Accounting Standards" (IPSAS), strengthened the organization of seminars on the development of Vietnamese public sector accounting standards, developed and promulgated the "Project on Announcing of Vietnamese public sector accounting standards" (2019) [7] and issue Vietnamese public sector accounting standards (VPSASs), in turn. This situation has motivated accountants and researchers to pay attention to reforms and changes in the world in public sector accounting that currently Vietnam's accounting regime is still far away. The research on factors affecting the quality of accounting information of public sector has been carried out with a methodical, grounded process, based on fundamental theories and inheriting the results of prospective studies with the support of data analysis software such as SPSS, AMOS... It can be mentioned as the research of Toan (2016) [8] on factors affecting the quality of accounting information on financial statements at public schools in Vinh Long province; Chau (2016) [9] on factors affecting the quality of information on financial statements at public education units; Thuan and Loi (2020) [10] studied factors affecting the quality of financial statements information in administrative units in Binh Duong province; Thao (2021) [11] surveyed the impact of factors on the quality of financial statements of administrative units in Da Lat city; Kieu (2022) [12] surveyed factors affecting the quality of accounting information on financial statements of public health units in Ho Chi Minh City... With different survey subjects, each study came to its conclusions about factors affecting the quality of information on financial statements. But in general, the quality of accounting information on the financial statements of a public entity is influenced by both factors belonging to the internal environment and the external environment of the entity. In particular, the internal factors are mentioned such as accounting policies and financial mechanisms applied at the entity, the level of compliance with the accounting regime, managers' participation, the organization of the accounting information system, accountants' competence, the internal control system, the application of information technology to accounting/quality of accounting software. Factors belonging to the external environment of the unit include integration requirements for public sector accounting, political environment, legal environment, economic environment, and cultural environment...

3. Research models and hypotheses

After reviewing the prospective studies, the authors conducted a group discussion with experts to seek advice on the model of studying factors affecting the quality of accounting information on Financial statements of Administrative Units in Vietnam. Participants in the discussion were managers (heads/deputy heads of units) and those in charge of accounting for 10 administrative units in Hanoi. The opinions exchanged ensure reliability because the participants in the discussion are all qualified and knowledgeable about public accounting issues. From there, the authors identified 5 factors in the quality of accounting information on financial statements of administrative units including (1) The level of compliance with legal regulations; (2) Accountants' competence; (3) Managers' participation; (4) Effectiveness of the internal control system; (5) And quality of accounting software.

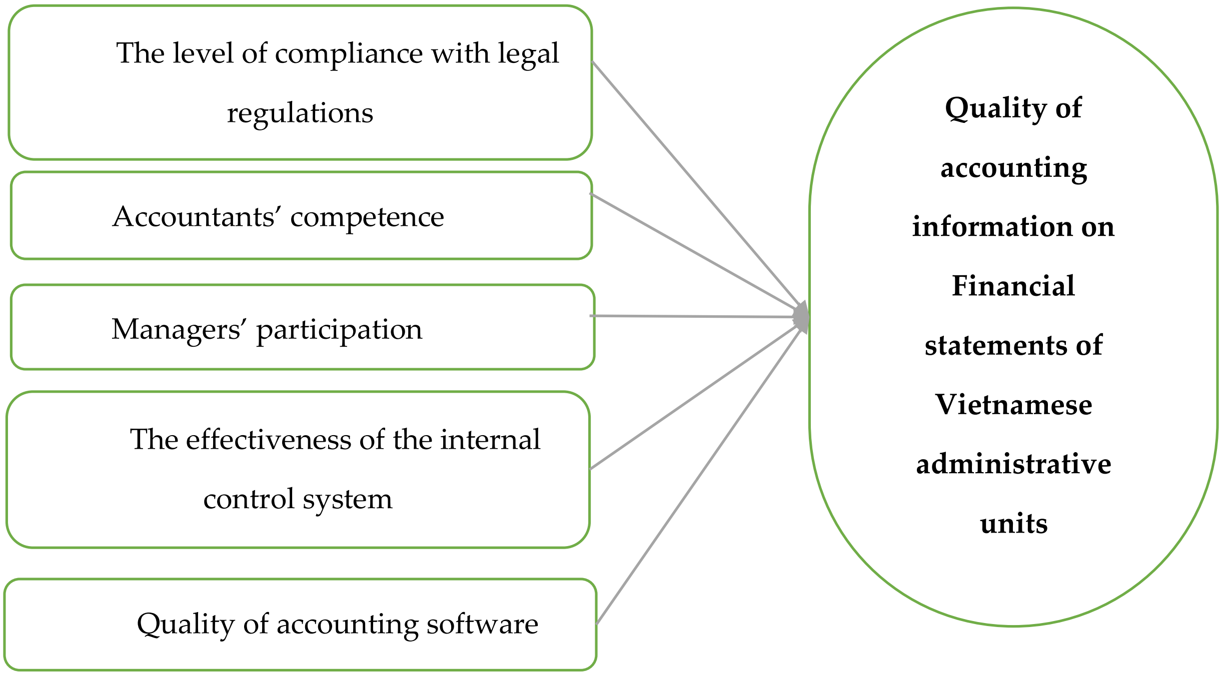

Fig 1. Model of research on factors affecting CLC on financial statements of Vietnamese administrative units

Source: Authors' compilation

With the above research model, the research hypotheses are stated as follows:

Hypothesis H1: *The level of compliance with legal regulations has an impact on the quality of accounting information on Financial statements of administrative units in Vietnam.*

Legal regulations are the legal bases on which accountants must base themselves to perform accounting work, ensuring that accounting activities comply with the law. On the other hand, legal regulations also serve as a bridge between accountants who provide accounting information and related parties, putting them in a relationship with the law, and improving accountability for the information they provide [5, 13]. By complying with legal regulations, the quality of accounting information on the financial statements of the entities will be more transparent, contributing to minimizing risks. The stricter the legal regulation, the more it enhances the responsibility of entities as well as the quality of accounting [3, 4]. With the above arguments and evidence, we hypothesize about the impact of the level of legal compliance on the quality of accounting information on the financial statements of the administration in Vietnam.

Hypothesis H2: *Accountants' competence has an impact on the quality of accounting information on financial statements of administrative units in Vietnam.*

Some previous studies suggest a relationship between accountants' competence and the quality of accounting information. For instance, the research by Paknezhad (2017) [14] in Iran argued that accountants are the people who directly collect, process, analyze and provide accounting information. Hence, the more qualified the accounting staff is, the better they can apply knowledge and choose appropriate accounting techniques and policies to maximize the benefits of the organization. Research by Saxunova (2017) [15] about accountant skills and competence in the contemporary environment shows that accountants' competence not only includes their qualifications and experience but is also demonstrated through soft skills, such as communication skills, openness to learning new things, the ability to exploit and applying information technology and new knowledge in organizing of accountancy. Moreover, they are trustworthiness, strong ethics, integrity, creativity, and inquisitiveness. In the information technology application environment, the accountants' competence is also shown in the ability to exploit and apply information technology competently, regularly update new knowledge and techniques, apply it to design systems, and develop and implement an accounting system suitable to the characteristics of the entity. With the characteristics of the Vietnamese public sector, accountants perform professional operations of each type of public unit according to different accounting regimes. Accountants must be able to apply the trained knowledge in practice flexibly. Every accounting mistake affects the quality of accounting information and can lead to unpredictable consequences. Therefore, accountants' competence is the second factor that is recommended to be included in the research model.

Hypothesis H3: *Managers' participation has an impact on the quality of accounting information on financial statements of administrative units in Vietnam.*

Managers will have different assessments about the role of accounting information as well as certain requirements for accounting information [10]. Each requirement of a manager will have a certain impact on accounting information and vice versa, each accounting information will be an important basis for managers to make appropriate operational plans and strategies [5]. Therefore, the involvement of managers with the quality of accounting information of the unit has a 2-way influence relationship. Managers' participation is not only reflected in their awareness and requirements for accounting but also through support in the process of designing, organizing, and operating the accounting information system of the entity.

Hypothesis H4: *The effectiveness of the internal control system affects the quality of accounting information on financial statements of administrative units in Vietnam.*

The internal control system is a set of mechanisms, policies, processes, internal regulations, and structures of the organization to control, prevent, detect and promptly handle risks and achieve requirements [16]. The internal control system is an important component of the unit's management apparatus. The objective of implementing internal control is to ensure efficient operations, control risks, protect assets, documents, and accounting books, ensure reliable and comprehensive information, and comply with current legal regulations. Research by Angella. A, (2009) [17] has shown that fraud in the preparation of financial statements and accounting scandals are often related to the effectiveness of internal control systems. In a study on the quality of banks' financial statements. J. Altamuro (2010) [18] demonstrated that the internal control system is a useful tool for producing quality financial statements. Specifically, the quality of units' financial statements is increased when they strengthen the operation of internal control systems to monitor the preparation of financial statements. Contextualizing the study as public entities, the authors said that among the factors affecting the quality of accounting information on financial statements, the effectiveness of the internal control system is an important factor.

Hypothesis H5: *The quality of accounting software has an impact on the quality of accounting information on financial statements of administrative units in Vietnam.*

Accounting software is an application that supports handling the work of accounting staff, performing accounting operations such as data entry, calculation, synthesis, reporting, and data export automatically, systematically with high accuracy in a short time based on input data provided by employees. With high accuracy, there is no risk probability like manual execution – affected by many external factors, accounting software has helped improve the accuracy of accounting information. Accounting software by accounting standards and regimes as well as operational structure, and specific units will contribute to improving the quality of accounting information. Many studies have mentioned the impact of the application of information technology in general, including accounting software, on the quality of accounting information of the unit [5, 6, 8, 9, 10].

4. Research methodology

4.1. Survey questionnaire design and scale selection

For research purposes, the authors designed a survey questionnaire of 27 measurement questions for dependent variables and independent variables. The questions were formulated from references to studies by Knight & Burn (2005) [19], Afiah & Rahmatika (2014) [3], Suwanda (2015) [5], Dewi, Azam & Yusoff (2019) [4], and VPSAS 01 (2021) [20]. The answers to these questions are measured by a Likert scale with 5 levels, the lowest is *"1 - Strongly disagree*" to "*5 - Strongly agree*". Respondents will also base on the actual situation of their entity to choose the appropriate answer.

To test the suitability of the questions, we investigated the pilot testing by sending 50 questionnaires to experts (leaders, chief accountants, and accountants of administrative units in Hanoi). With 33 collected questionnaires, we checked the reliability of the scale with two tools: Cronbach's Alpha and Corrected Item-Total Correlation. Both of these two coefficients need the requirements: Cronbach Alpha of all variables is greater than 0.7, and the Corrected Item-Total Correlation of observed variables is greater than 0.3 [21]. After that, we officially surveyed the enterprises of the research object. The questions (corrected) in the research model are described as below:

Table 1. Observed variables

Research variables	Variable code	Observed variables
Quality of accounting information on financial statements of administrative unit (QAI)	QAI1	Accounting information on Financial statements is faithful representation
	QAI2	Accounting information on Financial statements is understandable
	QAI3	Accounting information on Financial statements is timely
	QAI4	Accounting information on Financial statements is reliable
	QAI5	Accounting information on Financial statements is comparable
	QAI6	Accounting information on Financial statements is verifiable

The level of compliance with legal regulations (CLR)	CLR1	The preparation of Financial statements complies with the provisions of the Law on State Budget, the Law on Accounting, and other legal provisions on State Finance and Audit
	CLR2	The preparation of Financial statements complies with public sector accounting standards
	CLR3	The preparation of Financial statements complies with the accounting regime
	CLR4	The unit administrative complies with regulations on public disclosure of financial statement information
Accountants' competence (ACT)	ACT1	Accountants understand public sector accounting standards and regimes
	ACT2	Accountants have the experience and competence to handle professional work
	ACT3	Accountants are regularly trained and updated professional knowledge
	ACT4	Accountants have professional ethics
Managers' Participation (MNG)	MNG1	Managers have appreciated the importance of accounting information on Financial statements
	MNG2	Managers require Financial statements to be truthful and reasonable
	MNG3	Managers provide sufficient resources for organizing and operating accounting information systems
	MNG4	Managers are involved in assisting in designing and operating an accounting information system
The effectiveness of the internal control system	ICS1	The entity has established regulations and control procedures to ensure compliance with the law
	ICS2	The internal control system has helped detect and prevent fraud and errors
	ICS3	The internal control system has supervised the operation of the accounting information system
	ICS4	The internal control system has checked and supervised the quality assurance of accounting information
Accounting Software Quality (ASQ)	ASQ1	Accounting software ensures compliance with current accounting standards and regimes

	ASQ2	Accounting software that stores enough information allows tracking of visitors
	ASQ3	All data edits are saved on the Accounting Software
	ASQ4	Accounting software ensures to provide of honest and reasonable accounting information
	ASQ5	Accounting software is suitable for the characteristics of the entity

Source: Authors' compilation

4.2. Sample selection and data collection

Currently, the structure in Vietnam's public sector includes many types of units. Surveying all of them is beyond the author's ability because the sample size is too large. On the other hand, each type of unit in the public sector has different characteristics and organization of accounting work according to different regulations. Therefore, the authors selected the survey object as administrative units. Although there have not been complete statistics, the number of administrative units accounts for the majority of public sector. The survey selection will be feasible and ensure representation.

Between November and December 2022, we sent 500 questionnaires to 180 sample units in Hanoi, Hai Phong, Bac Ninh, Bac Giang, and Ho Chi Minh City. In which, there are 40 administrative units at all levels (People's Committees of communes, wards, townships, People's Committees of districts and districts), accounting for 22.22% and specialized agencies of People's Committees at all levels, and 140 public non-business units operating in the fields of health, education, culture, sports, economy ..., accounting for 77.78%. We received 420 votes, excluding 22 unsatisfactory votes that could not be used due to lack of necessary data, affecting data processing, the remaining 398 votes were valid, accounting for 79.6% of the total votes issued. These votes were used for analysis purposes. The descriptive statistical analyses are performed with the support of SPSS 26.0.

5. Results of data analysis and discussion

5.1. Describe the research sample

Regarding working position: Over 70% of survey participants are working as accountants in administrative units (chief accountant, accountant). 36 respondents were leaders (9%). The rest (nearly 20%) are researchers who teach public sector accounting in institutions or are research experts and participate in drafting public sector accounting standards.

Regarding working experience: The majority of respondents have more than 10 years of working experience (46.90%), 37.85% of respondents have 5 - 10 years of working experience and only 15.25% of them have experienced less than 5 years.

According to the authors, the survey participants all have professional qualifications and experience in public-sector accounting. This is an important foundation that ensures highly reliable survey results.

5.2. Reliability and validity analysis

To test the reliability of observed variables, the authors used Cronbach's Alpha and the Corrected Item - Total Correlation coefficient. The results of the reliability analysis showed that all independent and dependent variables in the Research model have Cronbach's Alpha groups higher than 0.6 (ranging from 0.626 to 0.853). All observed variables have Corrected Item - Total Correlation greater than 0.5. All of these indicators are greater than the minimum to ensure convergence, reliability, and distinctiveness of factors [32]. Thus, they should be included in the analysis in the next steps.

The observational variable MNG4 (Managers are involved in assisting in designing and operating accounting information system) has a total variable correlation coefficient = 0.283 (< 0.3) is not suitable for the research model and should be removed. The total variable correlation coefficient of the other observed variables is > 0.3. Thus, they should be included in the analysis in the next steps.

5.3. Exploratory Factor Analysis (EFA)

The results of analysis from the data show that the KMO coefficient is quite high (0.818 > 0.5) representing a suitable research dataset for factor analysis, the Bartlett test with p-value = 0.000 < 0.05 proves that the observed variables are correlated with each other in the factor. Based on the Eigenvalue table, factors with an Eigenvalue coefficient ≥ 1 are retained in the analysis model, so the model retains 5 factors corresponding to 5 independent variables (as the research model suggests). the Total Variance Explained is 71.452% > 50% so tissue The EFA figure is appropriate. Factor loading factors are both greater than 0.5 indicating that the observed variables are statistically significant and that no observed variables are uploaded to either element group.

Similarly, the results of the dependent variable discovery factor analysis (EFA) show a KMO coefficient of 0.784 > 0.5, the Bartlett test has Sig. = 0.000 < 0.05, the eigenvalue index is 2.823 > 1 the Total Variance Explained is 70.587% > 50%, and the Factor Loading factor coefficient shows that only one factor is extracted. Thus, the dependent variable and the 5 independent variables in the proposed research model all satisfy the conditions to be included in the analysis in the next steps.

5.4. Regression analysis and testing of research hypotheses

For regression analysis, from the observed variables, the authors determine representative variables. Each representative variable is the average of the observed variables of each group of factors. The dependent variable symbol is QAI, and the 5 independent variables are CLR, ACT, MNG, ISC, and ASQ. The multivariate regression analysis method is used to estimate the overall regression model:

$$\mathbf{QAI\ i = \beta1 + \beta2\ CLR\ i + \beta3\ ACT\ i + \beta4\ MNG\ i + \beta5\ ISC\ i + \beta6\ ASQ\ i + Ui\ (1)}$$

In which, Ui is the random error representing factors other than the above 5 factors, which affect "***Quality of accounting information on financial statements of administrative unit***" (QAI).

After that, we performed the model fit test and tested the research hypotheses. The result is as follows:

Table 2. Evaluating the suitable level of paradigm

Model	R	R^2	R^2 Calibration	Standard deviation	Durbin-Watson coefficient
1	.867[a]	.740	.785	.29183	.25395

a, Independent variables: (Constants), CLR, ACT, MNG, ISC, ASQ

b, Dependent variable: QAI

Source: Authors' calculation with SPSS 26.0

The results in Table 2 show that the model the team developed is consistent with a significance level of 0.05, since the adjusted R2 = 0.785 > 0.5 and the statistical F-test model conformity has Sig. = 0.000 < 0.05. Thus, 78.5% of the variation in the Quality of accounting information on financial statements of administrative units is explained by five independent factors.

Table 3. Regression analysis model results

Model		Non-normalized coefficients		Normalization factor	t	Sig.	Linear multi-plus statistics	
		B	Standard error	Beta			Tolerance	VIF
1	Constant	-.028	.098		.289	.773		
	CLR	.498	.028	.507	4.240	.000	.628	1.592
	ACT	.597	.032	.605	4.534	.000	.560	1.786
	MNG	.184	.032	.196	8.891	.000	.563	1.777
	ISC	.369	.028	.375	9.478	.000	.558	1.775
	ASQ	.256	.033	.264	2.770	.006	.561	1.791

Source: Authors' calculation with SPSS 26.0

The VIF variance magnification coefficient reaches the maximum value = 1.791 < 2 showing that the independent variables are not closely related to each other, so no multivariate occurs, and the relationship of the independent variables does not significantly affect the explanatory results of the regression model.

From the regression analysis table, we get the following regression function:

QAI i = 0.507 CLR i + 0.605 ACT i + 0.196 MNG i + 0.375 ISC i + 0.264 ASQ i (2)

Since the Sig. value of the constant = 0.773 > 0.05 should not include in the regression model.

From the regression equation, it can be seen that all 5 factors the Quality of accounting information on the financial statements of the administrative unit. In particular, the factor "Accountants' competence" (ACT) is assessed as the strongest influence on the quality of accounting information on financial statements of administrative units with a Beta coefficient of 0.605. When other factors do not change, if " Accountants' competence " increases by 1 unit, "quality of accounting information on financial statements of administrative units" will rise by 0.605 units. The factors

"Compliance with legal regulations", "Effectiveness of internal control system", "Quality of accounting software" and "Managers’ participation" also all affect the "quality of accounting information on financial statements of administrative units" with Beta coefficients of 0.507, 0.375, 0.264, and 0.196 respectively. Thus, the H1 hypothesis, H2, H3, H4 and H5 all are accepted at 95% confidence, and the theoretical model is consistent with the research data.

6. Conclusions

Our research results have assessed the impact of 5 factors on the quality of accounting information on the financial statements of Vietnamese administrative units, according to the decreasing level: " Accountants’ competence ", The level of compliance with legal regulations", "Effectiveness of the internal control system", "Quality of accounting software" and " Managers’ participation ". From the research results, we firmly believe that to improve the quality of accounting information on the financial statements of Vietnamese administrative units, State management agencies and public units need to pay attention to solutions to improve all 5 factors above. Namely:

(1) Improve the qualifications of accountants at units;

(2) Improve compliance with legal regulations governing finance and accounting in the public sector;

(3) Enhance the operational efficiency of the internal control system in the units;

(4) Improve the quality of accounting software, ensure compliance with legal regulations and conformity with the characteristics of the entity;

(5) Increase managers' awareness of the role of accountants, so that unit managers become more deeply involved in issues related to the organization of the entity's accounting work.

In addition to the results, our study has some limitations:

First, the five independent variables explained only 78.5% of the variation in the quality of accounting information on financial statements of administrative units, while the remaining 21.5% of the change in dependent variables was explained by other factors that had not been included in the study model.

Second, although the number surveyed was 180 units with 398 feedback sheets, it is consistent with the experience of determining the sample size of the study. However, compared to the overall sample of Vietnamese public units, the sample size is too small.

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PART 9.
ECONOMICS, BANKING & PAYMENT

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Towards A Framework for Empowering E-Government One-Stop Shop: Enhancing Service Delivery with Business Process Management and Compliance

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ABSTRACT

E-government one-stop shops have emerged as essential tools in the digital transformation era to enhance service delivery. To fully leverage their potential, This research presents a novel framework for e-government one-stop shops, combining Business Process Management (BPM) and Business Process Compliance (BPC). By leveraging BPM, automation and efficiency can be enhanced, while BPC ensures adherence to regulations. The research objective is to streamline and improve e-government services through this comprehensive unifying framework, focusing on enhancing the user experience and ensuring effective service delivery. To develop this framework, a conceptual research method was employed. This involved analyzing and integrating various theories and models related to BPM, BPC, and E-Government services. By utilizing this method, key components from these distinct areas were identified, the structure of the integration framework was designed, and the interactions between these components within the system were articulated. As a result, the integration enhances operational efficiency, service quality, and regulatory compliance, fostering a citizen-centric approach. Service delivery is streamlined, processing times are reduced, and the overall citizen experience is improved. Our proposed framework addresses the existing gap in e-government services, providing a unified, efficient, and compliant one-stop-shop service. This research contributes to transforming e-government operations and enhancing public service delivery.

Keywords: E-government; One-stop shop; Business Process Management; Business Process Compliance; Digital Transformation; Service Delivery.

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1. Introduction

Public administrations often face challenges with complex and user-unfriendly service delivery processes, resulting in complaints from citizens about the difficulties in obtaining required services [1]. These complaints primarily revolve around the lengthy and effort-intensive steps involved, often requiring the completion of complex and time-consuming forms. Additionally, citizens are forced to interact repetitively with different public authorities before receiving the services they need [1]. To modernize public administrations, scholars have proposed user-friendly administrative processes as potential solutions.

Governments worldwide have recognized the transformative potential of digital technologies in public service delivery, leading to the emergence of the e-government one-stop shop concept. The "One-stop shop" approach stands out as a prominent solution [1]. The one-stop shop model aims to provide a singular access point to the administration, streamlining service delivery in a consolidated manner [2]. Although it still involves user-initiated data collection through forms, the one-stop shop offers a centralized platform to streamline interactions between citizens and government agencies, reduce bureaucratic complexities, and improve the overall citizen experience [1]. This aligns with broader efforts in digital transformation, seeking to enhance the efficiency and accessibility of e-government services.

However, the successful implementation and operation of an e-government one-stop shop require not only technological advancements but also effective business process management (BPM) practices and business process compliance (BPC) considerations. BPM, as a discipline focused on optimizing and improving business processes, offers valuable tools and methodologies to enhance the efficiency, effectiveness, and quality of service delivery in the public sector. On the other hand, BPC plays a critical role in ensuring that these processes adhere to legal and regulatory requirements, minimizing legal risks, and upholding constitutional principles. By incorporating BPM and BPC principles into the design and operation of e-government one-stop shops, governments can further empower their digital platforms to deliver seamless and citizen-centric services.

Integrating BPM and BPC within e-government one-stop shops offers several benefits. First, it enhances operational efficiency by optimizing and improving the underlying business processes, eliminating redundancies, and streamlining operations. Second, it improves service quality by ensuring that processes are well-designed, standardized, and aligned with best practices. Third, it facilitates regulatory compliance by incorporating BPC principles, ensuring adherence to legal and regulatory requirements. Fourth, it enhances the citizen experience by simplifying procedures, reducing processing times, and offering personalized services. Finally, it promotes citizen-centric governance by incorporating citizen feedback, fostering engagement, and tailoring services to their specific needs.

The necessity of integrating Business Process Management (BPM) and Business Process Compliance (BPC) into a unified one-stop shop framework is self-evident. Although the goals of this amalgamation are ambitious, there is a dearth of scientific research in this field when compared to the existing body of knowledge in BPM and BPC. As a result, the research problem addressed in this paper pertains to the absence of a comprehensive framework that combines the principles of BPM and BPC with one-stop shops, thereby enhancing service delivery in the domain of e-government. The specific objectives of this study encompass the following: conducting a thorough literature review, establishing a solid theoretical foundation, developing a conceptual framework that amalgamates BPM, BPC, and the one-stop shop model, and discussing the implications and contributions of this framework to both theory and practice. The anticipated outcome of this research endeavor is to equip governments with the capability to deliver efficient and citizen-centric services, thereby ensuring enhanced efficiency, improved service quality, regulatory compliance, streamlined citizen experience, and governance that prioritizes the needs of the citizens.

The rest of the paper is organized as follows: With Section 2, a comprehensive literature review is conducted, identifying gaps in integrating e-government one-stop shops and BPM. Section 3 establishes theoretical foundations from e-government and BPM, while Section 4 presents a framework that integrates BPM principles with one-stop shops, providing guidelines for enhanced service delivery. In Section 5, the implications, contributions, and recommendations of the framework are discussed. Finally, the conclusion summarizes the key findings, emphasizing the framework's significance in empowering efficient and citizen-centric government services.

2. Background and related works

2.1. Overview of e-government

E-government, known as electronic government, the utilization of ICT in government activities, has gained global attention and commitment to enhancing public service delivery [3]. Numerous countries worldwide have prioritized the innovation and implementation of e-government initiatives [4], [5]. E-governments aim to enhance governance processes and modernize public administration by embracing a customer-centric approach to transform public services and enable streamlined access to different government benefits [5]–[8].

The implementation of e-government brings significant benefits. Citizens and businesses can access government information at any time, saving time and reducing the need for physical interactions [9]. By streamlining operational procedures, e-government reduces costs, improves organizational efficiency, and enhances the performance of government entities [9]. This leads to effective and efficient public service delivery, increasing customer satisfaction and service quality [9]. Furthermore, e-government promotes transparency by providing easy access to government information anytime and anywhere [8]. These benefits highlight the potential of e-government to improve public administration and service delivery for various stakeholders. Governments continue to prioritize the development and modernization of e-government initiatives, aiming to transform public services with a customer-centric approach [5]–[7].

2.2. The concept of one-stop shop

The one-stop shop concept is a significant development in e-government, aiming to streamline government services and improve service delivery [1], [4]. This concept is widely recognized in e-government initiatives as a popular and essential concept [10]. Wimmer defines it as "a single point of access" to electronic services and information offered by different public authorities" [5]. Specifically, it aims to provide a single, multilingual, and user-friendly access point for citizens [11]. From a client's perspective, a one-stop shop integrates services from various public authorities, enabling access to different public services through a single government portal [12]. This means that citizens, companies, or government departments can access various services without the need to contact individual government departments separately. Instead, an interface, known as the front office, acts as the single point of interaction between citizens and interconnected public authorities [1], [13].

Fig. 1 showcases the shift from a traditional department-centric approach to a citizen-centric one-stop access concept. In the traditional approach, public services are organized around individual government departments, leading to fragmented service delivery and the need for citizens to interact with multiple departments separately. In contrast, the one-stop access concept prioritizes citizens' needs by centralizing services and processes around them. By streamlining and integrating services across departments, this concept aims to provide seamless and personalized services through a single access point. This approach reduces the interaction between citizens and public departments, resulting in a simplified and user-friendly service delivery process [12]. The United Nations has recognized the significant benefits of this approach, highlighting its ability to simplify interactions between public authorities and citizens [14].

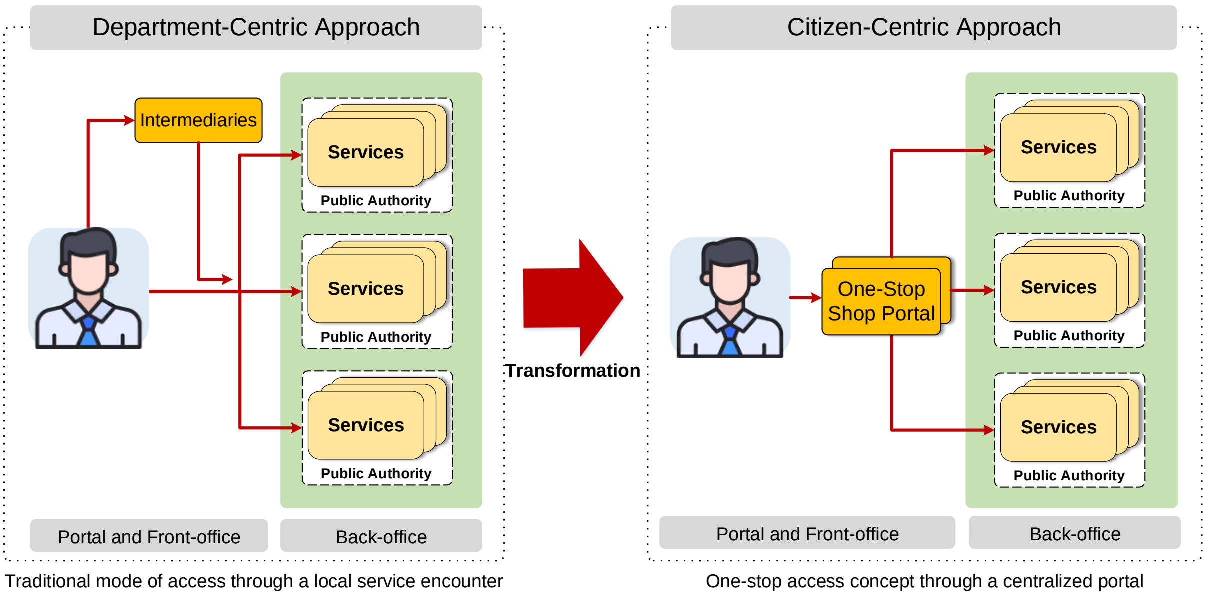

Fig. 1. The one-stop shop concept

Source: Adapted from Wimmer and Tambouris [12]

2.3. Business process management and compliance

Business Process Management (BPM) is a discipline that focuses on optimizing and improving business processes within organizations. BPM involves the systematic analysis, design, implementation, and continuous improvement of business processes to achieve organizational goals, enhance efficiency, and deliver value to stakeholders [15]. The literature emphasizes the importance of BPM in driving operational excellence, reducing costs, increasing productivity, and improving customer satisfaction.

Process modeling is a critical concept within Business Process Management (BPM) that utilizes visual notations such as BPMN or UML to represent business processes [15], [16]. Its primary purpose is to facilitate understanding, identify bottlenecks, and explore opportunities for optimization and automation [15]. Additionally, process analysis plays a crucial role in BPM by examining existing processes and employing techniques like mapping and root cause analysis to streamline and enhance their performance. Process optimization further enhances efficiency by eliminating waste and improving flow, often employing methodologies such as Lean, Six Sigma, and Total Quality Management (TQM) [15].

Automation and digitization are key components of BPM, leveraging technologies like workflow systems, Robotic Process Automation (RPA), and Intelligent Process Automation (IPA) to automate tasks and improve accuracy. Continuous improvement is an essential aspect of BPM, promoting adaptation, incorporating stakeholder feedback, and ensuring sustained excellence over time. This focus on continuous improvement is instrumental in achieving operational excellence, efficiency, and customer satisfaction [15].

In the context of e-government one-stop shops, the integration of BPM principles becomes crucial. By incorporating BPM concepts, these platforms are empowered to deliver efficient and citizen-centric services, maximizing their potential impact. By leveraging process modeling, analysis, optimization, automation, and continuous improvement, e-government one-stop shops can enhance service delivery and meet the needs of citizens more effectively.

Moreover, alongside BPM, considerations of business process compliance (BPC) are essential in the e-government domain [17]. BPC ensures that government/ organizations processes adhere to legal and regulatory requirements, minimizing risks and upholding constitutional principles [18], [19]. Compliance frameworks, audits, and controls help establish and monitor adherence to relevant laws and regulations. By incorporating BPC practices, e-government one-stop shops can enhance service delivery while ensuring regulatory compliance, fostering trust, transparency, and effectiveness [17]. Business process technology, encompassing the disciplines of Business Process Management (BPM) and Business Process Compliance (BPC), provides valuable tools and methodologies that are instrumental in streamlining processes, enhancing efficiency, and ensuring compliance. Governments can leverage these practices to effectively deliver citizen-centric services in the e-government domain, thereby fostering transparency and trust

2.4. The nexus between business process technologies and e-government one-stop shop

Business Process Management (BPM) plays a pivotal role in enhancing the capabilities of one-stop shop platforms in the context of e-government [17]. BPM involves optimizing and improving business processes within organizations to achieve operational excellence, efficiency, and customer satisfaction [20]. When applied to one-stop shop systems, BPM offers significant advantages in terms of service delivery, citizen-centricity, and process automation [21].

Firstly, BPM enables the streamlining and automation of processes within the one-stop shop platform [17]. Through process modeling and analysis, organizations can gain a visual understanding of their processes, identify inefficiencies, and explore opportunities for optimization and automation [21]. By implementing BPM techniques, such as lean principles, Six Sigma, and automation technologies like robotic process automation (RPA) or intelligent process automation (IPA), one-stop shop platforms can automate routine tasks, reduce manual intervention, and improve the speed and accuracy of service delivery, resulting in improve operational efficiency [17].

Secondly, BPM ensures citizen-centricity by facilitating a seamless and integrated experience for citizens accessing various government services through the one-stop shop [20]. By adopting a client-focused approach, BPM allows for the consolidation of services from different public authorities into a single front office [22]. Citizens can access a wide range of services through a unified interface, eliminating the need to contact multiple government departments individually [22]. This citizen-centric design enhances user experience, simplifies interactions, and improves overall satisfaction [20].

Furthermore, the integration of Business Process Compliance (BPC) practices within the e-government one-stop shop environment ensures adherence to legal and regulatory requirements [17]. BPC focuses on incorporating compliance measures into business processes to mitigate risks, ensure data privacy and security, and maintain regulatory compliance [17]. By integrating BPC, one-stop shop platforms can enhance service delivery while ensuring regulatory compliance, mitigating risks, upholding constitutional principles, building trust with citizens, and ensuring transparency and accountability [17].

By leveraging BPM and BPC together, governments can achieve enhanced efficiency, improved service quality, regulatory compliance, streamlined citizen experience, and citizen-centric governance [21]. The integration of BPM enables process optimization and automation, driving efficiency, reducing errors, and improving the quality of government services [21]. Simultaneously, BPC ensures that these processes are conducted in compliance with relevant laws, regulations, and standards, safeguarding data privacy and security [17]. This integration fosters a robust framework for delivering citizen-centric services that are efficient, transparent, and compliant [21].

Lastly, BPM provides a framework for continuous improvement within the e-government one-stop shop environment [20]. The iterative nature of BPM encourages organizations (government) to monitor, analyze, and refine processes regularly [20]. This enables the adaptation to changing needs, the incorporation of stakeholder feedback, and the ongoing enhancement of service delivery [20]. Through continuous improvement practices, one-stop shop platforms can evolve and respond to emerging challenges and citizens' evolving demands [20].

The integration of BPM and BPC principles within e-government one-stop shop platform brings numerous benefits [21]. It enables the automation and optimization of processes, enhances citizen-centricity, supports continuous improvement efforts, and ensures regulatory compliance [17]. By leveraging BPM techniques and technologies alongside BPC practices, organizations can maximize the potential of one-stop shop platforms to deliver efficient, integrated, and user-friendly government services while upholding legal and regulatory requirements, mitigating risks, and fostering citizen trust [22].

2.5. Integrating BPM and BPC in e-government one-stop shop: State-of-the-art

The integration of Business Process Management (BPM) and Business Process Compliance (BPC) within e-government one-stop shop platforms is a topic of growing interest [23]. While existing frameworks and approaches have explored BPM with one-stop shop platforms and BPC individually, there is a lack of literature specifically focusing on the combination of BPM with BPC within the context of e-government one-stop shops. This creates a notable research gap that needs to be addressed [24], [25].

In terms of BPM with e-government one-stop shop frameworks, several studies have proposed methodologies for process modeling, analysis, and optimization within e-government environments [21], [26]. These frameworks aim to enhance service delivery, streamline processes, and improve citizen experience. Moreover, scholars have recognized the potential of deploying BPM systems (BPMS) as a means to augment the performance, efficiency, and transparency of e-government processes. To facilitate this integration, the utilization of various information and communication technologies (ICTs), including cloud computing, web services, and blockchain, has been acknowledged as pivotal [27]. Correspondingly, in the e-government domain, frameworks have also emerged with a focus on business process compliance (BPC), aiming to ensure regulatory adherence and compliance with legal requirements [20], [28].

The combination of business process management (BPM) and business process compliance (BPC) within e-government one-stop shops has received limited attention in the existing literature [23]. Stefanovic et al. conducted a systematic literature review that specifically aimed to investigate the goals, technologies, and components associated with integrating BPM and BPC within such systems [27]. Their findings further highlight the scarcity of research papers that delve into the integration of these two disciplines within the context of one-stop shop platforms, as echoed by the works of Supahan et al. [25]. Consequently, this research gap underscores the pressing need for the development of comprehensive frameworks that effectively address both BPM and BPC aspects in e-government one-stop shops [21], [26].

Furthermore, besides the technological aspects, the literature also lacks studies that comprehensively investigate the benefits, challenges, and best practices associated with the integration of BPM, BPC, and one-stop shop concepts [20], [28]. Understanding the impact of this integration on service delivery, citizen experience, regulatory compliance, and governance is crucial for successful implementation [22], [29]. Additional research gaps include the need to assess the effectiveness of integrated BPM and BPC frameworks in achieving operational excellence, evaluating their impact on citizen satisfaction, and identifying areas for improvement and refinement [23]. Furthermore, exploring the potential barriers and risks related to the integration of these disciplines within e-government one-stop shop platforms is essential for developing robust and resilient frameworks [24], [25].

In sum, while existing frameworks and approaches have separately explored BPM with one-stop shop platforms and BPC individually, there is a research gap when it comes to the combination of BPM with BPC within e-government one-stop shops [21], [26], [27]. The scarcity of literature on this topic calls for comprehensive frameworks and further research to address the integration challenges and explore the potential benefits. This research will contribute to the advancement of e-government initiatives by providing insights and guidelines for integrating BPM, BPC, and one-stop shop concepts effectively [20], [28].

3. Towards a conceptual framework for integration of BPM, BPC, and e-government one-stop shop

Our study offers innovative perspectives on the integration of Business Process Management (BPM), Business Process Compliance (BPC), and the E-government One-stop shop concept. We're proposing a pioneering integrative framework called *BPMC-EOS* (*Business Process Management and Compliance for Enhanced E-government One-stop shop service*) - as the foundation for this amalgamation. The BPMC-EOS framework, as shown in Fig. 2, aims to close the gap that currently exists due to the lack of an overarching framework that unifies these three concepts. The paper proposes a comprehensive, unifying framework by merging three typically distinct parts – Business Process Management System (BPMS), Business Process Compliance (BPC), and the One-stop shop portal. The sections that follow provide a detailed breakdown of the primary components of the BPMC-EOS framework: (1) Identification of key components (Section 3.1) and (2) Framework design and structure (Section 3.2).

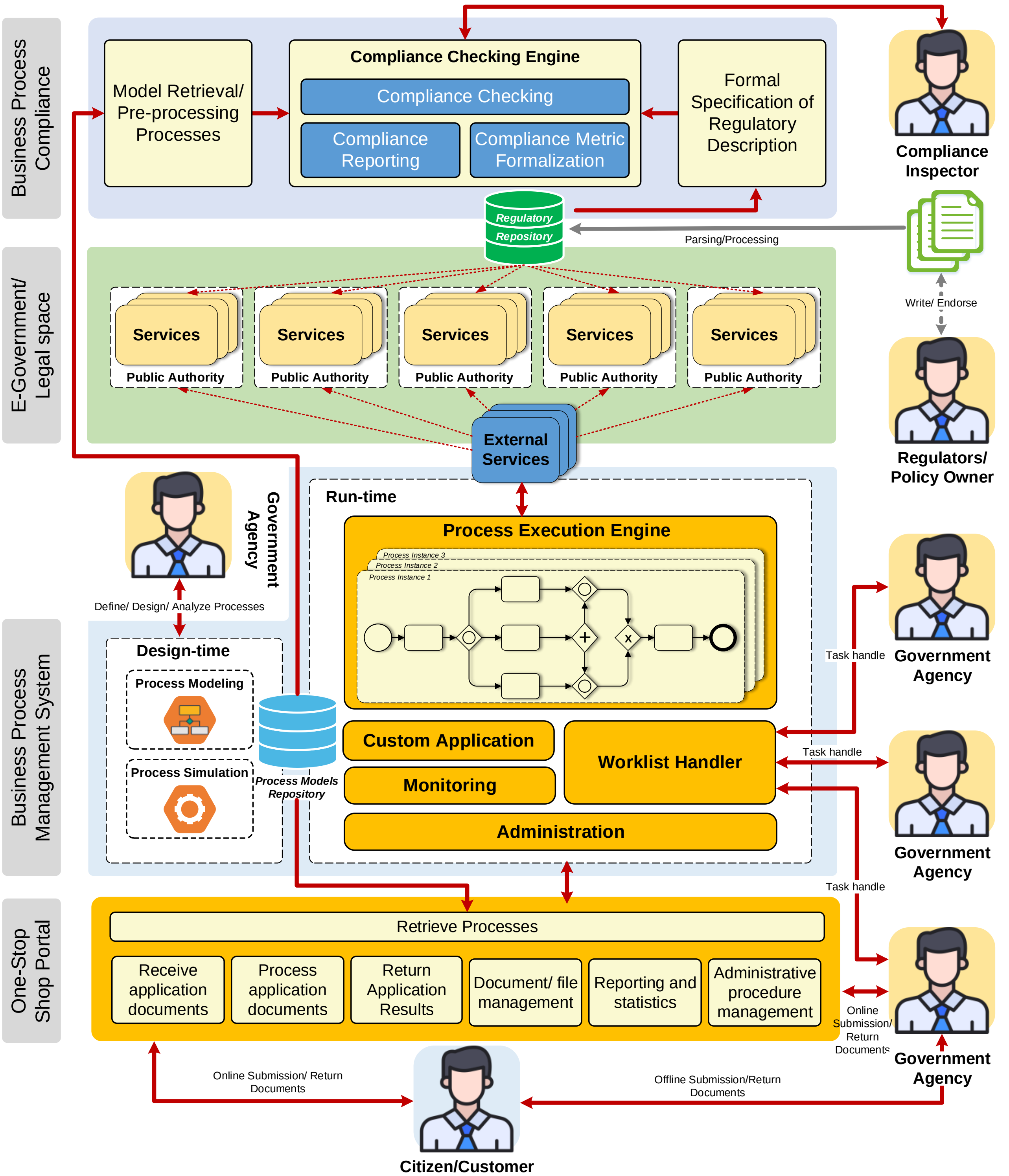

Fig. 2. Overview of the BPMC-EOS framework

Source: The results of the author's research

3.1. Research Method

In this paper, we adopted a conceptual research method, fitting for creating new theoretical models from established principles, to develop a comprehensive BPM, BPC, and e-government one-stop shop framework. Initially, we undertook an exhaustive literature review to grasp existing theories on these topics, identify essential components, benefits, and challenges. We especially focused on studies regarding BPM and BPC in e-government contexts. Following this, we analyzed our findings, distilling key features necessary for an integrated framework. Based on this analysis, we crafted a framework that amalgamates the advantages of BPM, BPC, and e-government services, addresses their challenges, and enhances operational efficiency, regulatory compliance, and user experience in e-government one-stop shops. Ultimately, this study presents a novel framework, born from a conceptual research method, that bolsters the effectiveness and efficiency of e-government one-stop shops.

3.2. Identification of key components

In our efforts to enhance e-government services through a One-stop shop, the identification of key components forms the cornerstone of our approach. These components constitute the fundamental building blocks of our BPMC-EOS framework, which integrates modules from Business Process Compliance (BPC), E-Government or Legal Space, Business Process Management Systems (BPMS), and the One-stop shop portal.

The first module is the Business Process Compliance (BPC) framework, inspired by the works of Governatori and Sadiq [18]. This framework illustrates the interaction between three crucial components integral to compliance checks within business processes. It's important to note that these components, including model retrieval and pre-processing business processes, formal specification of regulatory description, and compliance checking engine, provide a systemic approach to maintain the integrity of business processes. This compliance framework ensures that all business processes align with legal requirements and organizational policies, thereby ensuring transparency, accountability, and due diligence.

In addition to the aforementioned modules, another crucial component is the E-Government or Legal Space module [31]. This module presents a simplified adaptation of the e-government concept, wherein each government department or public authority is viewed as a service provider catering to a diverse range of requests both within and beyond the established framework. This approach fosters a more cohesive and harmonized approach to public service delivery, leading to improved efficiency and a reduction in bureaucratic obstacles. By considering the government departments and public authorities as service providers, the E-Government or Legal Space module enables a shift towards a customer-centric approach. This encourages a more seamless and coordinated delivery of services to citizens and stakeholders, minimizing redundancies and eliminating unnecessary administrative hurdles. Consequently, the incorporation of this module enhances overall efficiency and effectiveness within the government's service delivery landscape and contributes to the transformation of government operations, and enhances the overall public service delivery experience.

The third module, known as Business Process Management Systems (BPMS), is derived from the framework introduced by Dumas et al. [15]. This module consists of two main stages: design-time and run-time. The design-time stage focuses on constructing or modeling business processes specifically related to government processes. Conversely, the run-time stage plays a pivotal role in process execution and automation engine, handling a multitude of process instances generated by various stakeholders. To facilitate the process execution engine, several components are integrated, including the worklist handler, custom applications, process monitoring, and administration. The interconnection between these two stages is established through the process models repository, which serves as a centralized database for storing business process models. The primary objective of this framework is to facilitate the management, execution, and enhancement of organizational processes, ultimately improving operational efficiency and flexibility. It elucidates how various actors interact with the processes initiated by the One-stop shop portal. By providing a systematic approach to managing and executing business processes, this framework has the potential to significantly enhance efficiency, effectiveness, and adaptability.

Lastly, the One-stop shop portal stands as a critical element within our integrated framework, playing a pivotal role in enhancing the efficiency and accessibility of government services. This portal encompasses various essential components designed to assist citizens throughout the process of submitting applications and receiving results, while also facilitating seamless communication with other components both within and beyond the framework [32]. The key components of the One-stop shop portal are carefully orchestrated to provide a user-friendly and comprehensive experience. Furthermore, the submission and return of application documents components ensure a smooth and efficient process for citizens to provide the required documentation. This component handles the secure submission and retrieval of application documents, eliminating the need for physical paperwork and expediting the overall application process. The application documents processing systems component plays a crucial role in automating the processing of submitted documents. It utilizes advanced technologies to efficiently manage and validate documents, reducing manual efforts and enhancing accuracy. The component responsible for business process retrieval, reporting, and statistics plays a crucial role in the integrated framework. Its primary function is to retrieve relevant business process information and capture and analyze data associated with administrative procedures. By doing so, it enables the monitoring and evaluation of process performance, providing valuable insights for continuous improvement and informed decision-making. Ultimately, the management of the administrative procedures component oversees the entire process, ensuring adherence to established protocols and regulatory requirements. It streamlines the workflow, optimizes resource allocation, and ensures the efficient execution of administrative procedures.

3.3. Framework design and structure

Upon establishing the fundamental elements, we progress towards outlining the architecture and overall configuration of the BPMC-EOS framework. Notably, this design is conceived as a symbiotic interaction between the Business Process Management System (BPMS), Business Process Compliance (BPC), E-government, and the One-stop shop portal, each carrying out a distinct role yet engaging in a harmonious orchestration.

A layered design approach [33] has been chosen for the architectural setup of the BPMC-EOS framework, wherein each layer embodies a distinct facet of the BPMC-EOS structure. It allows for a clear separation of concerns and promotes modularity and reusability. The stratified architecture consists of four main layers, namely the Business Process Management Systems (BPMS) layer, the Business Process Compliance (BPC) layer, the E-Government/Legal Space layer, and the One-stop shop layer. Each of these layers represents a distinct but interconnected aspect of the framework, thereby promoting separation of concerns and reusability, ensuring that every module works harmoniously within the integrated framework.

As illustrated in Fig. 2, the interplay among the BPMS layer, BPC layer, E-government/legal space, and One-stop shop layer is visually represented in a user-friendly graphical format. The figure portrays the layers stacked vertically, symbolizing their interconnectedness and the cascading influence that each layer has on the others. Furthermore, the figure also depicts the interactions of human stakeholders, including citizens and government agencies, with each layer. This depiction emphasizes the importance of stakeholder engagement and highlights the user-centric approach within the integrated framework.

3.3.1. BPMS layer

As visualized in Figure 2, the BPMS layer serves as the foundational tier. It is responsible for managing, executing, and optimizing business processes, which are central to the efficiency and effectiveness of public service delivery. The processes are executed in two distinct stages - the design-time and run-time. The design-time stage concerns the modeling of government-related business processes, whereas the run-time stage caters to process execution and automation. The integration of components like the worklist handler, custom applications, process monitoring, and administration fosters the automation and orchestration of workflows, enhancing operational efficiency and flexibility. All these components communicate and interact through a centralized process models repository, storing business process models, thus maintaining a persistent connection between design-time and run-time stages.

The BPMS layer's pivotal role is not confined to its own processes. As the framework's core layer, it forges dynamic interactions with all other layers, steering the control, orchestration, and management of the business processes. Of particular significance is its integration with the e-government layer through the *external services* component, which functions as an application programming interface (API) portal. This integration enables the BPMS layer to seamlessly align with the e-government service, thus enhancing inter-layer synergy. In essence, the BPMS layer establishes the tempo for the framework's operations. It dictates the rhythm to which all other layers adhere, setting the pace for the harmonious and efficient functioning of the entire BPMC-EOS framework. Its role is pivotal in ensuring that each layer integrates seamlessly to deliver a cohesive, effective, and citizen-centric service.

3.3.2. E-Government/Legal Space layer

Positioned above the BPMS layer, the E-Government/Legal Space layer holds a significant role within the framework. Drawing inspiration from the e-government concept, this layer reimagines each government department or public authority as a service provider. This conceptual shift allows it to handle a broad spectrum of requests, not just within the framework's bounds, but also beyond its established parameters. Through this reframing, the E-Government/Legal Space layer champions a more unified and cohesive approach to public service delivery. It seeks to dismantle bureaucratic roadblocks and heighten efficiency, thereby creating a more seamless and accessible public service.

The layer's impact extends to the broader transformation of government operations, catalyzing a shift towardss a more customer-centric model and enhancing the overall public service delivery experience.

In addition to integrating with the BPMS layer through the BPMS's *external services* component, the E-Government/Legal Space layer also interacts with the *regulatory repository* for administrative activities. This repository houses machine-readable data derived from legal documents that have been endorsed by regulators or policy owners. The ability to access and retrieve this regulatory data enables the E-Government/Legal Space layer to align its service delivery with current regulations and maintain up-to-date administrative practices.

In essence, the E-Government/Legal Space layer acts as a conduit, bridging the operational efficiency of the BPMS layer with the regulatory assurance of the regulatory repository. Through its interactions and integrations, it ensures that public service delivery is not only efficient but also compliant and customer-focused, demonstrating its indispensable role within the BPMC-EOS framework.

3.3.3. BPC layer

At the topmost layer, the BPC plays a crucial role in ensuring regulatory compliance within the business processes, as proposed by Governatori and Sadiq [18]. This layer, which includes the model retrieval and pre-processing business processes, formal specification of regulatory description, and compliance checking engine, serves as the framework's watchdog. Its primary objective is to ensure the alignment of all business processes with the prevailing legal requirements and organizational policies, thereby maintaining transparency, accountability, and due diligence. The BPC layer operates in close association with the BPMS layer and E-Government/Legal Space layer, scrutinizing the latter's operations to maintain the integrity and compliance of public sector operations.

On a more granular level, this layer interacts with the *regulatory repository* to procure regulatory descriptions in a machine-readable format, such as compliance rules. These descriptions are then transposed into a format compatible with the *compliance checking engine* component. Concurrently, the process models are retrieved from the central *process model repository* situated within the BPMS layer, serving as another input for the compliance checking engine.

Equipped with these inputs, the compliance engine evaluates the degree of compliance, providing critical feedback on the state of regulatory adherence. This information is then relayed to relevant stakeholders, such as Compliance Inspectors, informing subsequent actions and reinforcing the layer's commitment to regulatory compliance. Thus, the BPC layer serves as a regulatory beacon within the BPMC-EOS framework, perpetually guiding the framework towards conformity and compliance.

3.3.4. One-stop shop layer

At the bottommost layer of this integrated framework, the One-stop shop portal forms a critical interface for interaction between the citizens and the government services. This portal integrates several key components designed to assist citizens throughout the process of submitting applications and receiving results, while also facilitating seamless communication with other components both within and beyond the framework. The integration of components such as the submission and return of application documents, application documents processing systems, business process retrieval, reporting and statistics, and management of administrative procedures within the One-stop shop layer ensures a streamlined, efficient, and comprehensive user experience.

Serving as the front-office of the framework, this layer enables direct interaction between citizens and the system. It interfaces with the BPMS layer, initiating execution of relevant processes in response to citizen requests, retrieved from the process model repository situated within the BPMS layer. Moreover, the portal is bolstered by government agencies responsible for assisting individuals, such as the elderly or those with disabilities, who may face difficulties in directly interacting with the One-stop shop. These agencies also initiate the process instances catering to citizen requests through the Worklist Handler component within the BPMS layer.

3.3.5. Summary

Despite each layer of the BPMC-EOS framework having its unique role, they are intricately interconnected, forming a robust, efficient, and effective ecosystem. They collaboratively create an integrated service platform for citizens and public administrators, with their interconnectedness underpinning the framework's seamless operation. Specifically, the optimal functioning of the One-stop shop layer is heavily dependent on the efficient operation of the underlying BPM, BPC, and E-Government/Legal Space layers. Any disturbances or inefficiencies in these foundational layers could potentially compromise the overall user experience at the One-stop shop layer.

In sum, the BPMC-EOS framework's design and structure embody a clear emphasis on a citizen-centric ethos. The intention is to refine user interactions with government services, making them more streamlined and efficient. Key attributes, such as intuitive design, easy navigation, accessibility, and efficient service delivery, form the framework's design bedrock. This unwavering commitment to user-centricity distinguishes the BPMC-EOS framework, positioning it as a potential blueprint for future e-government services.

4. Discussion on implications and contributions

The introduction of the BPMC-EOS framework, integrating BPM architecture with one-stop shop and e-government initiatives, is poised to significantly contribute to both theory and practice in the field of e-government, BPM, and BPC. This novel framework harnesses the power of these disciplines to redefine public service delivery, fostering organizational transformation, enhancing service quality, promoting regulatory compliance, and streamlining the citizen experience.

4.1. Potential contributions to theory and practice

The BPMC-EOS framework's unique integration of BPM, BPC, and e-government initiatives presents new possibilities for theoretical exploration and practical application. For BPM, the BPMS layer of the framework provides an innovative model for orchestrating and managing business processes. This layer's application in a public service delivery context could inspire further investigations into the use of BPM in public sector settings, extending its theoretical foundation and practical use cases. In the realm of e-government, the E-Government/Legal Space layer offers a fresh perspective on public service delivery, reimagining government departments as service providers. This transformative approach could catalyze research into new strategies for enhancing accessibility, efficiency, and citizen-centricity in e-government services. Additionally, the BPC layer's role in maintaining regulatory compliance could inspire a more rigorous exploration of the interplay between business process management and legal compliance. Overall, the BPMC-EOS framework paves the way for comprehensive investigations into the integration of BPM, BPC, and e-government initiatives, promising significant contributions to theory and practice in these areas.

4.2. Implications for e-government organizations

The BPMC-EOS framework can profoundly improve service delivery and operational efficiency in e-government organizations. The BPMS layer optimizes business processes, enhancing service delivery. The E-Government/Legal Space layer promotes a shift towards a customer-centric model, redefining public service delivery. The layered design enhances interoperability and unifies service delivery, particularly through the one-stop shop layer's role in bridging citizens and government services.

The framework integrates the BPMS and E-Government/Legal Space layers, fostering efficient inter-layer operations. The BPC layer enhances *service quality and compliance*, ensuring *alignment with legal requirements and policies*, bolstering transparency, and accountability. The one-stop shop layer improves user experience by streamlining citizen interactions and complementing the citizen-centric ethos of the BPMC-EOS framework. This user-centric approach enhances user experience and strengthens *citizen-centric governance*. In essence, each implication resulting from the implementation of the BPMC-EOS framework contributes significantly to enhancing the efficiency and effectiveness of e-government organizations. By offering an integrated and layered design, the framework serves as a powerful enabler of transformative e-government operations.

5. Conclusion

This study introduces an integrated BPMC-EOS framework that offers a transformative approach to enhance e-government service delivery. The framework recognizes the citizen as the central focus of public service and incorporates key elements of Business Process Management (BPM), Business Process Compliance (BPC), E-Government, and One-stop shop platforms. The novelty of this framework lies in its carefully designed architecture, consisting of four distinct layers: BPMS, BPC, E-Government/Legal Space, and One-stop shop. Each layer fulfills a specific function, and their seamless interaction leads to a harmonious, efficient, and citizen-centric service delivery approach.

The BPMC-EOS framework not only contributes to the theory of e-government and BPM but also provides practical guidelines to public sector organizations. It highlights the power of BPM in refining public service delivery and shows how a one-stop shop can elevate citizen-centric governance. To operationalize the BPMC-EOS framework, an extensive review of existing processes is needed to pinpoint potential areas of improvement and automation, followed by the design of software architecture for integrating with the current e-government one-stop shop systems.

Implementing this integrated framework necessitates creating an intuitive, user-friendly interface, streamlining service offerings, and fusing backend systems for fluid information and transaction processing. However, potential challenges, such as employee resistance to change and technological readiness, could arise and should be considered.

In conclusion, the BPMC-EOS framework paves the way for future research opportunities, including impact assessments, refining citizen-centric design, and comparative analyses of implementation strategies. This comprehensive, integrated framework holds the potential to revolutionize e-government services, enrich BPM practices, and set a new benchmark for digital governance. Ultimately, it seeks to offer a seamless, efficient, and citizen-focused public service experience.

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Impact of The Mechanism of Resource Mobilization and Utilization on The Linkage of Stakeholders in The Production and Consumption of Agricultural Products in Nghe An

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ABSTRACT

This study aims to examine the impact of resource mobilization and utilization mechanism on the linkages among stakeholders in agricultural production and consumption in Nghe An province. The research's methodology based on quantitative research method through exploratory factor analysis (EFA) and structural equation modeling (SEM). With a survey sample size of 605 respondents representing stakeholders in agricultural production and consumption, including individuals/households, businesses, governmental authorities, social organizations, schools/research institutes, and other organizations in Nghe An province, the results demonstrate both theoretical and practical contributions of the study, showing the significance of the mechanism in mobilizing and utilizing the financial resources in the impact relationship on linkages among stakeholders in agricultural production and consumption, as well as the intermediary role of factors namely opportunistic behavior and sharing culture. Additionally, the research reveals a negative impact of opportunistic behavior on the perception of participating stakeholders. The findings of this study will provide valuable insights for policymakers in the process of planning policies and solutions to enhance the effectiveness of linkages among stakeholders in agricultural production and consumption in Nghe An province

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Keywords: Resource mobilization and utilization mechanism; Opportunistic behavior; perception of participating stakeholders; Sharing culture; Linkage of stakeholders in agricultural production and consumption.

1. Introduction

As the economy continues to develop, specialization becomes increasingly prevalent (Lummus and Vokurka, 1999), and organizations tend to promote their collaboration with other members to utilize high-quality resources from partners at a lower cost compared to inefficient self-production (Nguyen et al., 2021). One of the essential foundations of the linkage that need initial attention is the labor allocation and production specialization. The more intensive the labor allocation and specialization are, the greater the demand for linkages and cooperation is. At the same time, specialization is primarily dependent on the advantages of each locality compared to others.

The role of linkages to the development process based on comparative advantage, benefits, and efficiency is of significant importance. The demand for any form of cooperation originates from two fundamental conditions: similarity and difference. All economic entities (economic regions, localities, business organizations) only exhibit a need for linkages and cooperation during their development process when the requirement for efficiency obliges them to intelligently utilize their own resources and those of their partners. The preconditions of any linkage and cooperation lies in a certain degree of similarity among entities in terms of resources and development levels, alongside relative differences in comparative advantages based on core competencies - derived from: (1) Resources and (2) Its potentials. Core competencies develop over time through a systematic learning and knowledge accumulation process on how to exploit different resources and capabilities. For being succeeded, localities must aim for surrounding opportunities that align with their capabilities, avoiding areas of weaknesses.

Jansson (1982), in his study on linkages among enterprises, distinguishes between linkages as relationships and linkages as transactions. Transactions involve the exchange of goods, services, or information, while relationships are seen as a framework within which transactions take place and are influenced by them. On another aspect, when considering the relationship between the economy, society, and institutions, Kristiansen (2003) categorizes linkages into three groups: (1) Linkages as the gross economic value of transactions between economic areas or geographical areas over time; (2) Linkages as continuous co-relation between economic agents, influenced by contracts or state interventions; and (3) Linkages as social relationships or networks that can be utilized to develop social capital, culture, and human, or to enhance the value of decisions, business transactions, or economic development.

Financial resources refer to the quantity of value expressed in money and are formed through the process of forming and utilizing various capital sources to shape economic and social relationships, which are distributed correspondingly and appropriately to a certain level of development. The mechanism of mobilizing and utilizing financial resources involves the ways in which financial resources are mobilized and allocated from different sources for specific objectives. To effectively mobilize and utilize financial resources, it is crucial to establish mechanisms and methods for allocating financial resources. As the context changes, organizations should also adapt to survive and thrive. Organizations tend to strengthen their relationships to mitigate the impacts of instability in supply, demand, technology, and environment in general (David, 1993; Mentzer et al., 2001; Chen and Paulraj, 2004). Generally, in the field of operations management, many authors have studied and proposed contextual factors such as organizational culture (McDermott and Stock, 1999; Nahm et al., 2004; Naor et al., 2008), enterprise scale (Jayaram et al., 2010), organization's business strategies (Sousa and Voss, 2001) that impact the efficiency of supply chain linkages.

Agriculture is one of the potentials and strengths of Nghe An province as its land area of 1,249,176 hectares ranks the top nationwide largest one. Agricultural land is occupied across mountainous regions, midlands, and coastal plains thus Nghe An is able to define and select the production of valuable agricultural products and goods. During the period from 2013 to 2021, the agricultural gross product increased by 19,781 billion VND, from 18,430 billion VND to 38,212 billion VND. The average growth rate was 4.43%, with a particularly high rate of 5.59% in 2021, the highest one in the North Central Coast region. The value of agricultural production reached 29,638.13 billion VND, a 3.9% increase compared to 2013 (Nguyen, 2022). The field of high-tech agriculture in an eco-friendly direction has initially achieved positive results. Up to this point, the province has attracted numerous high-tech agricultural projects to its area. Despite the achievements, the development of the agricultural sector in Nghe An still presents certain limitations: the slow structural transformation and inadequate uniform development among different sectors; the heavily extensive development of agricultural production, the reliance on the exploitation of natural resources, particularly land clearing to increase cultivated areas, excessive use of irrigation water to increase crop yields, and high input costs., the low level of technology engagement into agricultural products, and the application of high-tech solutions is mainly limited to single stages of the production process, with few value-chain based high-tech products which lead to unsatisfactory efficiency and lack of sustainability.

This study aims to examine the impact of resource mobilization and utilization mechanism on the linkages among stakeholders in agricultural production and consumption in Nghe An province. The research's methodology based on quantitative research method through exploratory factor analysis (EFA) and structural equation modeling (SEM). With a survey sample size of 605 respondents representing stakeholders in agricultural production and consumption, including individuals/households, businesses, governmental authorities, social organizations, schools/research institutes, and other organizations in Nghe An province, the results demonstrate both theoretical and practical contributions of the study, showing the significance of the mechanism in mobilizing and utilizing the financial resources in the impact relationship on linkages among stakeholders in agricultural production and consumption, as well as the intermediary role of factors namely opportunistic behavior and sharing culture. Based on these findings, the research provides recommendations to enhance the effectiveness of the linkage among stakeholders in agricultural production and consumption in Nghe An in the near future.

2. Literature review and hypotheses

2.1. Literature review

Value chain, also known as value chain analysis, is a concept in business management that was first mentioned and introduced by Porter (1985), the value chain represents a sequence of activities conducted by a company operating in a specific industry. The product goes through all the activities of the company which is operating in a particular industry. The product goes through all the activities of the chain in sequence order and at each activity, certain value is generated. The chain of activities creates a product with greater value-added than the sum of the individual activity value-added. Kaplinsky et al. (2011) provided the concept of value chain in the context of global analysis:

"The value chain is a series of activities required to transform a product or service from its concept stage, through various stages of production (including a combination of physical transformation and input of various production services), to delivery to the final end consumer and disposal after use." A value chain exists when all participants in the chain work together to create maximum value for the chain. The value chain encompasses the entire range of activities that enterprises/households, and individuals implement to transform an idea into a tangible product, bring it to the end consumer, and even include some after-sales steps. The core activities include research and development (R&D), design, production, marketing, distribution, and after-sales support. These activities can occur within a single enterprise/household or involve a combination of multiple enterprises/households, with the participation of various stakeholders/actors. The value chain approach focuses on the sequence of stages that contribute to both tangible and intangible value creation (Gereffi and Fernandez-Stark, 2016).

Value -chain linkages are considered from six dimensions: (1) Input-output structure describes the process of transforming raw materials and factors into final product; (2) The geographic scope describes the distribution of activities and identifies where specific activities are carried out in different locations; (3) Regulatory structure describes and explains how the value chain is governed by the actors involved, especially enterprises; (4) Upgrading reflects dynamics within the value chain, describing how producers move up to other stages in the chain; (5) Institutional contexts related to the local socio-economic factors that govern the value chain; and (6) Actor within the chain refer to the interactions among relevant stakeholders (Humphrey and Schmidt, 2002).

Similarly, regarding the linkages between small and medium enterprises (SMEs) and large enterprises, Hussain (2000) suggests that such linkages primarily take the form of joint ventures, concentrated production, and supply networks. These are essentially business cooperation that represent intensiveu levels of linkages among enterprises. On another aspect, Fujita and Mori (2005) propose two main types of linkages that create dynamics in the interaction between industries. The first type is economic linkages (E-linkages), which involve production activities and the exchange of goods and services. The second type is knowledge linkages (K-linkages), which encompass human activities in knowledge creation and transfer, thereby generating knowledge spillover effects.

Regarding linkages between foreign enterprises and domestic counterparts, there are two distinct types of linkages: vertical linkages and horizontal linkages. Whereupon, vertical linkages refer to the direct relationships between foreign enterprises and local suppliers (backward linkages) and between foreign enterprises and consumers for intermediate or final products (forward linkages). Vertical linkages primarily rely on transactional relationships but also cover voluntary assistance or the transfer of resources and technology to local partners (Pack and Saggi, 1999). Horizontal linkages involve cooperative activities between foreign and domestic enterprises in the form of joint ventures and network relationships among enterprises (Pack and Saggi, 1999; Giroud and Scott-Kennel, 2006); alternatively, horizontal linkages represent the interaction between foreign and local enterprises in the production of goods and services within the same stage of production

(UNCTAD, 2001). These authors also differentiate between linkages and their effects. The most significant effect is referred to as spillover effects, which arise as unintended impacts from the activities of foreign enterprises in the economy (through processes such as imitation, learning, and emulation by domestic enterprises regarding management skills, technology, and business strategies of foreign ones). Linkages, on the other hand, are seen as direct mechanisms for spillover effects to occur.

Mechanism refers to the structure of an entity composed of various interconnected components and the mode of operation or functioning of that entity, namely the interaction among components within the structure of that entity, according to certain principles and processes, aimed at achieving a specific outcome (Yun, 2005). Managers are individuals who understand and grasp the mechanisms, work protocol, and identify existing deficiencies or shortcomings in operations, thus they are capable of proposing improvements to the mechanisms. Therefore, the awareness and attitude of managers play a crucial role (Hoang, 2018). Even with an effective and efficient mechanism, if managers lack the knowledge, experience, and skills to implement it, the implementation of that mechanism can encounter difficulties and obstacles and even in some cases, due to limitations in management knowledge and skills, misunderstandings and misapplications of the mechanism can occur (Nguyen et al., 2021).

As mentioned by Nguyen et al. (2020), the concept of "opportunistic behavior" is considered a negative form of employee behavior within an organization, which is dominated and determined by the individual's awareness, attitude, and capabilities. Individuals, as members of the organization are subject to the influence and impact of organizational factors such as culture, leadership, power, organizational structure, and the groups they belong to as team members (Tran et al., 2019). Opportunistic behavior undermines the effectiveness of linking entities and building relationships in socio-economic development.

Political-social organizations, social organizations, and professional organizations somehow play a role in the transfer and dissemination of agricultural knowledge through activities such as experience sharing, information provision, consultation, and training. However, the true significance of these organizations lies in their intermediary function as bridges between producers and businesses, as well as representatives of specific stakeholder groups in their relationships with other stakeholders. Thus this role contributes to the generation of mutual trust and community cohesion, preserving and promoting regional identities, reducing transaction costs, sharing risks, enhancing negotiation capabilities of participating entities, and protecting the rights of members in case of disputes. The formation and development of these organizational networks create institutional density, serving as an important foundation for the exercise of civil society roles (Giroud and Scott-Kennel, 2006). Moreover, other public and private organizations such as trade promotion agencies and representative offices also contribute to information provision, consultation, market research, and fostering cooperative activities in agricultural production.

Culture is the totality of material and spiritual values that mankind has created in the course of history. According to Schein (2004), culture can be described through various elements, including: repetitive patterns of behavior in communication, group norms, shared values, formal philosophies, rules of the game, atmosphere, inherited skills, shared meanings, basic metaphors, uniform symbols, orthodox rituals and festivals. Sharing culture is a highly communal action that helps employees and managers understand each other better and allows knowledge and experiences to be shared among a larger group of people, benefiting both the sharer and the recipients. Asif et al (2011) suggests that the study of shared culture is rooted in cognitive theory, focusing on the development of social systems over time. Asif (2011) defines sharing culture as a collective and enduring awareness of important psychological aspects of the work environment. Wu and Wang (2008) states that shared culture is the accumulation of individual choices within a group over time. Accordingly, it is seen as a developmental process in which individuals within an organization learn from repeated choices.

2.2. Research hypothesis

2.2.1. Mechanisms for mobilizing and utilizing resources and linking actors in the production and consumption of agricultural products

The interconnection among macro-level management entities plays a crucial role in establishing and maintaining a healthy business environment where business rights are protected, contractual obligations are ensured, disputes are resolved, and monopolies and non-competitive practices are prevented. In the context of generating, operating and completing the mechanism of mobilizing and utilizing financial resources, the apparatus structure and technical infrastructure are considered significant factors (Ammons et al., 2001; Andrews et al., 2006; Ruben et al., 2022). Effectively harnessing and utilizing financial resources is essential for making cooperative decisions and sustaining long-term linkages among organizations and enterprises. Regarding the agricultural sector in Nghe An province, in order to specifically assess the impact of mechanism of resource mobilizing and utilizing on the linkages among stakeholders in agricultural production and consumption, the research sets forth the following hypothesis:

H1: The mechanism of resources mobilizing and utilizing has a positive impact on the linkages among stakeholders in agricultural production and consumption in Nghe An province (see Figure 1).

2.2.2. Mechanism for resources mobilizing and utilizing and opportunistic behavior of stakeholders involved in the production and consumption of agricultural products

In his research, Riege (2005) discusses several individual factors that hinder knowledge sharing, such as lack of awareness, differences in position, hierarchy, power dynamics, lack of interaction, and lack of social connections… As individuals are the subjects of management activities, management activities are strongly influenced by human perception. The cognitive aspect of the participating stakeholders when constructing the mechanism of mobilizing and utilizing financial resources refers to the government, management officials, and citizens (Ly, 2017; Hoang, 2018). The mechanism of rational and flexible mobilizing and utilizing resources leads to effectiveness in all activities and also helps establish legal frameworks that restrict individual behaviors and opportunism within the work of participating stakeholders in the business linkage chain. Thus, to examine the relationship between the mechanism of mobilizing and utilizing resources and the opportunistic behavior of participating stakeholders in agricultural production and consumption, the study sets forth the following hypothesis:

H2: The mechanism of resources mobilization and utilization negatively impact the opportunistic behavior of stakeholders involved in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.3. The opportunistic behavior and linkage among stakeholders in the production and consumption of agricultural products

The diverse connections among micro-level entities in agricultural production and consumption in Nghe An mainly revolve around horizontal and vertical linkages among businesses, households, organizations, and communities. Each type of entity not only interacts with other entities but also maintains close internal relationships within their respective groups, forming networks and establishing both vertical and horizontal linkages. The characteristics and behaviors of managers within organizations can promote collaboration among members and enhance managerial efficiency (De Cremer et al., 2005; Zhao et al., 2021). Opportunistic behavior, whether it occurs to a lesser or greater extent, always carries inherent risks that can negatively impact the overall linkage performance and the individual efficiency of members within the linkage chain. In order to examine the impact of opportunistic behavior on the linkage of stakeholders in agricultural production and consumption in Nghe An, the hypothesis of this study is proposed:

H3: Opportunistic behavior has a negative impact on the linkage of stakeholders in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.4. Mechanism for resources mobilizing and utilizing and awareness of stakeholders involved in the production and consumption of agricultural products

Alongside effectiveness, the economic viability of the mechanism for mobilizing and utilizing financial resources is an important requirement in constructing and improving management mechanisms. According to Ipek (2011), information sharing among members within a linkage has a positive impact on operational efficiency through an appropriate operational mechanism, fostering stronger connections among members. A mechanism that ensures effectiveness and efficiency impacts the members' perception to be more positive when engaging in linkage relationships and trusting in the value it brings. In studying this relationship, the hypothesis is formulated as follows:

H4: The mechanism of resources mobilization and utilization positively impacts the perception of stakeholders involved in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.5. Perception of participating stakeholders and linkages in the production and consumption of agricultural products

One of the current trends associated with globalization is the formation and blooming development of modern markets. These commodity markets are closely linked to large-scale wholesale and retail supermarket systems. These markets require large volumes of goods and low-priced products while meeting quality, hygiene, and food safety standards. The revenue scale of these modern market systems is enormous, and in combination with low costs, it leads to significant profits. The concentration of these markets is immense, with only a few retail conglomerates being able to control a majority of the market share (Vermeulen et al., 2008). In studying the impact of the perception of participating entities on linkage in the production and consumption of agricultural products in the context of agriculture in Nghe An, the hypothesis is formulated as follows:

H5: The perception of the participating stakeholders positively impacts the linkage in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.6. Mechanisms for resources mobilizing and utilizing and a sharing culture

The effectiveness of linkage in relationships is promoted by the trust and commitment of participating members, thereby fostering their creativity and knowledge sharing (Thomson and Heron, 2006). Increased knowledge sharing among members will enhance their commitment to the organization (Cabrera and Cabrera, 2002). A rational mechanism will create a appropriate framework for close and long-lasting linkage based on the foundation of commitment and knowledge sharing among participating members. Therefore, in the context of agriculture in Nghe An, to examine the impact of resources mobilizing and utilizing mechanism on the culture of knowledge sharing among participating entities in the production and consumption of agricultural products, the hypothesis formulated in the study is as follows:

H6: The mechanism of mobilization and utilization of resources positively impacts the sharing culture of actors involved in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.7. Culture of sharing and linking of stakeholders in the production and consumption of agricultural products

According to Davenport and Prusak (1998), if an individual is uncertain about their own capabilities and the outcomes of the knowledge they intend to share, they may refrain from sharing it, as trust is the heart of knowledge sharing. Increased trust leads to a higher degree of knowledge sharing (Anderson & Narus, 1990; Ardichvili et al., 2003). Similarly, Engstrom (2007) argues that employee satisfaction and trust in career prospects have an impact on knowledge sharing. In studying these perspectives, the hypothesis formulated as follow:

H7: The culture of sharing has a positive impact on the linkage of stakeholders in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.8. The opportunistic behavior and perception of stakeholders involved in the production and consumption of agricultural products

The reliable behavior of managers plays an important role in building long-term trust among members through social exchange processes, thereby reducing opportunistic behavior of each individual within the organization (Whitener et al., 1998). The members' perception of long-term cooperative relationships and the effectiveness of linkages based on mutual trust and understanding, while avoiding individualism and undesirable behaviors that can create barriers and diminish the effectiveness of the linkages. Therefore, the research hypothesis is formulated as follows:

H8: Opportunistic behavior negatively impacts the perception of stakeholders involved in the production and consumption of agricultural products in Nghe An (see Figure 1).

2.2.9. Sharing culture and awareness of stakeholders involved in the production and consumption of agricultural products

Sharing information about various aspects is a necessary condition for effective and sustainable linkages. Participating members will enhance their awareness of this when they actively engage more in the process of sharing knowledge with other members. According to Guinot et al. (2014), trust among participating members is a positive factor that influences the effectiveness of business operations in organizations. In order to construct a model and examine the impact of a sharing culture on the perception of participating entities in agricultural production and consumption in Nghe An, the study proceeds to develop the hypothesis:

H9: Sharing culture has a positive impact on the perception of stakeholders involved in the production and consumption of agricultural products in Nghe An (see Figure 1).

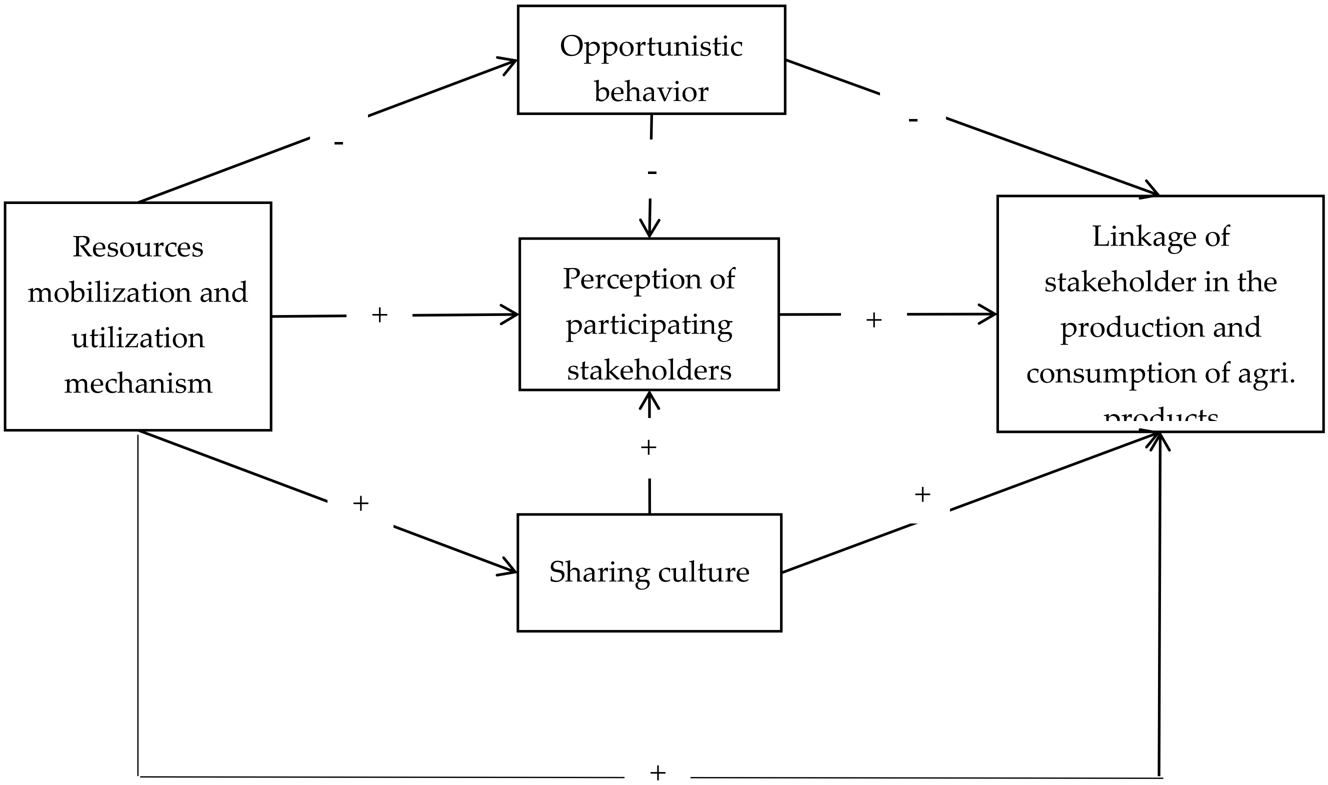

Figure 1. The proposed research model

Source: Authors

3. Research methodology

3.1. Research scale

Based on the literature review and relevant research works, the study proposes a model with 5 variables. In which, the dependent variable is the linkage among entities in agricultural production and consumption; the independent variable is the mechanism of mobilization and utilization of resources. The intermediate variables included in the model are opportunistic behavior, perception of participating entities, and sharing culture. The measurement scale used in the study is the Likert scale with 5 levels corresponding to evaluation scores: (1) - Strongly Disagree; (2) - Disagree; (3) - Neutral; (4) - Agree; (5) - Strongly Agree. The measurement indicators for each variable are appropriately adjusted to fit the characteristics of the research sample based on previous studies (see Table 1).

Table 1. Origin of variable measurement scale

No.	Variable	Symbol	Observations	Measurement scale origin
1	Resource mobilization and utilization mechanism	RUM	6	Doan (2017); Hoang (2018)
2	Opportunistic behavior	OPB	4	Katsikeas et al., (2009)
3	Perception of participating stakeholders	PPS	6	Le (2016)
4	Sharing culture	SHC	4	Schein (2004)
5	Linkage of stakeholder in production and consumption of agri. products	LIS	5	Zhao et al., (2013)

Source: Synthesized from research of authors

3.2. Research samples

The research sample was selected using the non-probability convenience sampling method. The units of investigation in the study are stakeholders in agricultural production and consumption, including individuals/households, businesses, government agencies, social organizations, schools/research institutes, and other organizations in Nghe An. The sample size for data collection is 605. The data collection was conducted using two methods: direct questionnaire handout and online questionnaires. The number of online questionnaires collected was 288, and the number of valid questionnaires was 284. Regarding direct hand-out, 500 questionnaires were distributed, 369 questionnaires were collected, and 321 questionnaires were valid. The total number of valid questionnaires used for analysis is 605 (see Table 2). Based on the study by Hair et al. (2010) for reference on the expected sample size, the minimum sample size is five times the total number of observed variables. With 25 observed variables in the study, a sample size of 605 ensures the requirements for analysis. The data collection was completed from September 2022 to February 2023.

Table 2. Survey sample distribution

No.	Surveyed stakeholder	Estimated samples	Collected samples	Samples used for analysis	Percentage (%)
1	Individual/household	200	135	126	20.83
2	Enterprise	200	141	132	21.82
3	Governmental authorities	200	132	129	21.32
4	Social organization	100	72	66	10.91
5	School and institute	200	116	107	17.69
6	Other organizations	100	51	45	7.44

Total	1000	647	605	100

Source: Authors

3.3. Data processing

The research method used in the study is quantitative research. After collection, the data were cleaned and processed using SPSS and AMOS software. Firstly, the reliability of the measurement scale was evaluated with the requirement of a Corrected Item - Total Correlation > 0.3 and Cronbach's Alpha coefficient > 0.7 (Hair et al., 2009). Additionally, if the Cronbach's Alpha If Item Deleted value is higher than the Cronbach's Alpha coefficient of a variable, the observation variable needs to be considered. Next, an exploratory factor analysis (EFA) was conducted to determine the "convergence value" and "discriminant value" of the measurement scale. The requirements for factor loading were > 0.5, the Kaiser-Meyer-Olkin (KMO) measure was between >= 0.5 and <=1, the significance value (Sig.) was < 0.05, and the percentage of extracted variance was > 50% (Hair et al., 1998). The Varimax rotation method was used for factor extraction. Subsequently, the AMOS program was used to evaluate the appropriateness of the model with the research data through confirmatory factor analysis (CFA). Finally, the research tested the research hypotheses using structural equation modeling (SEM), with the requirements of chi-square/df < 5 (Hair et al., 1998), p < 0.05, GFI, TLI, CFI > 0.8 (Segars & Grover, 1993) and RMSEA < 0.08 (Taylor et al., 1993).

4. Research results and discussion

4.1. Evaluation of measurement scale reliability

The results of the Cronbach's Alpha analysis indicate that the reliability of the measurement scale used in the analysis is satisfactory, as the Cronbach's Alpha coefficients for all variables are > 0.7, and the Corrected Item - Total Correlation is > 0.3. However, it is worth noting that the RUM4 indicator has a Cronbach's Alpha If Item Deleted value of 0.921, which is higher than the Cronbach's Alpha coefficient of the RUM variable (0.904). Therefore, in order to improve the appropriateness of the measurement scale, the study will proceed to remove this indicator (See Table 3).

Table 3. Evaluation of measurement scale reliability through Cronbach's Alpha coefficient

No.	Variables	Symbols	Cronbach's Alpha Coeff.
1	Resource mobilization and utilization mechanism	RUM	0.921
2	Opportunistic behavior	OPB	0.847
3	Perception of participating stakeholders	PPS	0.912
4	Sharing culture	SHC	0.886
5	Linkages of stakeholder in the production and consumption of agri. products	LIS	0.871

Source: Authors

4.2. EFA Analysis

After assessing the appropriateness of the measurement scale, the study proceeded with an exploratory factor analysis (EFA) for both the independent, intermediate, and dependent variables.

The results indicated that the data met the conditions for factor analysis, as evidenced by factor loadings > 0.5, a Kaiser-Meyer-Olkin (KMO) >= 0.5 and <= 1, significance values (Si .) < 0.05, variance extracted percentages > 50%, and satisfaction of both "convergence" (the observed variables converge on the same factor) and "discriminant validity" (the observed variables belonging to the same factor differ from other factors) (See Table 4).

Table 4. Analysis result of EFA

EFA	KMO coeff.	P-value	Variance extracted	Loading factor	Conclusion
Independent variables and intermediate variables	0.922	0.000	72.130	All > 0.5	Met requirement
Dependent variable	0.850	0.000	66.132	All > 0.5	Met requirement

Source: Authors

4.3. CFA Analysis

Confirmatory Factor Analysis (CFA) is the next step after conducting an exploratory factor analysis (EFA). It is designed to determine, test, and refine measurement models independently. The purpose of CFA is to establish well-fitting measurement models that can be used to assess structural models. The results of the CFA indicated that the measurement model fit well with the following indices: Chi-square = 806.735; df = 242; Chi-square/df = 3.334 (< 5); P = 0.000 (< 0.05); GFI = 0.895 (> 0.8); TLI = 0.934 (> 0.8); CFI = 0.942 (> 0.8); RMSEA = 0.062 (< 0.08).

4.4. Structural Equation Modeling Analysis (SEM)

The hypotheses were tested using structural equation modeling (SEM). The results of the analysis indicated that the overall indices met the required criteria. Specifically, Chi-square = 830.407; df = 243; Chi-square/df = 3.417 (< 5); P = 0.000 (< 0.05); GFI = 0.893 (> 0.8); TLI = 0.931 (> 0.8); CFI = 0.940 (> 0.8); RMSEA = 0.063 (< 0.08) (See Figure 2).

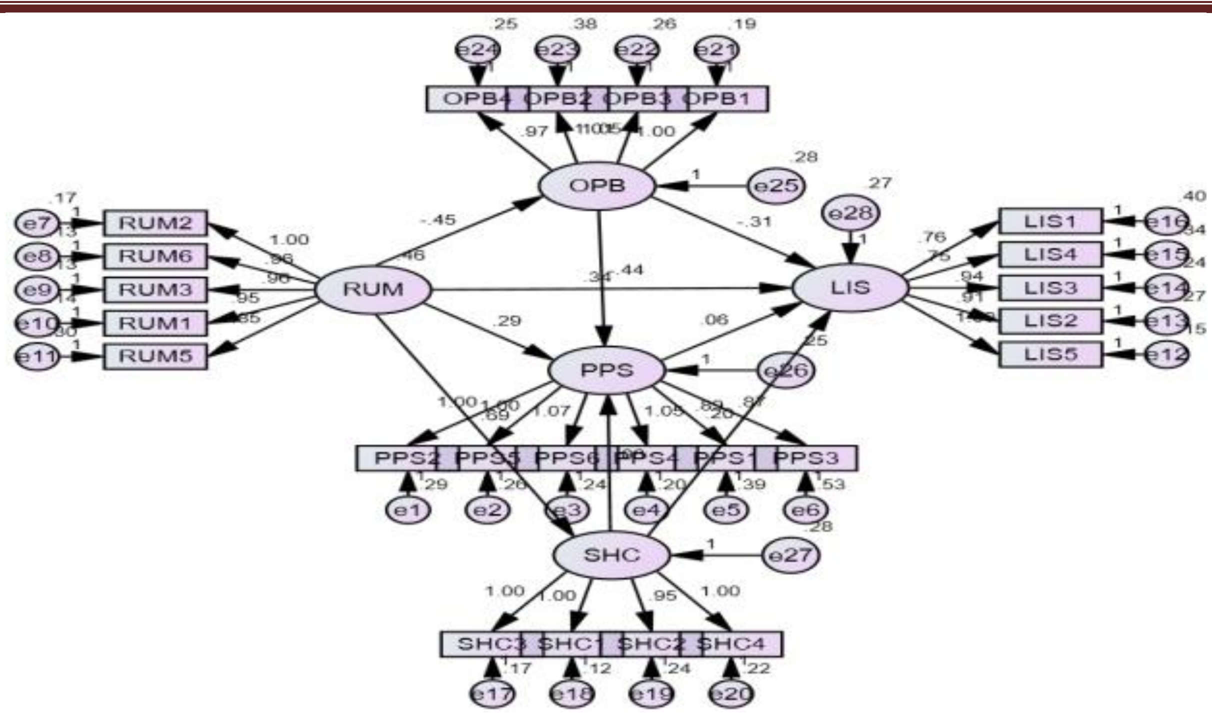

Figure 2. SEM analysis

Source: Authors

The estimation results of the relationships in the model indicate that the research model is of appropriateness. With the exception of hypotheses H5 and H9, all other hypotheses are accepted with statistical significance at $p < 0.05$.

Specifically, hypothesis H1 is accepted with statistical significance at $p < 0.05$, and the regression weight is 0.338 (> 0). Therefore, the results of the study have demonstrated that the mechanism of mobilizing and utilizing resources positively impacts the linkage among stakeholders in agricultural production and consumption in Nghe An. This finding is consistent with previous research conducted by Ammons et al. (2001); Andrews et al. (2006).

The hypotheses H2 and H3 are both accepted with statistical significance at a level of $p < 0.05$, and the regression weights are -0.450 (< 0) and -0.306 (< 0) respectively. The research results indicate that the mechanism of mobilizing and utilizing resources has a positive impact on the opportunistic behavior of participating members, and the opportunistic behavior, in turn, has a positive impact on the linkage among stakeholders in agricultural production and consumption in Nghe An. These findings are consistent with previous studies conducted by Riege (2005); De Cremer et al. (2005).

The hypothesis H4, which examines the impact of mobilizing and utilizing resources on members' perception and its subsequent impact on the linkage among stakeholders in agricultural production and consumption in Nghe An, is accepted with statistical significance at a level of $p < 0.05$ and a positive regression weight of 0.288. Therefore, it can be concluded that the mobilization and utilization of resources have a positive impact on the perception of participating members. This finding is consistent with previous research studies conducted by Andrews et al. (2006); Ipek (2011). On the other hand, the hypothesis H5 is rejected with a significance level of 0.226 (> 0.05). This means that there is no significant impact of the perception of participating members on the linkage among stakeholders in agricultural production and consumption.

Similarly, with significance level $p < 0.05$ and regression weights of 0.690 (> 0) and 0.197 (> 0) respectively, the hypotheses H6 and H7 are also accepted. That is to say, the mechanism of resource mobilization and utilization has a positive impact on the sharing culture, and the sharing culture also has a positive impact on the linkage of stakeholders in the production and consumption of agricultural products in Nghe An. These results correspond to the studies of Thomson and Heron (2006); Cabrera and Cabrera (2002); Davenport and Prusak (1998); Anderson and Narus (1990); Ardichvili et al. (2003).

Furthermore, with a significance level < 0.05 and a negative regression coefficient (-0.436), the study accepts hypothesis H8. Therefore, the research has demonstrated that reverse opportunistic behavior has a negative impact on the perception of participants involved in agricultural production and consumption in Nghe An. These findings align with previous research conducted by Whitener et al. (1998); Thomson and Heron (2006). On the contrary, hypothesis H9 is rejected as it has a significance level of 0.221 (> 0.05).

Thus, with the rejection of hypotheses H5 and H9, while accepting all the remaining hypotheses (see Table 5), the results of this study have demonstrated contributions both in terms of theory and practicality. Theoretical contributions include the findings that the mechanism of mobilizing and utilizing resources has both direct and indirect impacts on the linkage among stakeholders in agricultural production and consumption through the intermediate variables of opportunistic behavior and sharing culture. In practical terms, the research findings will serve as valuable resources for policymakers in the process of policy planning and implementing solutions to enhance the effectiveness of linkage among stakeholders in agricultural production and consumption in Nghe An.

Table 5. SEM analysis for relationships in the model

Hypothesis	Relationship	Regression weight	S.E.	C.R.	P	Conclusion
H1	LIS <--- RUM	0.338	0.060	5.672	0.000	Accepted
H2	OPB <--- RUM	-0.450	0.040	-11.156	0.000	Accepted
H3	LIS <--- OPB	-0.306	0.057	-5.321	0.000	Accepted
H4	PPS <--- RUM	0.288	0.056	5.156	0.000	Accepted
H5	LIS <--- PPS	0.064	0.053	1.212	0.226	Rejected
H6	SHC <--- RUM	0.690	0.043	16.156	0.000	Accepted
H7	LIS <--- SHC	0.197	0.050	3.966	0.000	Accepted
H8	PPS <--- OPB	-0.436	0.052	-8.412	0.000	Accepted
H9	PPS <--- SHC	0.058	0.047	1.224	0.221	Rejected

Source: Authors

5. Conclusions and recommendations

Based on the construction of the model and the testing of hypotheses using Exploratory Factor Analysis (EFA) and Structural Equation Modeling (SEM), the research results have revealed that the mechanism of mobilizing and utilizing resources has a direct and positive impact on the linkage among stakeholders in agricultural production and consumption in Nghe An. The study has also demonstrated the intermediating role of the opportunistic behavior factors and sharing culture among the participating members in this relationship. Additionally, the research has highlighted the negative impact of opportunistic behavior on the perception of the participating stakeholders. Based on these research findings, the authors have put forward several recommendations to enhance the effectiveness of the linkage among stakeholders in agricultural production and consumption in Nghe An in the near future:

Firstly, regarding the mechanism of mobilizing and utilizing resources, it is necessary to establish a capital mobilization mechanism that diversifies funding sources. This involves maximizing the utilization of existing resources from organizations, as well as integrating funds from both domestic and international support programs with funding from national target programs related to the agricultural sector.

Secondly, regarding the opportunistic behavior, members participating in the linkage of agricultural production and consumption should collectively build commitments based on economic and trade relations that combine both flexible and stringent terms. These commitments should be associated with mandatory requirements that members need to adhere to, emphasizing a positive spirit of collaboration and minimizing self-interested behaviors that aim solely at individual benefits. It is important to have appropriate sanctions in place to address such behaviors.

Thirdly, regarding the culture of sharing, organizations need to establish relationships based on long-term commitments and ensure effectiveness, with the active participation of each member. Enhancing knowledge sharing based on the extensive and valuable contributions of participating members creates a cohesive working environment and ensures a spirit of efficiency and effectiveness, aiming to build sustainable and mutually beneficial relationships.

Besides its contributions, the study also has certain limitations. The first aspect to consider is the sampling methodology employed in this study. It utilizes a non-probability sampling technique, specifically a convenience sampling method, this particular sampling method frequently fails to accurately assess sampling errors. Consequently, it diminishes the representation and overall validity of the samples employed in the study. Moreover, the research context is also limited to stakeholders in the production and consumption of agricultural products in Nghe An. The study's findings pave the way for further investigation into pertinent matters within national scope and global.

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The Effect of Technical Barriers to Trade & Sanitary and Phytosanitary Measures on Vietnam Coffee Export to the EU: An Application of The Gravity Model

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ABSTRACT

Developed countries have often imposed Technical Barriers to Trade and Sanitary and Phytosanitary Measures to restrict the import of agricultural goods from less developed countries, where technical standards and food safety are typically lower. Vietnam has experienced instances of export rejection in recent years due to violations of these measures in the export of agricultural products such as fish and aquatic products, animal products, and vegetables. This research examines the impact of Technical Barriers to Trade and Sanitary and Phytosanitary Measures on the export of Vietnamese coffee to the EU using the gravity model framework with panel data covering the period from 2011 to 2021. The findings reveal that Sanitary and Phytosanitary Measures do not have significant impact on the export of Vietnamese coffee to the EU. Meanwhile, the presence of Technical Barriers to Trade is found to have a negative impact, suggesting that the imposition of technical barriers of EU countries would hinder coffee exports from Vietnam to the EU market.

Keywords: Technical barriers to trade; Sanitary and phytosanitary measures; Coffee export, Gravity model.

1. Introduction

The contemporary global economy context has undergone significant changes, particularly with regards to the global drive towards comprehensive and sustainable economic development, which seeks to eschew the scourge of armed conflict. This has led to the emergence of the World Trade Organization (WTO) and analogous organizations, which promulgate regulations aimed at fostering fair competition in international trade among nations. In addition, these organizations also

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encourage trade flows from developed countries to third-world countries. As a result, over the past few decades, a notable trend towards trade liberalization has been observed, marked by a significant reduction in tariff rates (Kamal & Zaki, 2018). Nevertheless, international trade participants have also considered non-tariff measures (NTMs) as barriers for gorvenments to regulate international trade and safeguard domestic interests. These barriers pose significant challenges for international trade as a whole and for developing countries in particular. Among the different types of NTMs, Technical Barriers to Trade (TBTs) and Sanitary and Phytosanitary Measures (SPSs) are most predominant. According to the WTO Agreement on TBTs, TBTs are classified into 3 measures including technical regulations, technical standards and conformity assessment procedure, such as standardization of packaging, labeling and conformity assessment requirements, and reducing information asymmetry between buyers and shippers. Meanwhile, UNCTAD defines SPS as any measure applied to protect human, animal, plant life or biodiversity from risks arising from pests, diseases, disease-carrying organisms or disease-causing organisms; additives, contaminants, toxins or diseases causing organisms in foods, beverages or feedstuffs; or diseases carried by animals, plants or their byproducts. Overally, these technical measures are in principle necessary and reasonable to protect important interests such as human health, environment, and national security... Through its transparency provisions, TBTs and SPSs endeavors to support establishing a stable and foreseeable trading environment. However, in practice, technical measures possess the potential to impede international trade as they may be utilized to safeguard domestic production, creating obstacles for the entry of foreign goods into the market of the importing nation (VCCI). Therefore, these technical regulations can be interpreted as either impeding or promoting trade (Kamal & Zaki, 2018). On one hand, TBTs and SPSs that are not transparent, discriminatory, or unwarranted are significant barriers to trade (Crivelli & Gröschl, 2012; Grant et al., 2015). In the case of agricultural products, certain SPSs have the potential to obstruct trade liberalization by creating barriers to the meet standard (Crivelli & Gröschl, 2012; Henson & Loader, 2001; Prévost, 2002). On the other hand, not all technical measures have a negative impact on trade (Crivelli & Groeschl, 2016). Specific technical standards can promote trade, especially in the manufacturing sector - as opposed to the agricultural sector - through the cost of information.

Agricultural product export is one of the important trade activities of Vietnam, contributing positively to the overall domestic export turnover. According to data from The Ministry of Industry and Trade, Vietnam's agricultural exports set a new record with an export value of $41.2 billion in 2020 and $22.83 billion in the first five months of 2021. This is considered an impressive achievement in the context of many changes in the world because of the Covid 19 pandemic. Coffee export is one of the sub-sectors that bring great value to the structure of Vietnam's agricultural sector. In the European market, Vietnam is the second largest coffee supplier, only after Brazil (22.2%), accounting for 16.1% market share in terms of output. According to statistics from the International Trade Center (ITC), the EU (EU) is currently the largest global coffee consumption market, accounting for 47.9% of the total import value worldwide. It is also an important coffee export market for all producing countries in the world and is also Vietnam's largest coffee export market, accounting for 40% of the total volume and 38% of the country's total export turnover. However, Vietnam's coffee exports to many EU member markets also tend to have a downtrend. There are many contradictions surrounding this issue. The primary cause of this can be attributed to NTMs. Increasing public concern regarding health issues has prompted governments to enhance the quality and safety of agricultural importing products through NTMs, including SPSs and TBTs (Grant et al., 2015; Thuong, 2018). Developed countries have implemented TBT and SPS regulations to restrict the import of agricultural goods from less developed countries, where technical standards and food safety are typically lower. Vietnam has experienced instances of export rejection in recent years due to violations of TBTs and SPSs in the export of agricultural products such as fish and aquatic products, animal products, and vegetables (Thuong et al., 2021). Non-compliance with these measures may lead to a ban on the export of coffee to main markets in general and EU market in particular, resulting in a loss of revenue for Vietnamese coffee exporters. Moreover, compliance with these measures may also lead to increased costs for Vietnamese coffee producers and exporters, as they may have to invest in new equipment, technology, or personnel to meet the requirements. Additionally, SPS and TBT measures may create an uneven playing field for Vietnamese coffee exporters, as some countries may impose stricter measures than others, making it more difficult for Vietnamese coffee to compete in those markets. It is, therefore, essential for the Vietnamese government and coffee industry stakeholders to proactively work to meet these measures' requirements to maintain and expand Vietnam's access to overseas coffee markets while also ensuring the sustainability of the country's coffee industry.

There are a number of studies on the impact of TBT and SPSs on international trade, particularly in agricultural exporting (Assoua et al., 2022; Grant et al., 2015; Henson & Loader, 2001; Kang & Ramizo, 2017; Santeramo & Lamonaca, 2019; Thuong, 2018; Virginia & Novianti, 2020; Wood et al., 2017). However, they demonstrated contradict results that SPSs and TBTs could either positively or negatively affect export flows. These studies suggest that the effects of NTMs on trade are complex and context-dependent, and that the impact of these measures on trade varies depending on a range of factors such as the type of measure, the product, and the country involved. In Vietnam, there have been various studies on the impact of these non-tariff barriers on prominent agricultural products such as rice and aquatic products (Thuong, 2018; Tran et al., 2019). However, there is a paucity of empirical research on these impacts on coffee trade. To the authors' knowledge, no study has investigated the impact of TBTs and SPSs on Vietnam's coffee exports in recent years. A knowledge gap exists in quantifying the effect of these measures on Vietnam's major agricultural export.

Therefore, this study is conducted by employing an augmented gravity model to examine the impact of EU's TBTs and SPSs application on Vietnam coffee export value to the EU during the period from 2011 to 2021.

2. Literature review

2.1. Studies on the impact of TBTs and SPSs on export in general

Previous research has examined the effects of TBTs and SPSs on export flow with different approaches. Wilson & Otsuki (2004) found that SPSs have a significant negative impact on exports, and this impact tends to increase over time. Similarly, Ferrantino (2006) found that SPSs can have a negative impact on exports, and this impact tends to be larger in the long run. The impact of TBTs and SPSs on exports can also vary over time depending on factors such as changes in regulations, market conditions, and technology06/09/2023 2:44:00 PM (Song & Chen, 2010; Disdier & van Tongeren, 2010; Cadot & Gourdon, 2015).

Other studies suggest the effects of TBTs and SPSs either positively or negatively on export flows. Many empirical researches have been dedicated to exploring the adverse effects of non-tariff measures on global trade. A study conducted by Alaeibakhsh & Ardakani (2012) indicating that with an increase in SPS and TBT regulations by importing countries there would be mainly decrease in Pistachio's export flows from Iran. Cadot & Gourdon (2015) also depicted that SPSs can reduce exports by 4-5%. Siyakiya (2017) examined the impact of TBTs on South Africa's export of all products to 57 importing countries, which showed TBT notifications limit the trade flow. By contrast, compliance with TBTs and SPSs also can encourage international trade. While TBT and SPSs can create barriers to trade, compliance with these measures can also be a source of competitive advantage for exporters (Hoekman et al., 2010; Wu et al., 2022).

However, more studies provide evidence that there are no really significant effects of NTMs on international trade. These studies suggest that the effects of NTMs on trade are complex and context-dependent, and that the impact of these measures on trade varies depending on a range of factors such as the type of measure, the product, and the country involved (Xiong & Beghin, 2014; Wood et al., 2019; Disdier & Head, 2008; Egger et al., 2011).

2.2. Studies on the impact of TBT and SPS on agricultural/coffee export

The extant literature reveals that TBTs and SPSs have both positive and negative impacts on agriculture exports. On one side, most studies find that TBTs and SPSs result in relatively higher burden for low income countries (Kareem, 2014; Murina & Nicita, 2017), many of which are dependent on agricultural exports. For instance, studies have shown that compliance with SPSs can increase the costs of exporting meat and livestock products from developing countries (Henson et al., 2000; Henson & Loader, 2001; Santeramo & Lamonaca, 2022; Shang & Tonsor, 2019). Similarly, compliance with SPSs can increase the costs of producing and exporting processed food products (Alaeibakhsh & Ardakani, 2012; Chevassus-Lozza et al., 2005; Disdier et al., 2008). However, while SPSs and TBTs typically increase trade costs, they can also boost trade by giving consumers a positive signal that increases their trust in imported products (Disdier et al., 2008). A number of recent findings have corroborated this. For instance, results of the study of Gourdon et al., (2020) shows that technical measures, specifically TBT or SPS-related restrictions or special authorizations, such as registration requirements, can increase import prices of agricultural products by almost 15%. Labeling and packaging requirements, which have relatively low trade costs, have trade-enhancing effects. Wongmonta (2021) examined the impact of China's SPSs on Thai fruit exports, suggesting that the restrictiveness of SPSs has a positive and substantial effect on export volumes, indicating that informative SPS requirements can facilitate agricultural trade.

As one of the important agricultural products with great demand around the world, coffee export has also become a topic of interest to researchers. Since the number of TBTs and SPSs applied to agricultural commodities has increased significantly, interest in studying the impact of these measures on the coffee trade has also increased yet the amount of research on this topic is still limited. Almeida et al. (2012) used Poisson Pseudo Maximum Likelihood (PPML) estimation to examine the notification effects of the TBT and SPS agreements on green coffee exports worldwide.

The study showed that TBT notifications have a negative impact on coffee exports from 1996 to 2010, while SPS notifications do not have a significant effect. Similarly, Murina & Nicita (2017) examined the impact of TBTs and SPSs on Indonesian coffee exports to major importing countries and found that TBTs have a positive and significant impact on Indonesian coffee exports, but SPSs do not. Overall, these studies all show a trend of negative impacts between TBT and SPS and global coffee exports. However, TBT seems to have a stronger impact than SPSs.

Due to the ongoing trend of reducing tariffs and increasing non-tariff barriers, Vietnam's agricultural products are facing several significant challenges (Le & Tran, 2021). Consequently, this issue has gained the interest of policymakers and scholars, leading to an increase in research focusing on the impacts of SPSs and TBTs on Vietnam's agricultural exports. Ho & Vu (2014) discussed the impact of TBTs and SPSs on Vietnam agricultural industries in their study. The study suggests that education on international agreements and learning from best practices in other countries, such as Malaysia and Thailand, could help improve compliance with importing country regulations. Nguyen et al. (2020) examined the impact of non-tariff measures (NTMs) imposed by the EU on agricultural exports of Vietnam. Panel data from 2001 to 2020 was used in a gravity model to estimate the impact on three groups of agricultural products at the 4-digit level of the Harmonized System. A remarkable result shows that SPS and TBT measures have a positive and statistically significant effect on Vietnam's agricultural exports, with SPS having a greater impact. Thuong (2018) who investigated the impact of SPSs on Vietnam's rice exports to 20 major importing countries between 2000 and 2015, shows that SPSs implemented by importing countries have a significant impact on Vietnam's rice exports. However, there are studies that suggest that SPSs have a significant negative impact on Vietnam's agricultural exports, specifically tea (Le & Tran, 2021)

Although coffee is one of the main export agricultural products of Vietnam, the number of studies on coffee exports in general and the impact of TBTs and SPSs on coffee exports in particular is not significant. Some studies have been conducted to examine the trends and determinants of Vietnam's coffee export performance and prospects for the future (Hoang & Ngan, 2021; Nga et al., 2023; Nguyen et al., 2020). Meanwhile, others explore the competitive advantages of Vietnam's coffee exports internationally and evaluate the sustainability of Vietnam's coffee industry and suggest policy recommendations for improvement (Atmadji et al., 2018; Pratita & Budiarto, 2021; Thanh Van et al., 2021). Overall, there is a lack of empirical research examining the effects of SPSs and TBTs on Vietnam's coffee exports. This represents a gap in literature regarding the quantification of TBTs and SPSs effect on Vietnam's coffee export.

3. Research methodology

3.1. Model specification

This research employs an augmented gravity model to examine the impact of SPS and TBT measures on the export of Vietnamese coffee to the EU. The gravity model has been extensively used in the analysis of agricultural trade and can be applied to assess the influence of food safety regulations and standards on trade. The model takes inspiration from Newton's law of universal gravitation and incorporates various factors such as language, bilateral geographical distance (Anderson, 2011). Therefore, the gravity model is also constructed in the present study to analyze the impact of TBT and SPS regulations on Vietnam's coffee exports. The natural logarithmic form of the gravity trade model in this analysis can be written as follows:

$$\log(EX_{ijt}) = \beta_0 + \beta_1 \log(GDP_{it} * GDP_{jt}) + \beta_2 \log(POP_{jt}) + \beta_3 \log(D_{ij}) + \beta_4 TARIFF_{ij} + \beta_5 SPS_{jt} + \beta_6 TBT_{jt} + u_{ij}$$

Where:

- EX_{ijt} is total export value from country i (Vietnam) to country j in year t (in the EU)
- GDP_{it}, GDP_{jt} are gross domestic product of country i (Vietnam) and country j (in the EU) in year t
- POP_{jt} are total population of country j in year t
- D_{ij} is distance between country i (Vietnam) and country j
- $TARIFF_{ij}$ is the tariff rate that country j imposes on Vietnam's coffee export
- SPS_{jt} is the number of notifications of SPS measures on Vietnam's coffee export submitted by country j in year t
- TBT_{jt} is the number of notifications of TBT measures on Vietnam's coffee export submitted by country j in year t
- u_{ij} is the error term
- β_k is estimator parameter (k = 0,1,..,6)

3.2. Variables explanation and data collection

The dependent variable (EX_{ij}) is the total coffee export value of Vietnam to the countries in the EU in US dollars. The data of Vietnam's coffee export value from 2011 to 2021 to these countries (in thousand US dollars) are obtained from the International Trade Center (ITC) database. Coffee bean, HS0901 (Coffee, whether or not roasted or decaffeinated; coffee husks and skins; coffee substitutes…) is the main commodity for the study.

The explanatory variables in the research model are explained as below:

- *GDP:* Gross Domestic Product (GDP) represents the total value of goods and services produced by a country in a given period of time and is often used as a proxy for national income. In the context of this study, GDP is included in the model to capture the economic size of Vietnam and its trading partners in the EU. The author anticipates that a higher level of GDP for both Vietnam and the EU countries will correspond to a larger market size with greater demand for goods, including coffee exports. Data of GDP (in billion US dollars) are collected from the World Bank database.
- *Population (POP_j):* In the specific case of this study, population is included as an explanatory variable to capture the size of the potential consumer market for coffee exports between Vietnam and the EU. A larger population in the EU could increase the demand for coffee and therefore increase the volume of coffee exports from Vietnam to the EU. Population data is obtained from the WDI database of the World Bank.
- *Distance (D_{ij})*: Distance is a traditional variable in the gravity model because it affects the costs of transportation and communication between two countries. Distances between Vietnam and other countries (in kilometers) are collected from CEPII (the GeoDist Database).

• *Tariffs ($TARIFF_{ij}$)*: Tariff variable is included to capture the impact of tariff barriers on the volume of trade between countries. In general, the higher the tariff rate, the lower the volume of trade between countries. By including the tariff variable in their model, the study can determine whether the level of tariffs on coffee imports into the EU has a significant impact on the volume of coffee exports from Vietnam to the EU. The $TARIFF_{ij}$ variable is the average of the tariff rate that country j imposes on Vietnam's coffee export.

• *TBT (TBT_j) and SPS(SPS_j)*: By including these variables in the model, the study aims to examine their impact on the volume export of Vietnam coffee to the EU. There are some approaches to measure TBTs and SPSs in empirical research. While some studies measure them through the number of measures/notifications that the importing countries impose on exporting countries (Elisabeth & Verico, 2022; Khaliqi et al., 2018; Siyakiya, 2017; Wu et al., 2022), another method is to conduct compliance and impact assessments, examining the actual implementation of regulations and studying their effects on trade flows and economic impact (Grant et al., 2015; Khaliqi et al., 2018; Neeliah & Goburdhun, 2012). They can be also measured by dummy variables or using an inventory approach in the form of coverage ratio (Handoyo et al., 2019; Permata et al., 2020). In this study, the authors use the number of notifications of TBT and SPS to proxy for these two variables. Data are taken from the New global trade alert system "ePing" by United Nations (UN), World Trade Organization (WTO) and International Trade Center (ITC).

3.3. Data analysis

The study uses different estimation methods: ordinary least squares (OLS), fixed-effect (FE), random effect (RE) and Feasible generalized least squares (FGLS) models, then chooses the most suitable one. While OLS is commonly used, its assumptions may not always hold true, it may appear the phenomenon of heteroscedasticity. To identify whether the variance is homogenous, the authors conducted the Breusch-Pagan test for random effects with the null hypothesis that the variances of the panel-specific effects are zero, implying that there are no significant differences across entities (no panel effect). The result showed the Prob > chi2 = 0.0000, indicating a rejection of the null hypothesis. It implies the OLS regression result is not statistically significant, in other words, the RE model can be more consistent and efficient.

The authors continued to conduct FE models and RE models (REM), which accounts for unobserved non-time varying effects. Hausman test was performed to determine the correlation accurately and reasonably between the error term and the independent variables, thereby having a basis to indicate the appropriate explanatory model. The result of the Hausman test indicated there was weak evidence to reject the null hypothesis Ho: difference in coefficients not systematic. Thus, the RE model was the preferred model in this case.

After choosing a suitable model (between FE and RE models), the authors conducted tests of Heteroscedasticity and Autocorrelation. Wooldridge's test for serial correlation is a robust version of the Durbin-Watson test. If autocorrelation exists, the standard errors of the estimated coefficients may be biased, leading to incorrect hypothesis testing results. Identifying the presence of autocorrelation helps selecting the most appropriate model for analysis. The Wooldridge test result showed the Prob > chi2 = 0.0000, indicating a rejection "Ho: no first-order autocorrelation". Hence, the assumption of no autocorrelation of REM was violated.

The Feasible Generalized Least Squares (FGLS) method is designed specifically to handle autocorrelation and heteroscedasticity, which are common issues in panel data analysis. By appropriately modeling the correlation structure and variance heterogeneity, FGLS captures the underlying dynamics of the data more accurately, leading to improved model efficiency. In this case, the problem of autocorrelatio did appear, which lead the authors to use the FGLS model to analyze to rectify the situation, then sort out meaningful conclusions. Results of OLS, FE and RE models are provided in Appendix A.

4. Results and discussion

Table 1. Summary statistics.

Variables	Observations (N)	Mean	Standard Deviation	Minimum	Maximum
EX_{ij}	275	54858.67	112573.3	0	628536
GDP_i	275	2.68E+11	6.16E+10	1.73E+11	3.66E+11
GDP_j	275	6.06E+11	9.15E+11	9.46E+09	4.26E+12
$\log(GDP_{it}*GDP_{jt})$	275	52.4622	1.4863	48.8633	55.7066
POP_j	275	1.77E+07	2.21E+07	416268	8.32E+07
$\log(POP_{jt})$	275	15.9696	1.2670	12.9391	18.2367
D_{ij}	275	8402.134	776.5868	7492.48	10538.98
$\log(D_{ij})$	275	9.0322	0.0888	8.9217	9.26283
$TARIFF_{ij}$	275	7.9773	3.7674	0	9.75
SPS_{jt}	275	11.0909	2.0688	8	14
TBT_{jt}	275	24.3636	4.5864	18	33

Table 1 shows the descriptive statistics of the variables in this study. The number of observations is 275, including 25 countries in the EU during 11 years from 2011. It is clear that there is quite a big difference between the coffee export values of Vietnam to each of the EU nations (mean value is 54,858.67 USD and its standard deviation value is 112,573.3 USD). A relatively low standard deviation of 4.5864 suggests a consistent rate of TBT notifications between the EU nations. This consistency implies a certain level of harmonization or similarity in the regulatory frameworks and standards applied by the EU countries to Vietnam's coffee exports. It is the same with the number of SPS notification variables, with a mean of 11.0909 and a standard deviation of 2.0688.

The analysis conducted through the FGLS regression demonstrates that distance, population of import nations and TBTs have significant impact on the export value of Vietnam Coffee to the EU market. Distance and total population of import nations exhibit a positive effect on the dependent variable, indicating that an increase in these variables leads to a corresponding increase in export value of Vietnam Coffee to the EU market. On the other hand, TBT exhibits a negative effect, implying that an increase in the number of TBT notifications results in a decrease in Vietnam Coffee export value to the EU. Furthermore, the investigation reveals that variables GDP (both of Vietnam and the EU nations), tariff and number of SPS notifications do not exhibit any substantial relationship with Vietnam Coffee export value to the EU. Below, the authors analyze each impact and discusses it in more detail.

Table 2. Regression Results - Feasible generalized least squares (FGLS) models

Variables	Model (1)	Model (2)	Model (3)
$\log(GDPit.GDPjt)$	0.047	- 0.087	0.018
	(0.098)	(0.097)	(0.090)
$\log(POPjt)$	1.512***	1.681***	1.542***
	(0.126)	(0.121)	(0.119)
$\log(Dij)$	4.840***	4.452***	4.833***
	(0.668)	(0.559)	(0.660)
TARIFFij	0.005	0.011*	0.006
	(0.006)	(0.006)	(0.005)
SPSjt	- 0.012	- 0.023	
	(0.015)	(0.016)	
TBTjt	- 0.035***		- 0.035***
	(0.006)		(0.006)
Constant	- 60.65***	-53.54***	-59.67***
	(6.692)	(6.006)	(6.535)

Standard errors in parentheses
*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Firstly, it is observed that the variables GDP and Tariff have no impact on the total coffee export value from Vietnam to the EU. It may arise from the fact that the GDP of Vietnam and the EU countries may not be the primary drivers of the export value in the context of the coffee industry. Other factors such as coffee production capacity, quality, demand-supply dynamics, and market preferences might play a more substantial role in determining export values. The same case applies for Tariff, confirming the initial assumption that tariffs can not be a major barrier to coffee exports from Vietnam to the EU. However, other factors not included in the gravity model, such as market competition, trade facilitation policies, exchange rates, and consumer preferences, could also contribute to the observed lack of significance for GDP and Tariff variables.

The results reveal a positive association between the population size of EU nations and the total Vietnam coffee export value to the EU. In model (1), for every unit increase in the total population, the corresponding export value is anticipated to grow by 1.512%.

Contrary to the author's expectations, distance significantly positively affects the value of Vietnam coffee exports to the EU market. The result contradicts theory which states that as distance increases, exports decline due to an increase in transport cost. However, this result is not an isolated case. In line with this result, Assoua et al. (2022) also indicated that the impact of trade costs proxy by distance is positive to Cameroon's cocoa exports. While distance is indeed a significant factor in determining shipping costs, it can also be influenced by various other factors. Although the real distance from Vietnam to some nations such as Germany, France, Spain, Belgium may be greater than the distance to Slovakia, Slovenia, Austria but the availability and efficiency of trade routes and shipping infrastructure can impact costs. Germany, France or Spain, as a major European shipping destination, likely has well-established and efficient trade routes, ports, and transportation networks. This infrastructure can result in more competitive shipping rates due to increased connectivity and economies of scale. Some other smaller countries may have relatively less developed infrastructure, leading to higher shipping costs or limited shipping options. Additionally, Shipping companies often look to optimize their operations by consolidating shipments and maximizing container utilization. Germany or Spain who have larger markets and trade volumes may make it easier for shipping companies to consolidate shipments, resulting in more cost-effective transportation. Meanwhile, with its smaller market, other smaller countries may face challenges in consolidating shipments efficiently, leading to higher costs. Indeed, based on statistics, in the EU, some countries that are farther away from Vietnam than the rest are countries with a huge value of importing coffee from Vietnam. Those are mainly big countries, with large coffee demand and convenient logistics services, helping to optimize the cost of importing coffee from Vietnam.

Regarding TBT effect, the coefficient estimation has the expected negative sign, but no really significant impact. By a coefficient value of -0.035, an adverse correlation is observed between the quantity of TBT notifications and the export value of Vietnam coffee to the EU. Specifically, an augmentation of 1 unit in the TBTs enforced by EU nations on Vietnam's coffee is estimated to precipitate a decline of about 0.04% in the aforementioned export value. It suggests that Vietnamese coffee exporters have exhibited proactive efforts by allocating resources to ensure compliance with the TBTs imposed by the EU. These endeavors serve to mitigate the negative repercussions of TBTs on the export value. By adhering to the requisite standards and regulations, exporters endeavor to maintain access to the EU market while minimizing the adverse consequences of TBTs. Furthermore, Vietnam coffee exports to the EU possess advantageous pricing factors that render them less susceptible to the effects of TBTs. These reasons may enable Vietnamese coffee to sustain demand within the EU market, even in the presence of TBTs. The findings of this study align with the conclusions drawn by and (Elisabeth & Verico, 2022).

In contrast, results from model (1) and (2) shows that changes in SPS regulations do not significantly hinder Vietnam coffee exports to the EU market. Even when both variables TBT and SPS are incorporated in the same model (model (1)), the coefficients of TBT variable are the same (compared with model (3)) which further confirms the insignificant effect of SPS variable. Although the estimated elasticity for the SPS variable has the expected negative sign, it is not statistically significant. This is indicative that coffee export of Vietnam is quite sensitive to changes in SPS regulations in the EU market exporters but this sub-sector of Vietnam might have adapted to these changes in SPS regulations and taken the necessary steps to ensure adequate compliance before exporting. The estimation results in this study are not in accordance with previous studies stating that the SPS policy has a negative effect on export value because the higher imposition of SPS policies will cause a decline in the value of exports (Le & Tran, 2021; Permata et al., 2020; Thuong, 2018).

However, this result further confirms the conclusion of (Assoua et al., 2022; Grant et al., 2015; Handoyo et al., 2019; Khaliqi et al., 2018; Neeliah & Goburdhun, 2012).

5. Conclusion

This research examines the impact of TBT and SPS measures on the export of Vietnamese coffee to the EU using the gravity model framework. The analysis utilizes panel data covering the period from 2011 to 2021. The findings reveal that variables such as GDP, tariff, and SPS do not have a significant impact on the export of Vietnamese coffee to the EU. However, factors such as distance and population exhibit a positive impact on exports. Conversely, the presence of TBT is found to have a negative impact, with a coefficient value of -0.0351. This suggests that the imposition of technical barriers hinders coffee exports from Vietnam to the EU market.

These findings provide valuable insights into the factors influencing coffee exports from Vietnam to the EU and emphasize the importance of addressing technical barriers to promote successful trade relationships between the two entities. Therefore, Vietnamese coffee exporters should always update on TBTs from EU countries to meet import regulations. At the same time, businesses also need to maintain quality control of exported products to always meet the TBTs that EU countries have imposed on Vietnamese coffee exports so far. In addition, Vietnamese coffee exporters also need to pay attention to increasing the value of coffee instead of focusing on raw coffee beans as before. This will be a challenge but also a new opportunity for Vietnam coffee to reach more breakthrough milestones on the export journey to the EU market

While the research provides valuable insights, it is essential to acknowledge certain limitations. In this study, the notable limitation is the presence of zero-trade observations during the study period, which can affect the estimation results. Future studies could consider using methods such as the Heckman or Poisson models that are specifically designed to handle zero-trade observations. These approaches can account for the selection bias caused by zero-trade observations and provide more accurate estimations of the impact of TBT and SPS on coffee exports. By addressing this limitation, researchers can further enhance the understanding of the relationship between trade barriers and coffee exports from Vietnam to the EU, ultimately leading to more comprehensive and robust policy recommendations.

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APPENDIX

Appendix A. Regression Results - OLS, FE and RE models.

Variables	OLS	FE	RE
log($GDPit.GDPjt$)	-0.057	-0.233	-0.057
	(0.342)	(0.470)	(0.342)
log($POPjt$)	1.536***	5.146*	1.536***
	(0.410)	(2.780)	(0.410)
log(Dij)	4.969	omitted	4.969
	(3.268)	-	(3.268)
TARIFFij	0.024	0.023	0.024
	(0.019)	(0.020)	(0.019)
SPSjt	0.008	0.019	0.008
	(0.064)	(0.070)	(0.064)
TBTjt	-0.048*	-0.045	-0.048*
	(0.027)	(0.028)	(0.027)
Constant	-56.777**	-60.879	-56.777**
	(28.224)	(49.070)	(28.224)
Breusch pagan test for random effect	chi-square = 563.13 p-value = 0.0000		
Hausman test	chi-square = 2.09 p-value = 0.8370		
Wooldridge test for autocorrelation	F-statistic = 29.223 p-value = 0.0000		
Standard errors in parentheses *** p < 0.01, ** p < 0.05, * p < 0.1			

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Factors Affecting The Satisfaction with Life of People in Nha Trang City, Khanh Hoa Province

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ABSTRACT

In recent years, measuring the subjective happiness, specifically life satisfaction, has been researched extensively across the modern world. However, in Vietnam, the number of studies on life satisfaction and quality of life is very limited. Besides, no agency or organization has published official data related to these topics. Therefore, with the aim towards designing a set of reliable tools to measure life satisfaction, serving the assessment of quality of life in Vietnam in general and Nha Trang city in private. The article has analyzed and explained on "Factors affecting life satisfaction of people in Nha Trang City, Khanh Hoa Province". The author used two research methods, including qualitative research and quantitative research. The research aims to systematize theoretical issues related to people's life satisfaction. Assessing the current status of people's satisfaction with life in Nha Trang City, Khanh Hoa Province, analyzing and identifying factors affecting people's life satisfaction in the area city. At the same time, propose some solutions to improve people's satisfaction with life.

Keywords: Influential factors, life satisfaction, people, Nha Trang City, Khanh Hoa Province.

1. Introduction

Life satisfaction is a widely studied topic around the world. According to Suikkanen (2011), this is one of the important bases for assessing quality of life, happiness - issues of global significance. Besides, according to Walsh (2005), in addition to material life factors such as satisfaction with income, assets, and career, there are also many studies on mental life satisfaction. In addition, according to Shin and Johnson (1978), when a certain level of development is reached and material life is no longer so difficult, spiritual life becomes one of the important indicators of evaluating the quality of life of a community, a city or a country.

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The quality of life can be considered and assessed in two aspects according to Veenhoven (2006), the first is to assess the level of development and responsiveness of services and people's actual spending capacity for caring for life. The second aspect is the reality of people's subjective assessment and perception of how satisfied they are with their own lives in the conditions they are enjoying. In fact, Vietnam is currently inferior to many countries in the region and the world. However, according to the HSBC Expat report (2019) Vietnamese people are always considered to have a high sense of optimism in all aspects of life. With an optimistic self-assessment of aspects of life, in 2019, Vietnam was ranked among the 10 best countries to live and work in. In particular, Vietnam is considered a place that is easy to establish a new life, a stable economy, good career promotion opportunities, especially the high life balance factor and finally the quality of life. However, in Viet Nam, the number of studies on life satisfaction and quality of life (CLCS) is very limited, especially in Nha Trang there is currently no study on life satisfaction. Nha Trang is a coastal city and the political, economic, cultural, scientific, technical and tourism center of Khanh Hoa Province, Vietnam with a natural area of 251 km^2. Nha Trang has a tropical savanna climate influenced by oceanic climate. Nha Trang's climate is relatively mild, the average annual temperature is 26.3^{0}C. There are less cold winters and long rainy seasons. In 2019, the population of the city was 422,601 (1/4/2019) [7], of which the urban population accounted for 74.6%, the rural population accounted for 25.4%. In terms of sex ratio, males constitute 48.5% and females 51.5%. Regarding the structure of the economy: The agriculture, forestry and fishery sector accounted for 13.89%, industry and construction accounted for 29.09%, the service sector accounted for 46.31%, product tax minus product subsidies accounted for 10.71%. (The corresponding structure of the same period last year was: 13.1%; 25.15%; 51.73%; 10.03%) *(Source: Report on the socio-economic situation of Khanh Hoa province in the first 6 months of 2020).* Therefore, the author boldly chose the issue "***Factors affecting the satisfaction with the lives of people in Nha Trang City, Khanh Hoa Province***" as the research topic. This is a matter of urgency and practical reasoning posed today.

2. Literature review

2.1. Quality of life

CLCS as a scientific concept has been mentioned in many works. There are many other theories about CLCS, depending on the level of development, socio-cultural conception, traditions of each ethnic group, each community. According to Sharma (1988), author of the popular book, "Population, Resources, Environment and Quality of Life", CLCS is a complex concept that requires the satisfaction of the social community, as well as the ability to meet the basic needs of society itself. He defined: Quality of life is the feeling of being satisfied (happy) or (satisfied) with the elements of life, which are considered most important to a person himself. In addition, quality is the feeling of being satisfied with what people have. Although satisfaction, happiness or satisfaction are central factors in this definition, we should not see them as a transitory affirmation of happiness or satisfaction, but rather as the end result of the feeling of happiness. Maybe we have a better interpretation, it's a feeling of fullness or the fullness of life. His definition of CLCS has been widely accepted. Accordingly, the standard of living of each individual, family and social community is considered an important factor in the creation of CLCS (Sharma, 1988).

In modern society, the concept of CLCS is often identical with the concept of optimal comfort. In particular, the main concern of raising CLCS is to create a state of physical and mental well-being, which is to enhance rest time. The optimization of comfort levels is reflected in the diversification of consumer products that each social community, each family or each individual has. Such "optimal comfort" "makes no degree distinction between classes of people separated by luxury, or status in society." Therefore, the concept of CLCS has been expanded more comprehensively by Simon Bell (2008), such as linking the concept of CLCS with economic, political, cultural, ecological conditions ... According to him, CLCS is characterized by 12 points: "(1) Personal physical safety; (2) Economic affluence; (3) Fairness within the framework of the law; (4) National security; (5) Insurance in old age and sickness; (6) Mental well-being; (7) Participation in social life; (8) Equality of education, housing, and rest; (9) Quality of cultural life; (10) Civil liberties; (11) Quality of technical environment (transportation, housing, living equipment, educational and medical equipment); (12) Habitat quality and pollution resistance". In it, he emphasized the content "Safety" and affirmed that CLCS is characterized by the safety of the (artificial) environment in a healthy natural environment and a healthy social environment.

Thus, CLCS can be understood as a reflection, the fulfillment of social needs, first of all the minimum basic material needs of human beings. Then there is the condition that arises spiritual needs. The higher that level of response, the higher the CLCS.

2.2. Life satisfaction

Life satisfaction is defined as an overall assessment of an individual's quality of life based on his own standards (Diener, 1985). When making assessments of life satisfaction, it is necessary to be based on a comparison of an individual's life situation with what the individual desires as a yardstick for comparison, evaluation and comparison, this assessment is purely comparative, Individual, subjective and standards-based assessments are concretized. Individuals in the same community can share with each other the same system of criteria for living standards such as expected health, money, work, family ... However, individuals' own views and standards on each of these standards are completely different.

Satisfaction is delineated in 4 aspects, varying degrees Veenhoven (2006):

Feeling good, satisfied: "There exists a momentary sense of satisfaction with certain aspects of life, be it in material aspects such as judging a good food, or spiritual aspects such as attending a fun outing. The spirit of so-called hedonism is the notion of a maximum increase in these feelings of satisfaction."

Partial satisfaction: "The experience of (stable) satisfaction for each stage and area of life, such as job satisfaction, marriage."

Peak experience: "Transient satisfaction of whole life when positive evaluations exist in many aspects with a high level at the same time."

Life satisfaction: "A long-lasting sense of satisfaction about an individual's life."

Thus, it can be understood that life satisfaction is a comparison, between reality and the standards and evaluation standards set by each individual and these standards and standards are completely personalized and subjective.

2.3. Research approaches to life satisfaction

Currently, both in theory and practice, there are different views of an individual's life satisfaction. According to Suikkanen (2011), there are 3 different perspectives on life satisfaction.

The first view: "An individual may only feel satisfied with their life at a time when they have specific thoughts, perceptions, visualizations or even plans about their life up to that point and they feel that their actual life basically or completely fits the pattern Don't expect or plan themselves." These views are called "cognitive theoretical views of life satisfaction."

The second view: "An individual's sense of satisfaction can be derived solely from the individual's very subjective feelings and does not imply comparison or comparison with real life." These views are called "emotional theories of life satisfaction."

Third view: "At a given point, the individual has a perception, visualization, expectation or plan for his or her life and he himself feels satisfied with what he has, compared to what he expects whether it actually meets or is exactly the same."

Thus, we can see that life satisfaction studies are a research direction that is approached from many different angles and aspects and is extremely important in improving people's life satisfaction.

2.4. Meaning of people's life satisfaction

2.4.1. Life satisfaction: a measure of social stability

Life satisfaction research is the basis for assessing and forecasting "social stability" during development. In addition, studies on life satisfaction also show the effectiveness of implementing social policies of governments in the reality of social development. According to Hoang Ba Thinh (2013), the opposite of satisfaction is social dissatisfaction/dissatisfaction that is often viewed in terms with observable manifestations, such as: democracy, disorder; strike; crime, corruption. In addition, if social groups with specific characteristics (ethnicity, education, occupation, etc.) have low levels of satisfaction, this also provides us with evidence that they are socio-economic groups with greater dissatisfaction, and may develop social problems. Life satisfaction is an important component of people's conception of happiness. Life satisfaction studies can predict an individual's level of happiness. According to Pham Minh Hac (2005), although happiness is complex and abstract, it is a real thing, existing in every moment of life and has a great effect in directing human management activities. Therefore, if members of society feel happy, then society will be stable even if material life is not high.

2.4.2. Life satisfaction: indicator of development

According to Hoang Ba Thinh (2013), satisfaction contributes to increasing knowledge, improving work performance, enhancing creativity and cooperation. This shows that people who feel satisfied are more motivated, have a good work ethic, and are more productive. Moreover, those who have been satisfied have the determination to continuously improve and improve qualitatively. In contrast, people without satisfaction often withdraw and are reluctant to share their knowledge.

Thus, understanding the causes that lead to the dissatisfaction of individuals, understanding the needs, wants, ... of individuals in life is necessary to measure development.

2.4.3. Life saticfaction: a measure of the quality of social services

According to Hoang Ba Thinh (2013), satisfaction studies on health and business services are indicators of the quality of social services. In fact, in countries around the world and Vietnam, organizations, enterprises, ... often organize survey activities, collect opinions of customers and people to assess their satisfaction with the quality of products and services that organizations, businesses, ... supply to the market.

2.5. Factors affecting people's life satisfaction

2.5.1. Sources of income and employment

According to Nguyen Thi Van Hanh (2013), the more income increases, the more conditions an individual can meet their needs, the closer they are to overall life satisfaction. Previous studies have also shown that income and employment have an impact on people's life satisfaction. For example, Duong Thi Thu Huong (2012) found that the factor that has the strongest impact on HL's level of life is the economy of oneself and family (income, assets, employment), especially income satisfaction. Le Thi Truyen (2017) found a similar influence.

2.5.2. Standard and standard of living

The standard of living is a concept, related to the development and satisfaction of the needs of society in general and the needs of people in particular (Nguyen Thi Van Hanh, 2013). According to Maslow's theory of needs, when the needs and standards of living at the lower levels are met and satisfied, they gradually move towards meeting the needs at the higher level. Marshall et al., (1996), Research on objective conditions and life satisfaction through survey data on homeless people in the Los Angeles area has shown that subjective indicators of quality of life, or subjective living conditions (e.g., status) are associated with each specific aspect body of satisfaction with life. Standard and standard of living have been found by many studies to be a factor that positively influences quality of life and improves life satisfaction (Nguyen Tri Nam Khang et al., 2014).

2.5.3. Personal life

Private life or personal life is the life of an individual, especially seen as the totality of personal choices that contribute to the identity of a person's personality (Freud, 1947). Personal life is expressed through a number of indicators such as: Physical, mental life, personal safety (increase in accidents, increase in crime rate), price stability of goods and services and level of community cohesion. Thus, personal life is a concept, related to the satisfaction of an individual's needs in life. Research by Nguyen Tri Nam Khang et al., (2014) also shows that personal life has a proportional impact on the overall perception of the quality of life of people in Vinh Long province. The improvement and diversification of types of entertainment and entertainment for people, to improve life after a period of hard work, contributing to the regeneration of labor is important to bring satisfaction to people's lives. Research by Bui The Cuong (2010), also shows that there is a relationship between people's satisfaction with their lifestyle today.

2.5.4. Awareness and protecting and preserving values

The sense of protection and preservation of values related to the awareness of ecosystem conservation, the preservation of historical and cultural values, theabundance of customs, habits and good living habits of the people (Nguyen Tri Nam Khang & author, 2014). Besides, information boom is a term referring to the strong increase in documentary information products in the world in recent years. With the rapid development of S&T, newly developed technology products have brought many utilities to life, widely applied in many fields; especially in the field of information and communication. Electronic and online information systems, websites of organizations, units and enterprises have developed strongly, contributing to expanding relationships, exchanges and development cooperation in many fields, especially in the fields of economy, social culture, science and technology, health, education, etc entertainment. Moreover, like globalization and the S&T revolution, the market economy has duality, besides the positive effects are undesirable downsides, even its failures, one of the important impacts is the change in the value system and perception of the people. Therefore, it can be seen that perceptions and value changes will lead to widespread negatives throughout the social system in general and the life of each citizen in particular. Research by Nguyen Tri Nam Khang & authors (2014), also shows that there is a positive relationship between the sense of protection and preservation of values and the satisfaction of people's lives. The investment and upgrading of local cultural and historical relics, raising the national cultural consciousness and beauty of the local community so that the preservation of resources is important to improve the quality of life and satisfaction with life.

2.5.5. Social environment

The social environment involves many different angles of the relationship between people and people, as well as cultural, social, historical, habitual, habitual factors, governing people's lives and activities (Nguyen Tri Nam Khang & author, 2014). Globalization has a powerful impact on nation-states, on social life, as well as on the lives of individual people. The current social situation is quite complicated with outstanding negative phenomena such as corruption, bribery, bureaucracy, authoritarianism, more fees, social evils ... is still on the rise. The social environment is one of the factors negatively affected by the living activities of the population, production and business activities and tourism development of the locality (Hoang Duc Nhuan, 1995). The social environment has been confirmed to have a mutual influence on the life satisfaction of Ben Tre people (Le Thi Truyen, 2017).

2.5.6. Habitat quality

The environment consists of natural and man-made material factors closely related to each other, surrounding people, influencing the life, production, existence and development of humans and nature. (Article 1, Law on Environmental Protection of Vietnam, 2014). The social environment includes such criteria as the freshness of the air and the cleanliness of the water, the peace and tranquility of the environment, the concentration of the population, and social evils. (Nguyen Tri Nam Khang & author, 2014). Habitat issues have an important place in the process of human existence and development. The environment is the set of all natural and social factors necessary for human habitation and production. The environment consists of natural and man-made material factors closely related to each other, surrounding people, influencing the life, production, existence and development of humans and nature. (According to Article 1 of Vietnam's Law on Environmental Protection). As a natural-social entity, man lives in the natural environment and always exists in the social environment. Any disturbance in the natural environment as well as the social environment will directly affect the quality of life of people. To handle that interaction, people must use their knowledge and experience to find a "common voice" with the environment. However, in the current context, there are complex issues in solving the relationship between humans and the environment.

Scientific warnings have helped to show the causal relationship between humans and the ecological environment, between socio-economic development and natural resource conservation (Hoang Duc Nhuan, 1995). Bui Vu Thanh Nhat (2008), emphasizes the role of environmental quality in improving people's quality of life. The quality of living environment has a similar influence on people's life satisfaction in (Le Thi Truyen, 2017) on factors affecting the quality of life of people in Ben Tre city.

2.5.7. Self-perspective towards the future

According to Diener et al., (1985), life satisfaction is influenced by factors related to individuals' outlook on life. Research by Duong Thi Thu Huong (2012) also shows that life satisfaction is closely related to regionally related cultural characteristics that Northerners tend to have higher satisfaction about divine life than Southerners, but it's not clear what the personal views are here. Thus, this study focused on a forward-looking individual view and suggested that people with a forward-looking view would have higher levels of satisfaction with life. This hypothesis is based on research by Dwivedi and Rastogi (2017), which found that the stronger the individual's forward-looking view. Their quality of life will be better than that of short-term results-oriented individuals, so their level of satisfaction is also higher with life.

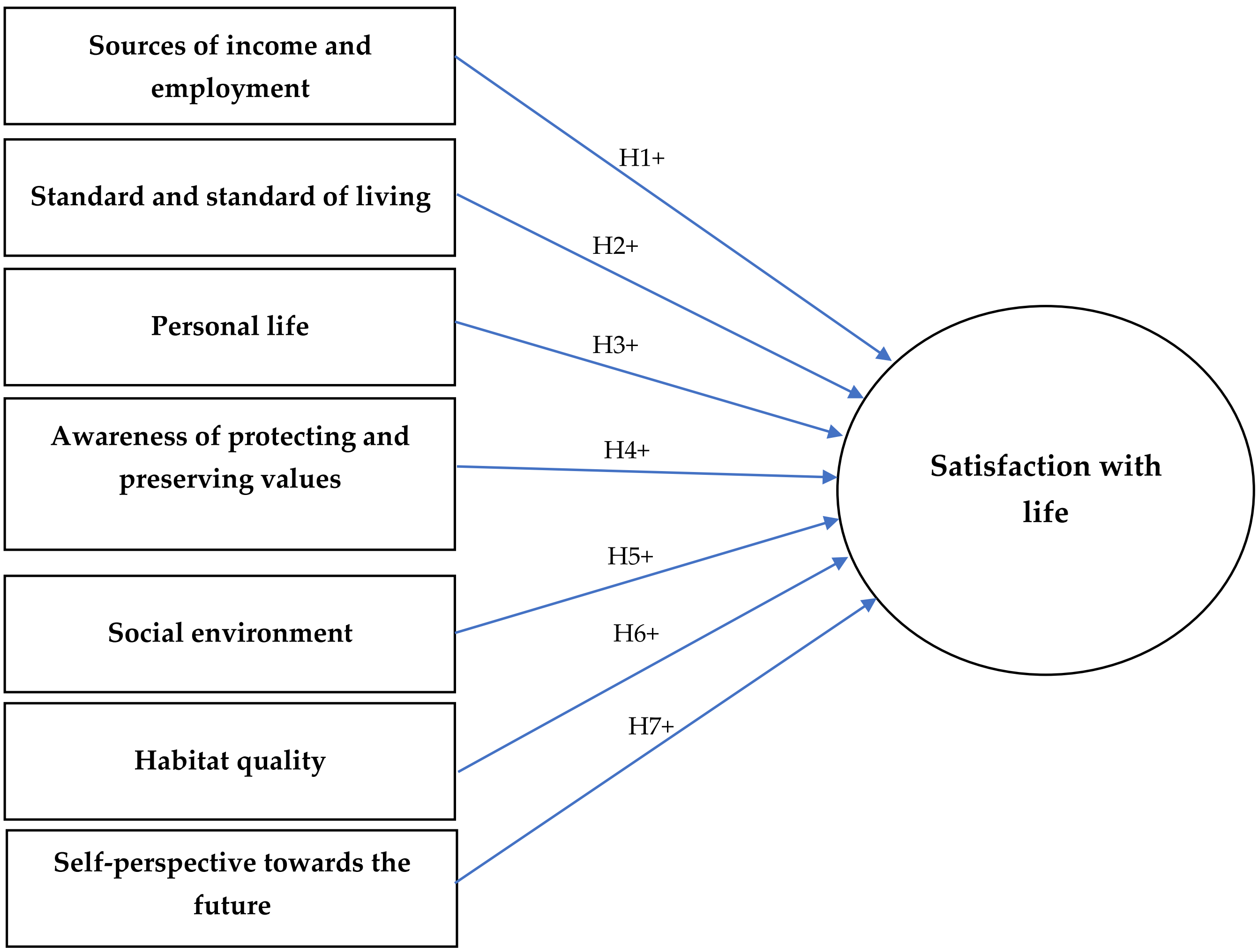

Fig.1. Research model

Source: Author

3. Research methodology

The author uses 2 research methods including qualitative research and quantitative research. Qualitative research Preliminary research is conducted using a qualitative research approach through expert consultation and group discussion. This research step aims to explore, adjust and add factors and attributes that measure the impact of people's satisfaction on the quality of life in Nha Trang city in addition to those in the proposed model. The quantitative study was conducted with 300 respondents using questionnaires. The collected data is used to evaluate the scale using a reliability analysis tool through the Cronbach Alpha coefficient, EFA discovery factor analysis, linear regression models to validate the model and research hypothesis. The collected data will be encrypted, cleaned and analyzed using SPSS 20 software.

4. Research results

4.1. Decriptive statistical results

The total number of votes issued was 300 votes and collected was 300 satisfactory questionnaires that were included in the quantitative study, the response rate was 100%. The interview results, after cleaning, are entered into the data matrix on SPSS 20 software and encode the observed variables according to the scale encoding table. The survey results showed that 300 people were 40.3% male and 59.7% female, 7.3% of respondents were under 20 years old, 20.7% of respondents were between 21 and 30 years old, 36.7% of respondents were between 31 and 40 years old and 35.3% of respondents were over 40 years old. With 40.3% of respondents married and 59.7% of respondents unmarried. Regarding people's qualifications, 17% of respondents are highly educated; 28.3% of respondents had a college-intermediate degree with 45% of respondents having a university degree and 9.7% of respondents having a postgraduate degree, 97.7% of respondents having a certain type of religion and 2.3% of respondents having no religion at all. Regarding personal income, 14.7% of respondents had personal income below VND 5 million, 69.7% of respondents had personal income from VND 5 to less than VND 10 million, 6.3% of respondents had personal income from VND 10 to less than VND 15 million and 9.3% of respondents had personal income from VND 15 to 20 million. Family income has 35% of respondents having family income below VND 5 million, 26% of respondents have family income from VND 5 to less than VND 15 million, 15.7% of respondents have family income from VND 15 to less than VND 25 million, 20.7% of respondents have family income from VND 25 to less than VND 35 million and 2.7% of people The questioner has a family income of over VND 35 million. Family members from the survey of 300 people had 13.7% of respondents as having 1 family member; 29% of respondents had 2-3 family members, 40.3% of respondents had 4-5 family members, 8.7% of respondents had 6-7 family members, and 8.3% of respondents had more than 7 family members.

4.2. Factors affecting satisfaction with people's in Nha Tràn city, Khanh Hoa province

Table 1. Cronbach's alpha analysis results

Factor	Initial observed variable	Residual observational variable	Cronbach's alpha coefficient	Total variable correlation
Income and employment (TN)	5	4	**0,789**	[0,594 - 0,526]
Standard and standard of living (TC)	5	5	**0,793**	[0,597 - 0,599]
Personal life (DS)	5	5	**0,754**	[0,455 - 0,655]
Awareness of protecting and preserving values (GG)	5	5	**0,801**	[0,617 - 0,681]
Social Environment (MX)	5	4	**0,834**	[0,629 - 0,828]
Habitat Quality (MX)	5	5	**0,806**	[0,546 -0,604]
Self-perspective towards the future (CN)	7	7	**0,897**	[0,721 - 0,631]
Life Satisfaction (HL)	11	6	**0,885**	[0,612 - 0,684]

Source: Processing results on SPSS 20.0 sofyware

Looking at the table, we can see that the scales have a standard **Cronbach alpha** confidence coefficient (> 0.70) and a variable Correlation coefficient – the sum of variables is both greater than 0.3, and some variables are disqualified due to substandard. Therefore, the remaining scales are reliable.

The observed variables of the sensory scale are analyzed by the principal component method with Varimax rotation. Variables with a factor load factor of less than 0.5 that do not guarantee convergence with the rest of the variables on the scale will be discarded.

Table 2. KMO and Barlett's independent variable test results

Get lost	Factor						
	1	2	3	4	5	6	7
CN1	0,795						
CN2	0,782						
CN3	0,757						
	………	………	………	………	…………	…………	…………
TN3							0,776
TN4							0,782
TN5							0,698
Eigenvalues					**1,460**		
Total extraction variance (%)					**59,262**		
SME					**0,814**		
Bartlett's (Sig)					**0,000**		

Source: Processing results on SPSS 20.0 sofyware

Based on the table above, the coefficient KMO = 0.814 > 0.5; This suggests that factor analysis is consistent with the research data. **Barlett's** test result is 4537,562 with sig significance = 0.000 < 0.05, (refuting hypothesis H0; observed variables are not correlated in the population) so the hypothesis of the factor model as inappropriate will be rejected, which proves that the data for factor analysis are completely appropriate. There are 35 observational variables combined into 7 factors derived from EFA analysis. Of which there are 7 factors quoted at *Eigenvalues* is 1,460 > 1. The total extract variance is *59.262%* > 50%, so the discovery factor analysis is satisfactory. The factor load factor > 0.5 (as small as *0.543*) so the factors have a high differentiation value.

Table 3. EFA discovery factor analysis results for dependent variables

Factor name	Observation variables	Factor
Life satisfaction	HL10	0,850
	HL11	0,779
	HL8	0,776
	HL9	0,759
	HL1	0,715
	HL2	0,715
Eigenvalues		**4,150**
Total extraction variance (%)		**59,279**
SME		**0,911**
Bartlett's (sig)		**0,000**

Source: Processing results on SPSS 20.0 sofyware

The EFA result for the dependent variable shows that 01 factor extracted at Eigenvalue is 4.150 > 1, the extracted variance is 59.279% and the KMO coefficient = 0.911> 0.5. Therefore, the factor analysis is appropriate and the quotation variance is satisfactory > 50%; Then it can be said that this 1 factor can explain 59.279% of the variation of the data. The observed variables of this scale will be used for further analysis.

Table 4. Correlation analysis

		HL	TN	TC	DS	GG	MX	MS	CN
HL	Pearson Correlation	1	.497**	.339**	.489**	.338**	.356**	.283**	.362**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000	.000
	N	300	300	300	300	300	300	300	300

Source: Processing results on SPSS 20.0 sofyware

The correlation coefficients between independent variables and dependent variables are satisfied with life with a uniform significance level of **0.05.** So they are all statistically significant correlated with the dependent variable.

Table 5. Conformity assessment of regression model

Model	R	R squared	R squared correction	Estimation standard error	Durbin-Watson
1	0,735[a]	0,540	0,529	0,37407	1,765

Source: Processing results on SPSS 20.0 sofyware

The results show R2 = 0.540 R2 and correction = **0.529.** So the relevance of the model is relatively high. 7 independent variables included affect 52.9% The change of the remaining dependent variable 47.1% is due to out-of-model variables and random error.

Table 6. ANOVA analysis results

Model		Total squared	Degrees of freedom (df)	Mean squared	F	Significance level
1	Regression	47,898	7	6,843	48,899	0,000[b]
	Residual	40,860	292	0,140		
	Sum	88,758	299			

Source: Processing results on SPSS 20.0 sofyware

Table 7. Results of regression analysis

Model		Unnormalized regression coefficient		Normalized regression coefficient	t	Significance level	Line addition statistics	
		B	Standard error	Beta			Tolerance	VIF
1	Constant	-0,833	0,269		-3,097	0,002		
	TN	0,251	0,041	0,264	6,059	0,000	0,829	1,206
	TC	0,164	0,037	0,185	4,394	0,000	0,885	1,130
	DS	0,276	0,042	0,282	6,607	0,000	0,864	1,157
	GG	0,139	0,032	0,177	4,303	0,000	0,935	1,069
	MX	0,146	0,045	0,152	3,232	0,001	0,712	1,404
	MS	0,094	0,046	0,095	2,033	0,043	0,718	1,394
	CN	0,187	0,043	0,183	4,376	0,000	0,897	1,115

Source: Processing results on SPSS 20.0 sofyware

The results showed that Sig was less than 0.05. Thus, the independent variables are all meant to account for the dependent variable, none of which are excluded from the model. The VIF is less than 2, so there is no linear multi-additive. The regression coefficients are greater than 0, so the independent variables included in the regression analysis all have the same effect on the dependent variable.

Table 8. Results of testing hypotheses

Assumptions	Hypothetical name	Standardized beta	Significance level	Result
H_1	Personal life positively impacts people's satisfaction with life.	0,282	0,000	Accept
H_2	Sources of income and employment positively impact people's satisfaction with life.	0,264	0,000	Accept
H_3	Standards and standards of living positively impact people's satisfaction with life.	0,185	0,000	Accept
H_4	Self-perspective towards the future positively impacts people's satisfaction with life.	0,183	0,000	Accept
H_5	Awareness of protecting and preserving values positively impacts people's satisfaction with life.	0,177	0,001	Accept
H6	Social environment positively impacts people's satisfaction with life.	0,152	0,043	Accept
H7	Habitat quality positively impacts people's satisfaction with their lives.	0,095	0,000	Accept

Discuss the results

The satisfaction with life of people in Nha Trang City is described by the function:

Y (HL) = 0,282* DS + 0,264* TN + 0,185* TC + 0,083* CN + 0,177* GG + 0,152* MX + 0,095* MS

Among the factors that affect people's life satisfaction, personal life factors have the most impact. According to the above regression results, we see that when the personal life factor increases by 1 unit, people's life satisfaction increases by 0.282 units, which means that people will feel more satisfied with life.

When income and employment increase by 1 unit, people will feel more satisfied than 0.246 units. Therefore, income and employment factors are one of the very important factors that need to be considered when assessing people's life satisfaction.

When the standard and standard of living increase to 1 unit, people will feel more satisfied with the quality of life of 0.185 units, that is, when people's standards and living standards are stable, meeting the needs of the people, people will feel more satisfied with people's lives. Therefore, standards and living standards are one of the very important factors that need to be considered when it comes to life satisfaction.

In addition, factors such as one's view of the future, the sense of preserving and protecting values, the social environment and the quality of the living environment are also good influences on satisfaction with the present life. This is an important factor to consider when assessing people's satisfaction with their lives.

The study results also show similarities with previous studies, specifically:

Whether income and occupational satisfaction have an effect on people's life satisfaction is similar to the research findings of (Nguyen Thi Van Hanh, 2013), (Duong Thi Thu Huong, 2012), (Le Thi Truyen, 2017).

The standard and standard of living that affect people's life satisfaction are similar to the research results of (Nguyen Thi Van Hanh, 2013), (Marshall et al., 1996), (Nguyen Tri Nam Khang et al., 2014).

Personal life and awareness of protecting and prederving values that affect people's life satisfaction are similar to people's findings (Nguyen Tri Nam Khang et author, 2014), (Bui The Cuong, 2010).

The social environment and quality of living environment have an impact on people's life satisfaction similar to previous findings that transparent, safe, and fair social environments contribute to improving people's quality of life (Tuong Manh, 2013); higher spiritual life increases the quality of life (Hoang Duc Nhuan, 1995), as well as people living in a positive and healthy social environment will also contribute to increasing awareness, increasing intellect and improving spiritual and cultural life (Nguyen Van Tri, 2016); (Nguyen Tri Nam Khang & author, 2014), (Le Thi Truyen, 2017).

Self-perspective towards the future that affect people's life satisfaction were found to be consistent with the view (Diener et al., 1985) that life satisfaction is influenced by factors related to individuals' life views, as well as the results of research by (Dwivedi and Rastogi, 2017) finding that people's levels of satisfaction are achieved higher with life if they have a better orientation towards the future.

5. Recommendations and conclusions

5.1. Conclusions

This project aims to address 03 main objectives: (1) Identify factors affecting people's life satisfaction; (2) Assess the impact of factors affecting the life satisfaction of people in Nha Trang City; (3) Propose policy implications to improve and enhance the satisfaction with the lives of the people of Nha Trang City.

Compared to the research objectives, the project has achieved the following results. Firstly, the topic has summarized related theories, built a model of 8 factors affecting the satisfaction with the life of people in Nha Trang city. The research results have identified 07 influential factors including: (1) Personal life; (2) Income and employment; (3) Standards and standards of living; (4) Self-perspective towards the future; (5) Awareness of protecting anh preserving values; (6) Social environment and (7) Habitat quality. Secondly, based on the research results, policy implications and recommendations, state agencies in general cannot assess the satisfaction with the lives of people in Nha Trang city in general ways but need to evaluate with specific scales to measure interrelated concepts that create satisfaction heart with the life of the people of Nha Trang city. Third, the research results contribute to helping Nha Trang City Government in particular and Khanh Hoa province in general to more accurately grasp the needs and perspectives of people on the quality of life. From there, it is possible to introduce specific and effective measures to improve the quality of life of people better and better.

Thus, the project assessed people's satisfaction with their lives and achieved basic results that met the research objectives. This result is important for reference, used for studies on measuring the satisfaction of people in Nha Trang city.

5.2. Propositions

Firstly, when it comes to personal life, each individual needs to absorb, adjust, summarize life experiences, standards ... from society, environment, culture and family… to improve and enhance your life satisfaction.

Second, in order to improve their career satisfaction and income, each citizen needs to consider many aspects, including improving their own capacity, maintaining and improving their health, etc.

Third, when it comes to living standards and standards, each individual and each family needs to know how to balance their financial resources with reasonable standards and standards of living to improve and improve their life satisfaction.

Fourth, life is developing more and more, so each individual and each citizen needs to absorb the new good, eliminate the bad, not suitable with our culture and national traditions from the past to the present.

Finally, the growing society leads to urbanization, environmental pollution to improve and improve the level of satisfaction with their lives, each citizen needs to be proactive in raising awareness of environmental protection, limiting the use of private vehicles to use public transport to limit emissions out into the environment, ...

5.3. Recommendations

To improve the satisfaction with the lives of people in Nha Trang City, the author boldly makes some suggestions to the authorities of Nha Trang City as follows:

First, perfecting the political system must put the interests of the people first in the process of performing their tasks and responsibilities. It is necessary to understand and evoke the spirit of "wholeheartedly serving the Fatherland, serving the people", truly "for the happiness of the people" among cadres, civil servants and Party members so that in each of their acts, advice and proposals, they are concerned about the interests of the people. Since then, people's satisfaction with life has been cared for, cared for and protected. That is, addressing people's satisfaction with their lives must come from addressing the quality of cadres, civil servants, Party members, and the quality of operation and administration of Party organizations and administrative agencies.

Secondly, each branch, each district and district must actively review whether there are still problems and limitations in their fields and areas that may affect the quality of life of people and find ways to overcome them immediately. Problems beyond the reach of the locality shall be quickly reported to superiors for timely handling measures.

Finally, improve the effectiveness of social security policies such as education, health, environment, transportation, etc. It is necessary to pay more attention to the practical needs and interests of the people. For example, when advocating the restriction of private transport to reduce traffic congestion and reduce environmental pollution, it is necessary to take into account the travel needs of people in certain economic conditions of each region and locality; i.e. to simultaneously increase the quality and quantity of the public transport system, increase the quality of inspection and handling of acts that pollute the environment...

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Solutions To Develop Smart Tourism Destinations in Danang City, Vietnam: A Theoretical Approach

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ABSTRACT

In recent years, the explosion of information and communication technology (ICT) has brought "smart" in almost all organizations and communities, in which the concept of smart destination has also appeared with the emergence of smart cities. Da Nang is one of the leading localities in deploying a smart tourism platform, developing smart tourist destinations to attract tourists, investors as well as other stakeholders. Smart tourism destinations help enhance the competitiveness of tourist destinations, improve the image of destinations, and increase the quality of travel experiences for tourists. This study uses qualitative research method as the main method to evaluate the existing literature on smart tourism development. The study was conducted with two main objectives. The first objective is to understand and explain the components that make up a smart tourism destination. The second objective is to analyze the current situation of developing smart tourism destination in Da Nang city and then propose solutions to develop Da Nang smart tourism destination effectively and sustainably.

Keywords: Smart city, Da Nang, Tourism, Smart tourism destinations, ICT

1. Introduction

The new era of ICT has also opened up countless new tools for the tourism industry. Theseday, tourist destinations face a new set of difficulties arising from both consumer and environmental changes influenced by emerging technologies. The advancement of ICT has prompted governments and tourism managers to leverage smart technologies to optimize decision making in business planning and enhance the tourist experience. Current popular smart technologies such as Internet of Things (IoT), mobile apps, location-based services, geotag services, Virtual Reality (VR), Augmented Reality (AR), social media, and smart devices have provided tremendous opportunities

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for the Tourism industry and its stakeholders to create, store and retrieve Big Data for different purposes [1]. Smart tourism destinations are becoming one of the topics that attracts many scientists and tourism managers in recent years. Boes et al (2016) [2] asserted that smart tourism destination was the ecosystem for the competitiveness of tourist destination. In particular, developing smart tourist destinations is considered an effective solution to recovery tourism industry after the Covid - 19 pandemic [3].

A smart tourism destination is a destination built on modern technological infrastructure, ensuring the sustainable development of tourist areas, accessible to everyone, and creating favorable conditions for tourist interaction and integration into the surrounding environment, increasing the quality of experience at the destination, while improving the quality of residents' life [4]. A tourism destination has many benefits when becoming a smart tourist destination, specifically (1) Towards sustainable tourism development; (2) Can integrate governance principles in tourism management; (3) Improve the efficiency of destination management in all areas; (4) Enhance the competitiveness and improve the position of the destination; (5) Explore opportunities to apply Information and Communication Technology (ICT) to the needs and uses of ICT by tourism businesses; (6) Develop more innovative knowledge-based management; (7) Through an active role in the use of new technology according to the needs of each destination; (8) Promote entrepreneurship and new business models by combining tourism activities with ICT [5]. Furthermore, UNWTO forecasts that by 2030, more and more tourists will be interested in the need to experience new values on a unique basis - creative and high-tech values. Therefore, smart tourist destinations have been deployed by many countries and localities around the world in many different forms, creating creative highlights and tourism competitive advantages, such as Amsterdam, London, Barcelona, etc. Helsinki, Manchester, etc. Not out of this trend, Da Nang tourism is also oriented to develop a smart tourist destination on the smart city platform. In current context, the tourism industry in the world as well as Da Nang has been suffering heavy losses due to the strong influence of the Covid-19 pandemic. These difficulties and challenges require the entire Tourism industry to make efforts to adapt, promote internal resources and restore tourism activities in the "new normal". Developing a smart tourist destination is one of the inevitable trends of Da Nang tourism after the pandemic. This article explores the core components that make up a smart tourism destination and proposes some recommendations for developing a smart tourism destination for tourism in Da Nang in particular and Vietnam in general.

2. Theoretical basis of smart tourism destination

2.1. Smart tourism destination

The term "smart" refers to the technological, economic and social development thanks to the ICT revolutions, storage on sensors, database systems, ways of connecting and exchanging information change new information [6], [7]. Smart tourism is understood as a social phenomenon arising from the convergence of ICT combined with travel experiences [8]. Smart tourism is tourism supported by aggregated efforts at a destination to collect, aggregate, and exploit data derived from physical infrastructure, social connections, resources from governments, organizations, human minds combined with the use of advanced technology to transform data into experiences, thereby proposing values of business performance and towards sustainability [4], [6]. Smart tourism should aim to raise awareness of using advanced technologies but associated with environmental protection and use of renewable energy [9], which should ensure three angles: public technology, people and institutions [10]. The overall goal of smart tourism is to provide a connection between tourists and destinations in order to have a responsive orientation to address specific needs [11].

A smart tourism destination is a place where tourists can experience technology and emphasizes the importance of enhancing tourist travel experiences enabled through IT integration [2], [12]. Expanding on this concept, Gretzel et al (2015); Tsaih and Hsu (2018); Savic and Pavlovic (2018) argued that a smart tourist destination was an innovative tourist destination, built on a modern technological infrastructure that ensures the sustainable development of tourist areas, everyone is welcome. accessible, facilitate the interaction of tourists and they can integrate into their surroundings, increasing the quality of the destination experience and improving the quality of life of residents [13] [4] [8]. According to Jasrotia and Gangotia (2018) [14], smart tourism destinations were defined as cities or destinations that use available technological tools, innovations and techniques to bring joy and experiences to tourists as well as tourists as profit for institutions and destinations.

2.2. Components of a smart tourism destination

Smart travel destinations emphasize on enhancing the travel experience while improving the quality of life for residents. The components and criteria for measuring smart tourism destinations may vary from destination to destination, and there is no unified and scientifically valid smart tourism destination model in the literature academic. Different cities and countries, depending on their level of development, policies and resources, will have different views on smart tourism destinations [14]. Destinations, which want to become smart travel destinations, should strive to provide modern and user-friendly applications of technology but also should not ignore aspects of innovation, technology, accessibility and sustainability [15]; environmental safety, accessibility and smart services [16]; attributes of smart tourism application such as smart information system, smart tour, e-commerce system and smart forecast [17]. The presence of these aspects will improve the quality of tourism services, enhance the experience, thereby influence the attitude, stimulate the intention to visit, increase the satisfaction of tourists [16]. Besides, Sigalat et al (2019); Ivars-Baidal et al (2021) suggest that smart mobility, smart governance, smart environment, smart economy, smart quality of life, smart people are constitutive aspects Smart tourism destination [18], [19]. In addition, based on the intelligence analysis of destinations, Tavitiyaman et al (2021) proposed six key components required for a destination to become a smart tourism destination: Smart Attractions, Smart Accessibility, Smart Comfort, Smart Packages Available, Smart Activities and Smart Ancillary Services [17]. Thus, the components that make up a smart tourist destination will change over time and space in the increasingly extensive development of businesses, destinations, customer needs with the explosion of smart technologies (as Table 1).

Table 1. Components of smart tourism destinations in recent studies

Authors	Components of a smart tourism destination
Liberato et al (2017) [15]	Innovation, technology, accessibility and sustainability
Ghaderia et al (2018) [16]	Environmental safety, accessibility and smart services
Tavitiyaman et al (2021) [17]	Smart information system, smart tour, e-commerce system and smart forecast
Sigalat et al (2019); Ivars-Baidal et al (2021) [18], [19]	smart mobility, smart governance, smart environment, smart economy, smart quality of life, smart people
Huertas et al (2019), Tavitiyaman et al (2021) [17]	Smart Attractions, Smart Accessibility, Smart Comfort, Smart Packages Available, Smart Activities and Smart Ancillary Services

Source: Synthesized results of the authors (2023

3. Smart tourism destination model

Many researchers have proposed different smart tourism destination models depending on the research context and objectives. In which, it can be seen that there are three typical models inherited and developed by researchers, including (1) Smart tourism destination model of Boes et al (2016) [2]; (2) Smart tourism destination model of Ivars-Baidal et al (2019) [19]; (3) Popova and Malcheva's smart tourist destination model (2020) [20].

3.1. Smart tourism destination model of Boes et al (2016)

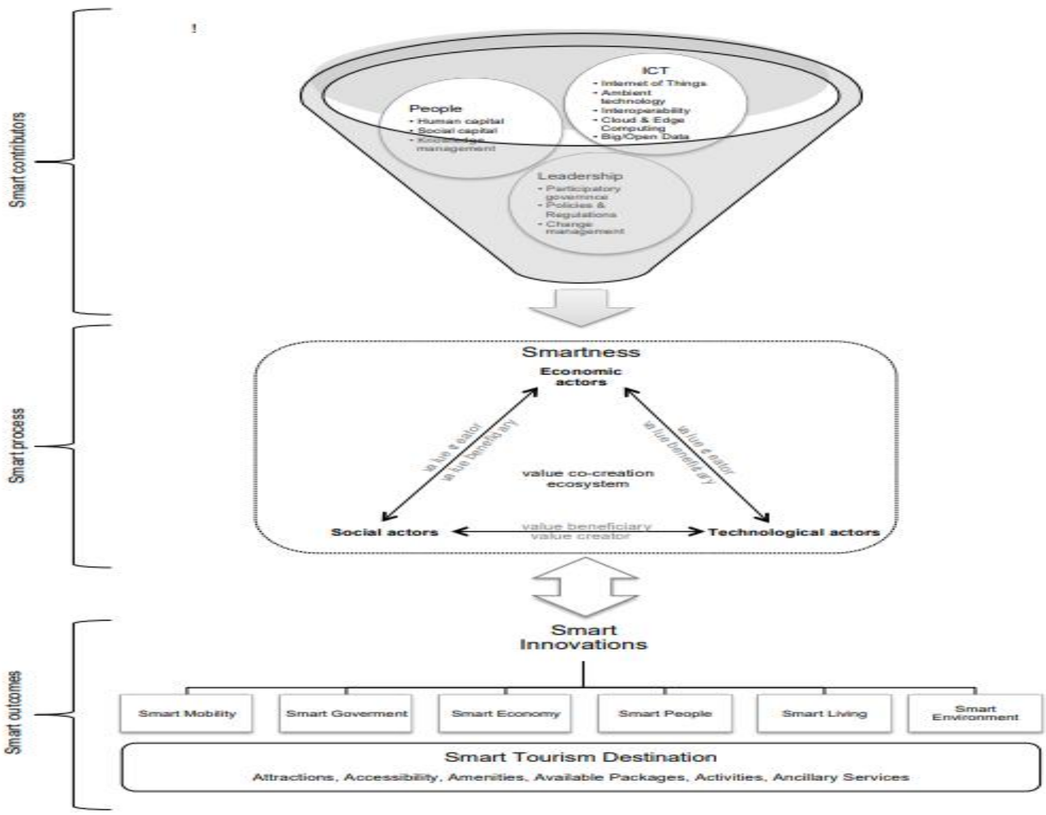


Fig. 1. Smart tourism destination model 1

Source: Boes et al (2016) [2]

The smart tourism destination model of Boes et al (2016) [2] (Figure 1) proposes based on the view that smart services are at the heart of smart tourism destinations. Boes et al (2016) [2] argued that smart tourism destination was a comprehensive ecosystem that can only be achieved through dynamic leadership and integration of all actors in the development of tourism destination intelligence: people resources, leadership, ICT resources and innovation. Boes et al (2016) asserted that these four components, working closely together in the support of a smart ecosystem (advanced infrastructure/information technology) would help enhance the potential advantage sustainable competition in tourist destinations. In addition, Boes et al (2016) [2] also pointed out six strategic factors to build a smart tourism destination (smart mobility, smart government, smart economy, smart people, smart life, etc.) smart living, smart environment, and the 6 components needed to create a successful smart tourism destination (sightseeing, accessibility, amenities, packages available, activities, services auxiliary).

3.2. Smart tourism destination model ofIvars-Baidal et al (2019)

The smart tourism destination model Ivars-Baidal et al (2019) [19] (Figure 2) proposes based on the systems point of view. This approach emphasized how smart solutions provide feedback on fundamental aspects of the strategy-relationship level (e.g. innovation or stakeholder collaboration) and the strategic-relationship level functionality (enhanced data available to destination information systems).

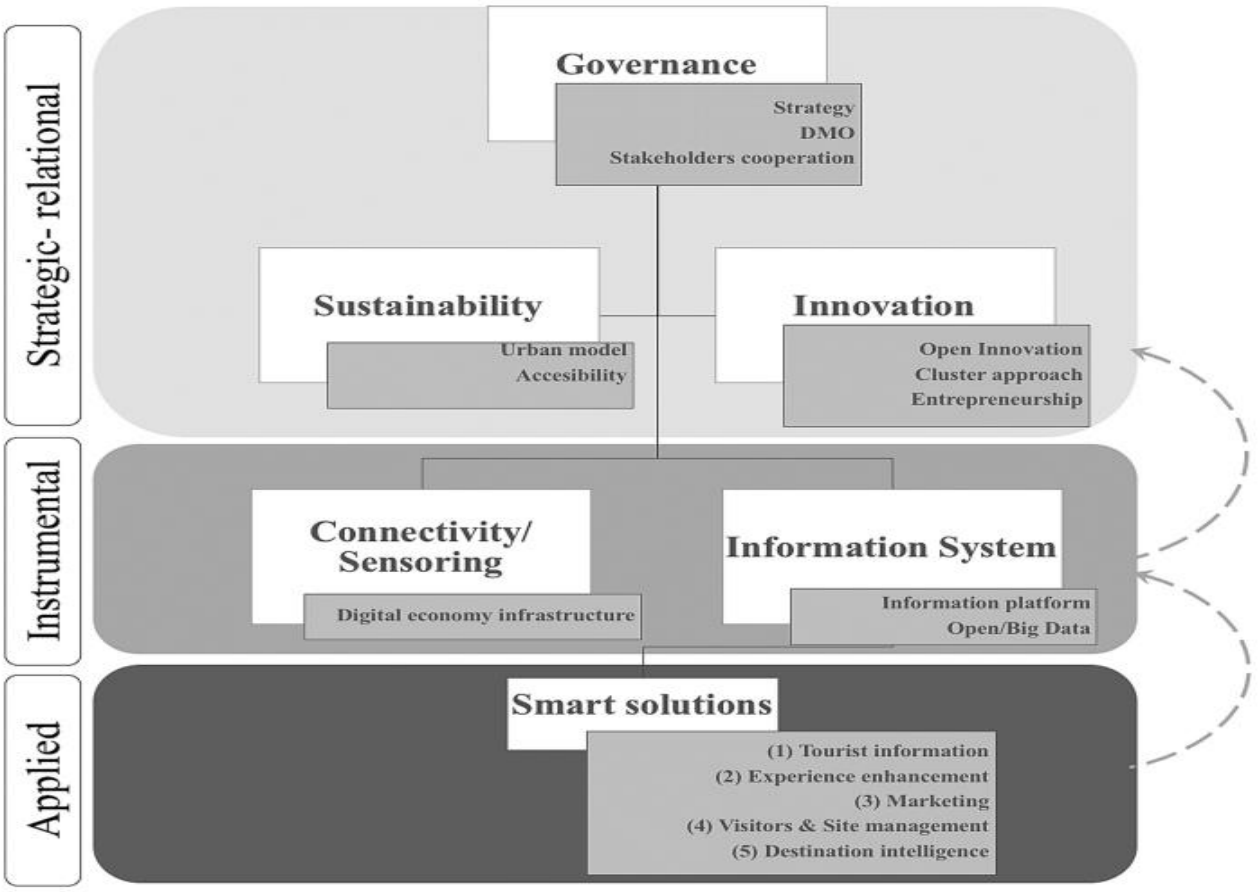


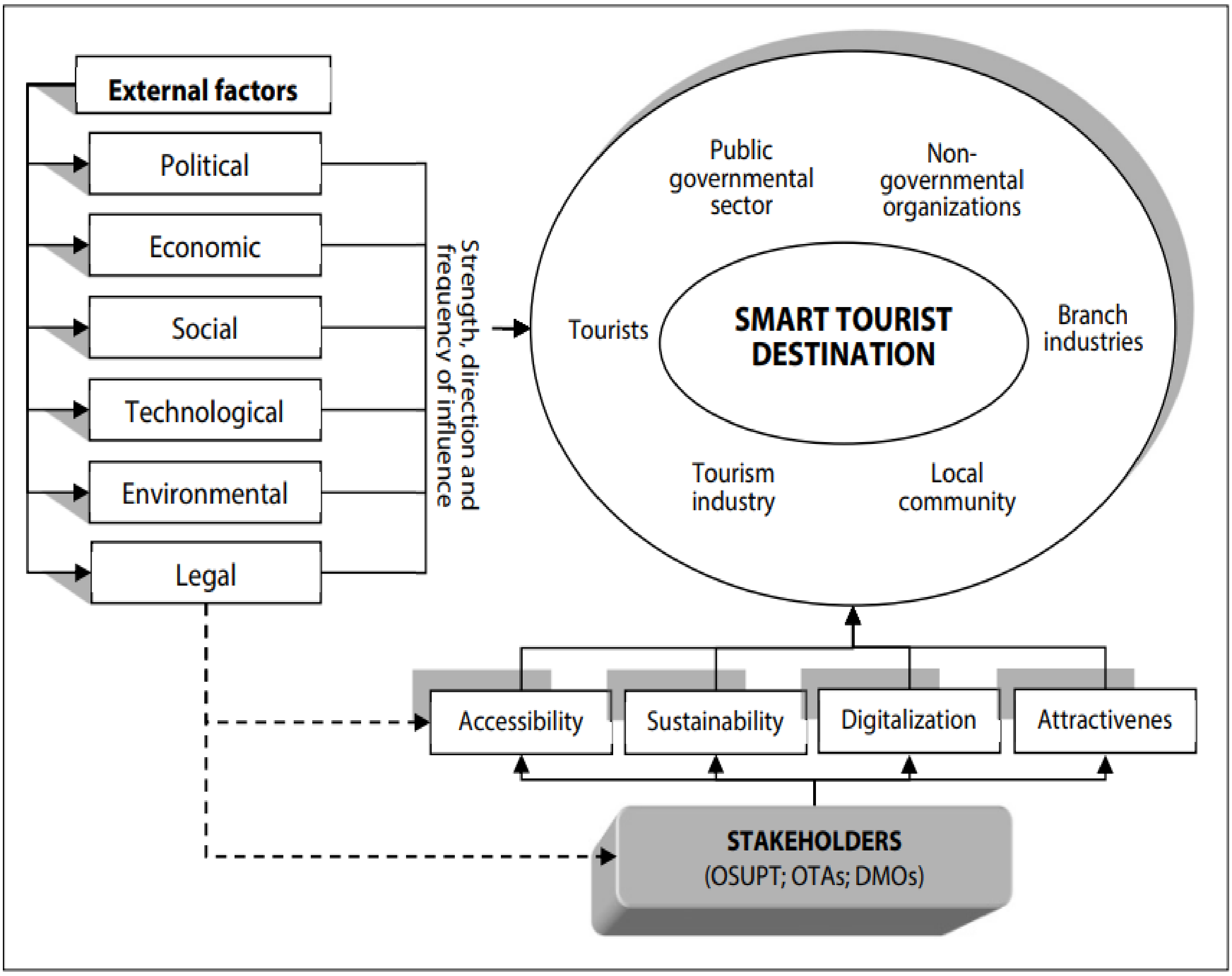
Fig. 2. Smart tourism destination model 2

Source: Ivars-Baidal et al (2019) [19]

In this way, the development of smart tourism destinations created synergies that lead to continuous improvement and creates a process that has the potential to transform tourism destination management. Effective smart tourism destination development should focus on the strategic level - relationships and governance factors play a fundamental role in strengthening the knowledge and innovation capacity of destinations [19]. The smart tourism destination challenge lies more in governance than in technology, highlighting key aspects of new capacity building within destination management organizations to facilitate application and smart solutions; Simultaneously analyzing and exploiting data, coordinating with travel agencies in the destination.

3.3. Smart tourism destination model of Popova và Malcheva (2020)

The development of a smart tourism destination depends on the attitude of the public sector and the will of public institutions to cooperate with other organizations, including organizations from the tourism industry and organizations. other sectors.



Legend: OSUPT (Organizational Structures of Urban Public Transport); OTAs (Online Travel Agencies); DMOs (Destination Management Organizations).

Fig. 3. Smart tourism destination model 3

Source: Popova & Malcheva (2020) [20]

At the core of the operation of a smart tourism destination that encourages leadership, entrepreneurship and investment for the purpose of modernizing physical and technical infrastructure, the modern lifestyle of local people combined with the increasing demand of online travel products and services by tourists. Popova and Malcheva (2020) [20] argued that accessibility, sustainability, digitization and attractiveness (with the support of stakeholders) were required components for a smart destination. These were the basic requirements to improve local and regional tourism products. In addition, an important role here was reserved for online travel agencies (OTAs) and public transport organizations. In addition, the components and conditions for the development of tissue-smart tourism destinations were directly affected by factors of the external environment (political, economic, social, technological, environmental and legal methods) in relation to their strength, direction and frequency of occurrence [20].

4. Realities of deploying smart tourism destination in Da Nang

Da Nang is one of the attractive destinations for domestic and foreign tourists with many favorable conditions for tourism development. The goal of Da Nang Tourism by 2025 is to reach 12.3 million tourists; The average growth rate of total tourism revenue in the period 2020-2025 will reach 12-12.5%/year. However, according to the Danang Department of Tourism, from 2019 to now, tourism activities have been heavily affected by the Covid-19 pandemic. In the face of the complicated situation of the Covid epidemic with profound impacts on the tourism industry, Da Nang is one of the leading cities in applying ICT to tourism development, aiming to develop the city into a smart tourist destination. In Da Nang, on January 24, 2019, the Politburo issued Resolution 43-NQ/TW, affirming that tourism is one of the five key areas of the city and a leading locality in the development of this model Smart Tourism. In 2020, Da Nang City People's Committee issued Decision No. 3860/QD - People's Committee on approving the Project of Restructuring Danang City's Tourism Industry to 2025, with orientation to 2030, one of seven practical solutions. The current objective is: "Promoting the application of science and technology to develop smart tourism".

In fact, smart cities act as a ladder to form smart tourist destinations and Da Nang is one of the very effective examples. In fact, smart cities act as a ladder to form smart tourist destinations and Da Nang City is one of the very effective examples. Since 2012, Da Nang Wi-Fi system has covered coverage, installed on light poles on both sides of the Han River, the coast, the city center, the airport, the train station, the public areas, universities, departments, agencies, branches in the area of Da Nang city, etc to serve citizens and tourists. In 2014, e-government was applied in administrative activities for the first time in the country and brought many conveniences to the people, contributing to improving the competitiveness index for Da Nang well meet the procedural requirements for citizens, businesses and organizations. Da Nang Party Committee issued Resolution No. 05-NQ/TU dated June 17, 2021 on digital transformation in the city until 2025, orientation to 2030; in which the view is: "Digital transformation is an inevitable step to fundamentally and comprehensively transform leadership activities of Party committees and organizations at all levels; management and administration activities of the government; is an opportunity to solve bottlenecks as well as breakthroughs in the city's development". The Digital Transformation Project of Da Nang City defines: "Governments and state agencies use digital technology and digital data to make decisions, create more effective socio-economic development and management, to lead the development of the digital economy and digital society". With the orientation to become a smart tourism destination, Da Nang City has implemented a series of projects to implement this tourism model.

Table 2. Some events in the smart tourism development project in Da Nang

Year	Events
2012	Da Nang Wi-Fi system covers
2014	Model of information technology application in first administrative activities, website of Da Nang tourism portal
2016	Signing a Memorandum of Understanding with Military Telecommunications Group (Viettel) on Building a Smart City
2017	Tourism Chatbot Pilot
2018	Smart tourism apps, official launch of tourism chatbot
2019	Smart surveillance system project
2020	Smart tourism conference to find technology and solutions for the post-Covid-19 tourism industry
2021	VR360 application carries the message "One touch to Da Nang"

Source: Synthesized results of the authors (2023

Da Nang has built software systems, applications and utilities to support tourists as well as to connect tourists with Da Nang tourism: “Go! Da Nang", "Da Nang Bus", "Da Nang Tourism" integrated "Facebook Live Chat, "InDaNang". These applications have helped people and tourists discover tourist attractions, cuisine and resorts in a more friendly and easy way; as well as update information about events or discounts at destination locations. In addition, Da Nang Tourism Promotion Center and commercial banks, tourism units have linked to create the "Dana Pass" application, which brings convenience to tourists in making payments when accepting payments. receive payment for nearly 500 points in Da Nang, Hoi An. In particular, in 2017, Da Nang has put into use the chatbot application "Da Nang Fantasticity" which can communicate in 2 languages English - Vietnamese to help tourists ask questions about tourism data anywhere. anywhere, at any time in Da Nang city. In 2018, the People's Committee of Da Nang City and FPT Corporation signed a cooperation agreement on building a smart city for the period of 2018 - 2020, whereby, in the field of tourism, the two sides cooperate to build a card information checking system tour guide, mobile tourist transport vehicle, look up information about standard tourist service providers, smart travel card system, etc.

To increase the experience for tourists, Da Nang has implemented English language QR codes on Da Nang tourism publications to publish information; 3D scanning technology at the Museum of Cham Sculpture. In 2019, the intelligent journey monitoring system was deployed through the journey monitoring devices installed on each bus, the system collects information such as location, speed, location, estimated time of the trip station arrivals, real-time bus routes, map current location updates and real-time bus arrival times. The operating information of the system is integrated into the website ecobus.danang.gov.vn to provide information to passengers.

By the end of 2020, Da Nang city has 1,239 tourist accommodation establishments with many different segments, which have actively applied information technology in tourism business with digital transformation capabilities and technology application. diversified information technology:

using technology applications to serve customers; mobile applications serve to maximize "touchless communication" between guests and staff when the Covid-19 epidemic situation continues to evolve complicatedly; Automatic ticket machines at tourist sites all have clips and brief descriptions of the service, making it easy for tourists to choose the service; etc. Especially, in November 2021, the Danang Department of Tourism launched the VR360 application with the message "One touch to Da Nang" at vr360.danangfantasticity.com with many preeminent features to help guide tourists Experience Da Nang discovery tour.

Besides, in 2021, Da Nang Department of Tourism has carried out a series of activities to promote the application of digital technology in tourism activities such as: promoting communication and promotion on social networks; organize online seminars; cooperate with businesses to implement digital maps for tourism; calling on businesses to step up digital transformation in tourism promotion and promotion activities; building tourism products associated with digital technology such as "virtual reality" tourism. The Department of Tourism has also effectively deployed public service software; complete the industry database with the update of background data of travel businesses, accommodation, catering, and tourist attractions in the city.

It can be seen that Da Nang has been gradually making a transformation in developing into a smart tourism destination. Da Nang Tourism has applied advanced ICT in management, business activities as well as communication and promotion from the level of state management to enterprises, in order to actively adapt to the changes of the tourism industry trends and negative impacts from the Covid-19 pandemic, aiming to develop smart tourism destinations

5. Recommendations

Most studies confirm that the smart tourism destination development strategy needs to pay attention to the basic factors: smart governance, smart infrastructure, smart economy, smart society. , smart environment, smart experience [2], [5], [19]. Managers need to design a comprehensive smart tourism destination ecosystem by integrating all these elements in smart tourism destination development. Furthermore, Lima et al (2020) assert that to become a smart tourist destination, it is necessary to consider the strategies, public policies and effective management of the government [5]. Therefore, with the current situation of deploying the smart tourism destination model, as well as the current epidemic control situation, Da Nang's tourism industry needs solutions to flexibly respond and gradually recover. Specifically:

First, the city needs to strengthen Smart Governance: perfecting e-government; the promulgation of mechanisms and policies to develop smart tourism should be focused; improve public administrative procedures, plans and strategies for smart tourism development; connect and coordinate stakeholders to develop smart destinations. The city also needs to establish and create transparent data through open source technologies for the entire smart tourism destination value chain.

Second, it is necessary to invest in developing smart infrastructure to ensure mobility, security, smart mobility, and smart accessibility for tourists. The city needs to improve the local transport infrastructure in a smart way with the goal of providing tourists with real-time information about the location of the transport, as well as the waiting time. The “interactive bus shelters” not only provide tourist information and bus arrival times, but also provide additional USB ports for charging mobile devices. At the same time, improve smart science and technology applications, internet systems, wifi, etc allowing tourists to navigate more easily in a smart environment; on the other hand allows the environment to receive information about travelers more easily.

Third, it is necessary to create favorable conditions for the development of a smart economy to ensure the spirit of creativity; smart investment; labor productivity, market flexibility, connectivity and adaptability to changes. It helps the destination improve its competitive advantage, improve the quality of products and services provided to tourists, positively impact quality of life and encourage smart investment attraction.

Fourth, it is necessary to increase awareness and build a smart society by raising the minimum level of people's understanding and application of technology; promote quality of life with premium services; providing citizens with a platform on which they can develop new ideas and services and collaborate with each other. Smart society with applications of technologies that create smart accessibility, allowing all individuals to access, use and enjoy without exception, providing the right to equal opportunity in the environment, goods, services, products, technology in a safer, more comfortable way. In particular, smart people in smart destinations refer to creativity, learning society and education.

Fifth, it is necessary to build an efficient smart environment and optimize energy consumption, recycle and reduce harmful substances to protect the environment. The city needs to develop civic-oriented sustainability campaigns; awareness campaigns about sustainability goals for tourists; Implement hazardous waste collection and treatment and ensure companies are awarded environmental certifications. In addition, the city needs to prioritize the implementation of environmentally-friendly smart tourism destination development projects such as "walking street" projects in the city center areas. To encourage people and tourists to move "green", it is necessary to install signs that integrate technologies such as scanning QR codes, through mobile Apps to provide information about tourist attractions, walking distances to destinations and estimated travel times, and comes with automatic translation into different languages.

Finally, enhance the smart travel experience for tourists through smart products, services, amenities, connectivity and sensors. Augmented reality (VR) and augmented reality (AR) at tourist sites. The city government should implement the application of location sensors and determine the occupancy time to ensure safety in crowded places; security alert apps are available to notify local authorities of any problems tourists may encounter. The city should also invest in technology to prevent medical incidents such as real-time weather information, geolocation of pharmacies, and multilingual apps that allow access. into the tourist's medical history if they need it.

6. Conclusion

In the competitive landscape of the tourism industry, destinations must continuously adapt, develop a comprehensive smart tourist destination ecosystem - connect - innovate and co-create value to ensure quality experiences for tourists. The process of developing a smart tourism destination is a long process and requires innovation in both thinking and action of the entire tourism industry, from management agencies to businesses. Destination managers need to understand the core components of a smart tourism destination and the support between them and how they are linked. With the efforts and efforts that the city has been making, the goal of developing a smart tourism destination in Da Nang has been gradually achieved and in the immediate future with the hope that the Da Nang tourism industry will recover strongly after Covid-19 pandemic.

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Effect of Voluntary Human Policy Disclosure on Firm Value: Case Study in Vietnam

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ABSTRACT

This study aims to examine the impact of voluntary human policy disclosure on firm value using a dataset comprising 374 Vietnamese-listed companies from 2010 to 2021. The study provides compelling empirical evidence supporting the positive influence of voluntary human policy disclosure on firm value by employing robust estimation methods, including Ordinary Least Squares, Fixed Effect, Random Effect, and GMM system. The findings are theoretically grounded and align with agency, signaling, and stakeholder theories, shedding light on the underlying mechanisms through which human policy disclosure enhances firm value. Additionally, the study identifies several key determinants of firm value, such as profitability, financial leverage, and age, which have significant favorable effects. These results contribute to the existing literature and offer valuable insights for researchers and practitioners in corporate disclosure and firm valuation.

Keywords: voluntary information, human policy disclosure, firm value

1. Introduction

Vietnam is one of the most dynamic economies in the world, with a 3.6 percent - average growth of GDP growth in 2002-2021. As projected, this country will reach 6.3 percent of GDP growth in 2023 [1]. Skilled and talented human resources have contributed to the success of Vietnam. The country has made significant advancements and achieved notable progress in various sectors due to its workforce's capabilities, knowledge, and dedication. The contributions of human resources have played a pivotal role in driving economic growth, attracting investments, and fostering innovation. However, according to The Global Competitiveness Report in 2018, Vietnam placed 84th out of 137 countries in terms of the skills possessed by university graduates, while its innovation capacity was ranked 79th out of 134 countries [2]. These rankings reveal that human resources management in Vietnam should be paid more attention, especially in the fast-changing world. Since

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the success of a business is heavily contingent on human resources' effectiveness, which can be considered a source of value-creation [3].

One of the most efficient ways to communicate with employees and related stakeholders is transparency, especially in human resource management policy. The company can provide information on recruiting, training, salary, and other human-related issues, which can benefit employees and other stakeholders [4]. The higher level of voluntary disclosure of information regarding human resources will reduce information asymmetry and enhance transparency to stakeholders [5, 6]. Thanks to that, firms can enhance their reputation, mitigate risks, foster stakeholder trust, and ultimately drive sustainable value creation [7].

In addition, under the perspective of agency [8], signaling [9], and stakeholder theories [10], voluntary disclosure of human resources can increase firm value efficiently. In agency theory, Jensen and Meckling [8] reveal that transparency can reduce agency costs. Ross [9] proposes signaling theory proving that high-quality firms can disclose more information to signal about their actual value to the potential investors. Employing the stakeholder theory explanation [10], firms will obtain higher stock value if they volunteer to disclose beneficial activities for non-shareholder stakeholders more precisely. Human policy disclosure might create wealth based on the theoretical framework and the above arguments.

However, in recent years, most studies have focused environmental and social disclosure [11, 12] instead of human resources information or determinants of human policy disclosure [4]. A few studies try to discover the value-creation role of voluntary human policy disclosure, especially in an emerging market such as Vietnam. Given these literature gaps, the study examines the effect of human policy disclosure on firm value in the case of Vietnam.

The study contributes to the existing literature in two distinct. First, it provides evidence about the beneficial benefit of human policy disclosure on firm value. The positive impact can be explained well by agency, signaling, and stakeholder theorem. This finding implies that firms with transparent information on human resource policy can gain value creation as a reward from the stakholders'stakholders' group. Second, it is the very first outcome about the effect of human policy disclosure in Vietnam with an extensive dataset and suitable econometric methodology.

The subsequent sections of this paper are structured as follows: Section 2 offers a concise overview of the theoretical frameworks and prior studies relevant to the topic; Section 3 outlines the research methodology employed; Section 4 presents the empirical findings; and Section 5 concludes the paper and highlights avenues for future research.Literature review and Hypothesis Development

1.1. Literature review

Agency Theory: Jensen and Meckling [8] indicate that the principal employs people (agents) to perform some actions in their favor. Thereby, the owners have to delegate particular decision-making power to the managers. The agency problem appears because the agents might not act for the best benefit of the principals; they will earn their gains through corporate decisions [13-16]. The expression of agency problem is information asymmetry, moral hazard and adverse selection [17].

Information asymmetry arises when agents are better informed than the principals. If the managers hold crucial corporate information without disclosing it to shareholders, the information asymmetry between managers and shareholders increases. Consequently, the agents have more opportunities to exploit the information for personal benefit, or agency problems increase [8, 15, 17]. Anticipating all explanations from the agency theory, it is clear that information transparency can effectively decrease agency costs [18, 19].

Signaling Theory: The signaling theory in the labor market was first developed by Spence [20] and later extended and applied by Ross [9] to explain the phenomenon of voluntary disclosure in corporate reports. Companies that strive to reduce information asymmetry with investors adopt a proactive approach by disclosing more information than is legally mandated. This deliberate disclosure indicates the company's superior quality compared to its industry peers [9, 21].

Stakeholder Theory: A stakeholder is any group or person that might influence or be influenced by the achievement of an organization's purpose [22]. They are not only the financial claim holders but also workers, consumers, society, and state officials [10]. Stakeholder theory indicates that the manager should make decisions considering all the stakeholders' interests in a business [10, 21]. As a result, the need for voluntary disclosures has increased rapidly in recent years [23, 24]. As a firm achieves higher levels of transparency, it tends to generate greater satisfaction among diverse stakeholder groups.

Empirical Research: Regarding the effect of voluntary disclosure on firm value, many studies are trying to explain this problem. Many scholars reveal that non-financial disclosure reduces the firm's risk, agency cost [25, 26] and cost of capital [12, 27]. From the findings, we can anticipate a benefit of non-financial disclosure on firm performance. Clearer, some studies indicate that voluntary disclosure of information favors firm performance [11, 28, 29].

Considering the effect of human policy disclosure on firm valu, Cahaya and Hervina [30] and Alawi and Belfaqih [31] argue that disclosure satisfies the demand of creditors and shareholders on continuing sustainability. Han, Nasih [32] and Tjondro, Wijoyo [33] prove that human rights disclosure has enhanced firm value with case studies in Indonesia.

1.2. Hypothesis Development

The paper employs agency, signaling, and stakeholder theories to set the hypothesis on the effect of CSR on firm value. Agency theory [8, 18, 19] suggests that information disclosure serves as a mechanism to reduce information asymmetry. Therefore, increased transparency in areas such as human rights can discourage agents from diverting company resources, ultimately increasing firm value. Signaling theory posits that high-quality firms tend to disclose mandatory and voluntary information as a signal of their superior quality compared to their competitors [9, 21]. Based on this premise, more information, including disclosures related to human rights, will positively associate with firm value. Finally, stakeholder theory [10, 21] highlights the significant role of non-investor stakeholders, such as employees, in a firm's financial decision-making processes. Therefore, explicit disclosure of information regarding human resources contributes positively to the company's value. Moreover, empirical studies provide evidence that voluntary information disclosure helps to mitigate risk [25, 26] and lower the cost of capital [12, 27]. Recent papers of Han, Nasih [32] and Tjondro, Wijoyo [33], focusing on case studies in emerging markets, further support the favorable impact of human rights on firm value. Building upon these substantive arguments, we propose the following hypothesis regarding the impact of human policy disclosure on firm value:

Hypothesis: Human policy disclosure has a positive effect on firm value.

2. Research Methodology

2.1. Variable Measurement

Dependent variable: TOBINQ is calculated as the sum of the market value of common shares, book value of preferred shares and the book value of total liabilities divided by the book value of total assets [34]. TOBINQ is the ratio between market value of total assets and their replacement value. Since 2017,this proxy has been considered an extensive method to measure efficiency based on market profitability indicators as a proxy of firm value [35] [36]. Another variable is used for the robustness test is MB, which is calculated by dividing the ending-year closing stock price by its book value.

Independent varibale: The independent variable in this study is HPD (Human Policy Disclosure score). On October 6th, 2015, the Ministry of Finance implemented Circular 155/2015/TT-BTC, which provided instructions for information disclosure in the finance market. This circular introduced the requirement for sustainable development disclosure. Under this circular, companies must report on seven areas of sustainable development in their annual reports: raw material management, energy consumption, water consumption, environmental protection, employee policies, community responsibilities, and green capital activities. Since January 1st, 2021, Circular 96/2020/TT-BTC has replaced Circular 155; however, it largely retains the requirements related to sustainable development.

The methodology employed in this study for evaluating HPD derives from previous scholarly works [37-39]. The HPD score is assigned based on a comprehensive scoring system, raging from 0 to 2. A score of 2 signifies providing detailed monetary and quantity information on human policies, while a score of 1 represents the disclosure of general information. Conversely, a score of 0 indicates a complete absence of disclosed information related to human policies. This scoring approach ensures a systematic and quantitative assessment of the extent and quality of human policy disclosure within the sample companies.

Moreover, another proxy is applied to evaluate the disclosure level of firms, which is HPDD. HPDD is a dummy variable that equals 0 if firms do not disclose information about human policy and vice versa. HPDD will be used to evaluate voluntary disclosure percentage and re-test the research outcomes.

Control variable: This study incorporates several control variables: SIZE, LEV, ROA, AGE, and FA. The firm's size (SIZE) is measured using the natural logarithm of total assets. Prior research suggests a positive relationship between size and firm value [40]. Leverage ratio (LEV) is calculated by total debt divided by total equity. The impact of LEV on firm value remains a topic of debate in the literature [40-42]. Return on total assets (ROA) which represents profitability is computed by dividing earnings after tax by total assets. High profitable firms tend to be higher value [32, 43]. AGE is the amount of years after the firm became a Joint Stock company. The long-history corporations are more publicly visible [44]; thus, we expected older companies are associated with higher firm value. FA is fixed assets proportion over total assets. FA is expected to positively relate with firm value [45].

Table 1. Measurement of variables

Variable	Measurement
Dependent variable	
TobinQ	[(Market value of common shares + Book value of preferred shares)+Book value of total liabilities]/Book value of total asset
MB	Market value of common share / Book value of common share
Independent variables	
HPD	Human policy disclosure score, which is scored as 0, 1, 2.
HPDD	Human policy disclosure dummy, which is valued as 0,1.
Control variables	
SIZE	Natural logarithm of total assets
LEV	Total liabilities/ Equity
ROA	Earnings after tax / Total assets
AGE	Age of firm
FA	Fixed Assets/ Total assets

2.2. Dataset

Data was systematically collected from 374 non-financial listed firms in the Ho Chi Minh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX), two main stock markets in Vietnam, during the period spanning from 2010 to 2021. The financial information was extracted rigorously from the official financial statements of the respective firms, ensuring accuracy and reliability. Additionally, the historical transaction records were utilized to extract the stock prices, ensuring a comprehensive and robust dataset for analysis. Information on human policy disclosure is extracted from the firms' annual reports by the scoring method. Finally, we winsorize the dataset at 1% and 99% to eliminate the outliers.

2.3. Research Model and Econometric Methodology

Based on the previous studies [33, 46, 47], the research model is proposed as below:

$$\mathrm{TOBINQ_{it}} = \beta_0 + \beta_1\mathrm{HPD_{it}} + \beta_2\mathrm{SIZE_{it}} + \beta_3\mathrm{LEV_{it}} + \beta_4\mathrm{ROA_{it}} + \beta_5\mathrm{AGE_{it}} + \beta_6\mathrm{FA_{it}} + \text{Year dummies} + \text{Industry dummies} + \varepsilon_{it} \quad (1)$$

Additionally, the study employs the same model on dynamic panel data. Thus, the second model is as below:

$$\mathrm{TOBINQ_{it}} = \beta_0 + \beta_1\mathrm{TOBINQ_{it-1}} + \beta_2\mathrm{HPD_{it}} + \beta_3\mathrm{SIZE_{it}} + \beta_4\mathrm{LEV_{it}} + \beta_5\mathrm{ROA_{it}} + \beta_6\mathrm{AGE_{it}} + \beta_7\mathrm{FA_{it}} + \text{Year dummies} + \text{Industry dummies} + \varepsilon_{it} \quad (2)$$

This paper examines effect of vonluntary human policy disclosure both on panel data and dynamic panel data. We employ Ordinary Least Square (OLS), Fixed Effect (FE), Random Effect (RE), and Generalized Method of Moments (GMM) System.

3. Results and Discussion

Table 2 provides the descriptive statistics for all variables included in the analysis. The variable TOBINQ has an average value of 1.05, indicating that, on average, the market value exceeds the book value by 105% within the sample. The highest recorded value for TOBINQ is 3.35, while the lowest value observed is 0.38. Moving on to the variable MB, it exhibits a mean value of 2.01, with a minimum value of 0.21 and a maximum value of 9.19. The variable HPD has a mean of 0.47, representing the average level of human policy disclosure. HPDD's average value is 0.38 showing that 38% of the sample volunteer to disclose human policies.

Furthermore, the variable SIZE demonstrates a mean value of 27.27. Regarding LEV, the average value is 1.49, implying that, on average, the debt level surpasses the equity level by 149% within the sample. ROA exhibits a mean of 6%, with the highest recorded value at 26% and the lowest at -10%. The average value for AGE is approximately 13, indicating that most companies in the sample are relatively young. Lastly, the variable FA has a mean figure of 23%, denoting that, on average, firms allocate 23% of their investments to fixed assets.

Table 2. Descriptive Analysis

Variable	Obs	Mean	SD	Min	Max
TOBINQ	4,282	1.05	0.41	0.38	3.35
MB	4,231	2.01	1.67	0.21	9.19
HPD	4,368	0.47	0.68	0	2
HPDD	4,368	0.38	0.48	0	1
SIZE	4,230	27.27	1.39	23.83	30.84
LEV	4,227	1.49	1.37	0.05	7.46
ROA	4,226	0.06	0.06	-0.10	0.26
AGE	4,309	12.68	4.24	4	23
FA	4,276	0.23	0.19	0.001	0.83

Source: STATA

Table 3 presents the results of the correlation analysis. Significant positive correlations are observed between TOBINQ and HPD, TOBINQ and HPDD, as well as between MB and HPD, all at a significance level of 1%. Additionally, significant positive associations are found between SIZE, ROA, and AGE with HPD, all at a significance level of 1%. On the other hand, significant negative correlations are identified between LEV and HPD and FA and HPD, both at a significance level of 1%.

Table 3. Correlation Analysis

	TOBINQ	MB	HPD	HPDD	SIZE	LEV	ROA	AGE	FA
TOBINQ	**1**								
MB	0.722***	**1**							
HPD	0.227***	0.278***	**1**						
HPDD	0.193***	0.233***	0.915***	**1**					
SIZE	0.046***	0.147***	0.312***	0.271***	**1**				
LEV	-0.133***	-0.226***	-0.048***	-0.047***	0.221***	**1**			
ROA	0.493***	0.555***	0.103***	0.077***	-0.105***	-0.429***	**1**		
AGE	0.178***	0.189***	0.411***	0.451***	0.047***	-0.110***	0.024	**1**	
FA	0.036**	0.005	-0.049***	-0.085*	0.003	-0.066***	0.057***	-0.126***	**1**

****, **, *: significant level at 1%, 5% and 10%*

Source: STATA

Table 4 provides the regression analysis's outcome using OLS estimation on panel data. In the first model, the year and industry dummies are not included. The second model adds the set of year and industry dummies. In both models, HPD positively impacts TOBINQ at a 1% significant level. We employ the FE and RE models to eliminate the OLS's bias. The findings of the two estimation methods are represented in Table 5.

Table 4. Effect of Voluntary Human Policies Disclosure on Firm Value: OLS estimation with panel data

Dependent variable	TOBINQ	TOBINQ
HPD	**0.338*** **	**0.055*** **
	(0.009)	(0.010)
SIZE	**0.013*** **	**0.005**
	(0.004)	(0.005)
LEV	**0.039*** **	**0.041*** **
	(0.004)	(0.005)
ROA	**4.061*** **	**3.953*** **
	(0.106)	(0.104)
AGE	**0.012*** **	**0.003**
	(0.001)	(0.002)
FA	**0.065** **	**0.084*** **
	(0.028)	(0.030)
Cons	**0.185**	**0.470*** **
	(0.114)	(0.126)
R^2	**0.339**	**0.409**

Adj R^2	**0.338**	**0.403**
Year Dummies	No	Yes
Industry dummies	No	Yes

****,**, *: significant level at 1%, 5% and 10%*

Source: STATA

Table 5 displays the regression results obtained using the Fixed Effect (FE) and Random Effect (RE) estimation methods. The first two models are estimated without including year dummies, while the subsequent models incorporate a set of year dummies. The results of the Hausman tests indicate that the FE method outperforms the RE method in two instances. Notably, the FE estimation confirms the continued positive impact of HPD on TOBINQ.

Table 5. Effect of Voluntary Human Policies Disclosure on Firm Value: FE, RE estimation with panel data

Method	**FE**	**RE**	**FE**	**RE**
Depedent Variable	**TOBINQ**	**TOBINQ**	**TOBINQ**	**TOBINQ**
HPD	**0.040*****	**0.051*****	**0.286*****	**0.041*****
	(0.010)	(0.010)	(0.010)	(0.010)
SIZE	**0.009**	**0.017****	**0.014**	**0.016****
	(0.013)	(0.007)	(0.012)	(0.007)
LEV	**0.030*****	**0.027*****	**0.027*****	**0.025*****
	(0.007)	(0.006)	(0.006)	(0.005)
ROA	**2.686*****	**3.030*****	**2.497*****	**2.884*****
	(0.121)	(0.113)	(0.115)	(0.109)
AGE	**0.018*****	**0.017*****	**-0.025*****	**-0.001**
	(0.002)	(0.002)	(0.007)	(0.004)
FA	**-0.066**	**0.002**	**-0.025**	**0.033**
	(0.048)	(0.039)	(0.045)	(0.038)
Cons	**0.351**	**0.125**	**0.695****	**0.428****
	(0.341)	(0.199)	(0.330)	(0.199)
R^2	**0.312**	**0.328**	**0.286**	**0.366**
Year Dummies	No	No	Yes	Yes
Chi Square	98.280			104.8
p-value	0.000			0.000

****,**, *: significant level at 1%, 5% and 10%*

Source: STATA

Subsequently, we employ the Ordinary Least Squares (OLS) estimation method on dynamic panel data to reexamine the impact of HPD on TOBINQ. The first model does not include a set of dummies. The findings consistently indicate a significant positive effect of human policy disclosure on firm value, supported at a significance level of 1%.

Table 6. Effect of Voluntary Human Policies Disclosure on Firm Value: OLS estimation with dynamic panel data

Depedent Variable	TOBINQ	TOBINQ
L1.TOBINQ	**0.676*****	**0.696*****
	(0.013)	(0.012)
HPD	**0.028*****	**0.020*****
	(0.007)	(0.007)
SIZE	**0.008****	**0.003**
	(0.003)	(0.003)
LEV	**0.019*****	**0.021*****
	(0.003)	(0.003)
ROA	**1.635*****	**1.617*****
	(0.094)	(0.088)
AGE	**0.094*****	**0.002**
	(0.001)	(0.001)
FA	**0.008**	**0.028**
	(0.021)	(0.022)
Cons	**-0.165***	**-0.205****
	(0.089)	(0.096)
R^2	**0.634**	**0.693**
Adj R^2	**0.633**	**0.689**
Year Dummies	No	Yes
Industry dummies	No	Yes

****, **, *: significant level at 1%, 5% and 10%*

Source: STATA

In order to mitigate potential endogeneity issues, the study utilizes GMM system methods. Table 7 presents the results obtained from both the one-step GMM system and two-step GMM system approaches. The findings consistently support the research hypothesis, indicating a significant and positive impact of Human Policies Disclosure on firm value, as measured by TOBINQ. Moreover, the AR(2) test and Hansen test results confirm the validity and appropriateness of the models employed in the analysis. Therefore, based on the comprehensive set of estimations, the study provides robust evidence to support the hypothesis that *Human Policies Disclosure positively influences firm value.*

Table 7. Effect of Voluntary Human Policies Disclosure on Firm Value: GMM SYSTEM estimation

Depedent Variable	**TOBINQ**	**TOBINQ**
Method	**1 STEP**	**2 STEP**
L1.TOBINQ	**0.552*****	**0.504*****
	(0.047)	(0.058)
HPD	**0.036*****	**0.036*****
	(0.010)	(0.013)
SIZE	**0.009***	**0.012****
	(0.005)	(0.006)
LEV	**0.005*****	**0.027*****
	(0.004)	(0.005)
ROA	**2.059*****	**2.045*****
	(0.187)	(0.233)
AGE	**0.013*****	**0.011*****
	(0.001)	(0.002)
FA	**0.017**	**0.015**
	(0.026)	(0.031)
Cons	**-0.116**	**-0.142**
	(0.124)	(0.157)
AR(2)	**0.232**	**0.224**
Hansen	**0.527**	**0.527**

****,**, *: significant level at 1%, 5% and 10%*

Source: STATA

Furthermore, the study reveals that variables such as ROA, LEV, and AGE positively impact TOBINQ, indicating their significant contribution to firm value. However, the effect of SIZE on TOBINQ remains inconclusive and requires further examination in future research. Surprisingly, the analysis does not find a significant association between FA and firm value, suggesting that the impact of FA on TOBINQ is negligible. This unexpected finding prompts additional investigation and consideration in future studies.

Robustness Test: We replace TOBINQ with MB as the dependent variable in the main models, considering both panel data and dynamic panel data. The results consistently support our earlier conclusion regarding the positive impact of HPD on firm value, even when using MB as the alternative measure.

Table 8. Robustness Test 1

Depedent Variable	**MB**			
Method	**OLS**			
L1.MB			**0.665*****	**0.708*** **
			(0.012)	(0.011)
HPD	**0.300*****	**0.297*****	**0.110*****	**0.091*****
	(0.035)	(0.037)	(0.025)	(0.025)
SIZE	**0.215*****	**0.198*****	**0.093*****	**0.075*****
	(0.005)	(0.017)	(0.012)	(0.012)
LEV	**-0.009**	**0.007**	**0.011**	**0.025****
	(0.017)	(0.017)	(0.012)	(0.012)
ROA	**16.995*****	**16.263*****	**7.255*****	**6.953*****
	(0.405)	(0.392)	(0.339)	(0.309)
AGE	**0.049*****	**0.046*****	**0.048*****	**0.011****
	(0.005)	(0.007)	(0.004)	(0.005)
FA	**-0.068**	**0.013**	**-0.056**	**0.004**
	(0.105)	(0.111)	(0.077)	(0.073)
Cons	**-5.556*****	**-4.649*****	**-2.963*****	**-3.023*****
	(0.433)	(0.479)	(0.322)	(0.328)
Year dummies	No	Yes	No	Yes
Industry dummies	No	Yes	No	Yes
R^2	**0.424**	**0.423**	**0.708**	**0.765**
Adj R^2	**0.423**	**0.491**	**0.707**	**0.763**

****, **, *: significant level at 1%, 5% and 10%*

Source: STATA

Next, the main independent varibale is replaced by HPDD. AGE is replaced by the log value of age (LOGAGE). The outcome once remains that voluntary human policy disclosure improves the firm value. Additionally, the impact of firms' age on TOBINQ is still positive.

Table 9. Robustness Test 2

Depedent Variable	**TOBINQ**				
Method	**OLS**	**FE**	**RE**	**GMMSYS 1STEP**	**GMMSYS 2STEP**
L1.TOBINQ	**0.714*****	**0.467*****	**0.644*****	**0.554*****	**0.503*****
	(0.012)	(0.016)	(0.013)	(0.046)	(0.057)
HPDD	**0.032*****	**0.031*****	**0.035*****	**0.043*****	**0.033****
	(0.010)	(0.012)	(0.011)	(0.013)	(0.016)
SIZE	**0.006*****	**-0.0003**	**0.005**	**0.011****	**0.015****
	(0.003)	(0.012)	(0.004)	(0.005)	(0.006)
LEV	**0.019*****	**0.022*****	**0.020*****	**0.022*****	**0.027*****
	(0.003)	(0.006)	(0.004)	(0.004)	(0.005)
ROA	**1.592*****	**1.599*****	**1.718*****	**2.071*****	**2.072*****
	(0.087)	(0.111)	(0.093)	(0.190)	(0.234)
LOGAGE	**0.039****	**-0.102***	**0.038***	**0.162*****	**0.145*****
	(0.017)	(0.054)	(0.021)	(0.016)	(0.018)
FA	**0.019**	**-0.047**	**0.017**	**0.024**	**0.020**
	(0.020)	(0.044)	(0.024)	(0.026)	(0.031)
Cons	**-0.317*****	**0.421**	**-0.234****	**-0.408*****	**-0.442*****
	(0.091)	(0.336)	(0.114)	(0.131)	(0.165)
Year dummies	**YES**	**YES**	**YES**	**NO**	**NO**
R^2	**0.689**	**0.661**	**0.688**		
Hausman Test					
Chi2			*359.24*		
p-value			*0.000*		
AR(2)				**0.229**	**0.219**
Hansen				**0.452**	**0.452**

****,**, *: significant level at 1%, 5% and 10%*

Source: STATA

4. Conclusion

The study provides strong and robust evidence demonstrating that voluntary human policy disclosure positively influences firm value in the context of Vietnam, an emerging economy. These findings offer compelling insights into the significance of voluntary non-financial information disclosure. The study confirms the wealth-creating role of human resource policies information, aligning with the principles of agency [8], signaling [9] and stakeholder [10] theories. Moreover, this study fills the research gap by utilizing a Vietnamese dataset and providing more precise evidence supporting recent studies.

Based on these findings, managers in listed firms should pay more attention to disclosing human policy information. The investors can employ the outcomes in choosing the better stocks, and the authority can utilize the study's findings to impose more detailed policies on information disclosure.

Regarding some limitations, two aspects might affect the outcomes. Firstly, excluding certain control variables of ownership and growth could have affected the findings. Given the unique ownership structure in Vietnam, particularly the significant role of the state, and the recent influx of foreign direct investment, both state ownership and foreign ownership may have impacted both the dependent and independent variables. Secondly, the absence of official data on sustainable reporting in Vietnam has affected the data collection process. This lack of data has implications for the study's ability to capture the complete picture. By improving those limitations, the study can be expanded by adding more control variables and a more detailed scoring method with HPD.

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PART 10.
EDUCATION
& SOCIOLOGY

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Factors Affecting Students' Online Learning Satisfaction – Empirical Evidence at FPT Polytechnic Danang

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ABSTRACT

This paper is the first to investigate factors affecting tertiary students' satisfaction with online learning in Danang. While a number of previous papers have studied this issue at higher educational institutions in several locations in Vietnam, including Hanoi, Ho Chi Minh City, Dong Nai, and Quang Nam… none was conducted at institutions in Danang. Survey data of 189 students at FPT Polytechnic Danang is collected. EFA and regression are conducted for data analysis using SPSS. Our result indicates that three factors, namely characteristics of the lecturer, quality of the online learning technology, and student online learning self-efficacy, positively and significantly impact students' online learning satisfaction. This result has important practical implications.

Keywords: Online learning; student satisfaction; online learning technology; student self-efficacy

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Unveiling the Influence of Historical Films on Vietnamese Viewers: Insights from In-depth Interviews on Viewer Engagement and Cultural Connections

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ABSTRACT

This qualitative study examines the impact of historical movies on viewer engagement, place attachment, and behavioral intentions in Vietnam. Despite the limited presence and quality of historical movies in the local film industry, this research demonstrates that they can foster place attachment and inspire various behavioral intentions, such as visiting depicted locations, participating in national holidays, consuming related cultural products, and engaging in historical research. With analysis of 18 in-depth interviews, the study identifies elements such as plot twists, costumes, settings, and sounds that enhance viewer engagement. These findings provide valuable insights for the collaboration between the government and filmmakers to improve the development of historical movies in Vietnam. Furthermore, the study contributes to the existing body of research in the field of historical films and offers a foundation for future studies in this area. By understanding the influence of historical movies, stakeholders can work towards enhancing the cultural significance and appreciation of these films in Vietnam.

Keywords: historical movies; movie identity coherency; movie engagement; place attachment; behavioral intention

1. Introduction

The indifference towards Vietnam's history and the prevalence of misconceptions among the younger generation are concerning issues. A 2015 national television broadcast revealed that many students were unaware that Quang Trung and Nguyen Hue are two names for the same historical figure (VTV 24H, 2015). Low average scores in high school history exams, with over 70% of students performing below average, reflect the alarming disinterest in traditional history learning among

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Vietnamese youth (Lan Anh, 2020). Paradoxically, many young individuals demonstrate greater familiarity with the histories of other nations, particularly through online groups addicted to Chinese historical dramas. These groups analyze Chinese history extensively, presenting a comprehensive understanding comparable to cultural experts. To address the issue, it is crucial to discover and widely apply approaches to history that naturally enhance people's understanding. By doing so, concerns about the potential fading of Vietnam's glorious history can be mitigated. Promoting engaging, accessible, and relatable methods will foster a sense of pride and appreciation, preserving the rich historical heritage for future generations. Countries worldwide, including China, a prominent film production nation (McPhail & Phipps, 2019), have effectively used cinema as a channel to transmit national history. Historical films, in particular, serve as a cultural product that conveys the essence of a nation. They familiarize and provide a profound understanding of various histories to global audiences. Embracing the power of historical films, Vietnam can effectively promote its own history and engage audiences on a deep level.

Vietnam's movie industry is on the rise but still faces many difficulties and challenges. In the past decade, Vietnam's successful movies abroad have predominantly been independent productions, often backed by international support or private investors. Vietnam has actively participated in regional and international movie festivals, garnering recognition and accolades. In the context of international integration. Nevertheless, Vietnamese movies are still facing constant challenges. While some Vietnamese movies have been introduced to international audiences, such as "Living in Fear", "Pao's Story" and "The Floating Lives", they have primarily been sold to local TV stations rather than screened in foreign cinemas. The number of Vietnamese movies picked up by international distributors remains limited, with notable examples including the action movie "Furie" and the horror movies "Kuman Thoong" and "Face Off 4: The Walking Guests" (VOV World, 2020). Director Luong emphasized the need for increased investment in the Vietnamese movie industry. The question posed here is, why is it that in the same region, the movie industry of other countries has developed rapidly on a global scale, while Vietnam continues to face obstacles and difficulties, particularly in the genre of historical movies, which have the powerful ability to promote national identity?

Movie is cultural product, we can learn about the history, culture and traditions of other countries through it. It is a medium for storytelling, expression, and representation of cultures, values, and beliefs (P. B. Weinstein, 2001). Movie has the ability to shape and reflect society, as it presents images and narratives that can influence the way people think and feel about certain issues. Furthermore, it has the potential to foster a feeling of community and a sense of belonging among viewers who have common cultural backgrounds or shared experiences. Interestingly, there has been a fascination among younger generations in Vietnam with historical cultural products. Historical elements in art products, such as the music video "Khong the cung nhau suot kiep" (translated title: “Can’t be together forever”) by Hoa Minzy, have captivated a wide audience and sparked discussions about Vietnam's past. The integration of historical content in the music video has successfully introduced Vietnamese historical elements to young viewers, generating interest in figures like Queen Nam Phuong and King Bao Dai. This popularity is evident in the song's high rankings on YouTube and its international recognition. Similarly, other artists like Hoang Thuy Linh, OnlyC, Bich Phuong, Bui Lan Huong, and Duc Phuc have creatively combined folklore and modern music, revitalizing historical narratives and providing audiences with new cultural experiences. The allure of Vietnam's rich and intricate history, combined with increased access to historical information through the Internet and social media, has kindled a renewed interest in historical cultural products. Moreover, these creations foster a sense of national pride and identity, strengthening the Vietnamese community (Linh Chi, 2022).

Vietnam's historical film industry lags behind global and regional counterparts, with limited production and lackluster audience reception. Existing films often serve as mere educational aids, failing to captivate viewers. In recent years, fewer than 10 Vietnamese historical films have been released, often mired in controversy. The root of this issue lies in the challenges faced by Vietnamese historical films, including heavy reliance on state funding, prioritizing propaganda over artistic merit. This hampers their ability to attract audiences, independent of the disinterest of young people in national history. To succeed, Vietnamese historical films must adopt bolder approaches, encompassing innovative thinking, compelling content delivery, and audience engagement. They must become a vital source of cultural enrichment for Vietnamese audiences, preventing the dominance of foreign historical films and preserving the memory of our own history.

The impact of historical movies on society extends beyond entertainment, as they convey the filmmaker's interpretation of history and create immersive visual experiences that resonate with the depicted locations. However, the limitations surrounding Vietnamese historical movies call for comprehensive research on their identity and their influence on the behavioral intentions of cultural consumers towards Vietnamese cultural products. This study aims to address these limitations by investigating the behavioral intentions of audiences after watching historical films and exploring the key antecedents that shape these intentions. Additionally, it seeks to evaluate the extent to which significant factors influence the behavioral orientation of cultural consumers. By answering these research questions, this study aims to shed light on the role of historical movies in shaping cultural consumption patterns in Vietnam.

2. Literature review

2.1. Cultural products

Basically, a cultural product is anything that symbolizes the values, beliefs, and traditions of a particular culture. It is the birthplace of a distinctive collection of goods and values, ranging from manufactured goods that enable consumers to create distinctive forms of individuality, self-affirmation, and social display (such as fashion clothing or jewelry) to entertainment, edification, and information (such as motion pictures, recorded music, print media, or museums) (Scott, 2004). Along with tangible products like artifacts, clothing, books, and food, cultural products also includes intangible offerings (i.e., music, theater, visual arts…) with symbolized features can define and form identities (Happy Sharer, 2023). They can be applied to promote a sense of belonging and to create social and cultural borders. In some ways, culture is the condensation of the glories that were created during a particular historical moment or over the course of numerous historical periods, which convey the social context's imprints (Kesebir & Kesebir, 2017). Culture serves as a "witness to history" since it depicts the growth and development of civilization.

Based on the above-revised definition of Scott (2004), a movie, which belongs to the group of entertainment, can be considered to be a cultural product. No matter the length of the movie or the genre, they have at least incorporated a cultural good or value. The movie depicts cultural themes through the language, gestures, and actions of the characters as well as by imposing, understated, or dazzling lyrical settings (Sankowski, 1999). The movie's content is authentic and significant since it is drawn from human civilization (Lees, 2016). The movie is not a dead product. It has moving pictures and sounds that profoundly affect viewers' ideas and emotions (Tan, 1995).

2.2. Historical movies

The majority of movie and history theories concur that the historical movie genre is a trustworthy source of information from the past (Rosenstone, 2006). Though there has been a substantial amount of research, there have not been many attempts to develop definitions for historical movies (Rosenstone & Parvulescu, 2013). The majority of researchers refer to historical movies as those that are purposefully set in the past. This definition, however, is so ambiguous and inclusive that relying on a simple definition like this will make it difficult to discern between different movie genres. To clearly separate movie genres from each other, researchers must not only be able to define what a historical movie is but also be able to identify its components. Otherwise, the appearance of the movie genre known as historical movies would be infrequent due to the conceptual ambiguity illustrated by the above classification of Korean movies.

Essential theories to differentiate between different movie genres have been put out in many studies that the genre discernment is mainly based on the setting's date, the plot's details, and the legitimacy of the tale, etc (Burgoyne, 2008; Davis, Dickinson, Patti, & Villarejo, 2015; Rosenstone, 2006). The movies to be expelled from the historical movie genre will be those that do not provide audiences with any actual historical knowledge, or, to put it another way, do not help them comprehend the past (V. Weinstein, 2014). The addition of these further components to the concept of historical movies has improved the categorization process. Ironically, historical movie classifications vary greatly among theorists, primarily due to their contradictory genre approaches (Rosenstone, 2006). Consequently, there is no precise definition of what constitutes a historical movie.

Utilizing the movies' purposes as a criterion is another way to categorize historical movies. According to Landy (2001), historical movies serve the purpose of reenacting historical events. The events that are recreated can be as large scale as wars of the size of a whole nation or the globe, or they can be as banal as stories from daily life as long as they genuinely take place. Similarly, Rosenstone and Parvulescu (2013) believe that historical movies can be used as retellings of events that happened before the year in which the movie was produced. According to the theory, the event aspect that was replicated in the movie constitutes the mainspring and focal point of the whole thing. These events will be emotionally enhanced and conveyed to the viewer through “plots”, which can be fictional (Burgoyne, 2008). In short, the historical movie combines real-life occurrences with made-up plot elements.

The film itself is frequently labeled in a variety of ways. The split of film into “movie” and “drama” is one of them. It is a categorization that is widely accepted by the public and even used in important movie award ceremonies held in several nations and throughout the world, for example, the Baeksang Arts Awards, which is one of the three oldest and most prestigious movie awards in Korea. However, for this research, rather than selecting the most general to observe and examine, we decided to confine the study to the subject of just movies. This is due to the fact that the majority of historical movies in Vietnam fall under the category of movies, which have a short running time instead of having several episodes like dramas. Moreover, individuals at this time tend to favor fast-moving consumer goods. This is vividly demonstrated by the number of people using Tik Tok, which is a platform that specializes in providing short videos that have been noticeably growing.

The historical movie genre itself has a wide variety of subgenres. In this research, we opt for five among them based on their familiarity with Vietnamese audiences and their accessibility, which are biographical movies, historical epic movies, costume drama movies, war movies, and historical fiction movies. Table 1 shows a brief explanation for each of those, along with some well-known Vietnamese movies that represent it.

Table 1. Historical movies' subgenres

Subgenres	**Characteristics**	**Vietnamese movies**
Biographical movies	Focus on the life and achievements of a historical figure (i.e., famous politician, artist, inventor)	Em va Trinh (2022), Long Thanh Cam Gia Ca (2010)
Historical epic movies	Cover a broad span of history and follow the journeys of multiple characters with large-scale battle scenes and elaborate sets and costumes.	Dem hoi Long Tri (1989), Dat nuoc dung len (1995)
Costume drama movies	Be set in a particular historical period and focus on the daily lives and customs of the people who lived during that time with elaborate costumes and settings.	Xich lo (1995), Bao gio cho den thang Muoi (1984), Ao lua Ha Dong (2006), So Do (1990), Co Ba Sai Gon (2017)
War movies	Focus on military conflicts and the involved people, depict the brutality of war and its impact on soldiers and civilians.	Noi gio (1966), Canh dong hoang (1979), Em be Ha Noi (1974), Mui co chay (2012)
Historical fiction movies	Be based on historical events but take some creative liberties with the facts to tell a compelling story	Thien menh anh hung (2012), Khat vong Thang Long (2010)

Source: Compiled by author based on Landy (2001)

2.3. Movie identity coherency

Identity is the culmination of all the emotional and cognitive components that enable humans to recall and distinguish one item from numerous subjects. This concept highlights the distinctive characteristics that make up a particular living thing, whether it be a person or object. From this overarching idea, we may deduce that a movie's identity coherency is the conjugation of elements that have enough influence to create the identity of a movie, making it simpler for a movie to stick in viewers' minds. Elements of movie identity coherency are characters, production house, setting, plot, mise-en-scene, etc. These elements work together to draw viewers to a movie they would enjoy, to draw them into the movie as they watch it, and to imprint the movie in their minds for the rest of their lives. In other words, the before-during-after process of consuming a movie will be significantly impacted by the coherence of the movie's identity. Furthermore, viewers are less likely to encounter "category confusion" when they believe a movie's identity is coherent (Zhao, Ishihara, & Lounsbury, 2013). If a movie successfully represents a certain genre, it will help the genre reach higher positions in the movie industry and may even encourage moviemakers to venture into markets with finicky audiences. According to (Kohli, Yen, Alwi, & Gupta, 2021), a movie's components jointly define its identity rather than necessarily dictating its position.

2.4. Movie engagement

We can grasp the meaning of "movie engagement" in the most general concept, which is "engagement". Engagement is a psychological procedure that demonstrates the methods by which a first-time consumer acquires loyalty and keeps it sustained for repeat purchases of a service brand (Bowden, 2009). Although the concept of engagement is covered in several business and management studies, it has recently appeared in marketing literature. Many scholars (Brodie, Ilic, Juric, & Hollebeek, 2013; Kumar & Pansari, 2016; Vivek, Beatty, & Morgan, 2012) termed it as "consumer engagement" or "customer engagement". "Consumer engagement" is described as a multidimensional concept that includes cognitive, emotional, and behavioral dimensions (Brodie et al., 2013). It is crucial to the process of relational exchange because interactive engagement processes within the brand community use other relational concepts as engagement antecedents or outcomes. Similarly, "customer engagement" refers to a state of motivation that arises from customers' collaborative, interactive encounters with an object in focused brand interactions (Brodie, Hollebeek, Jurić, & Ilić, 2011), equivalent to customers' level of physical, mental, and emotional involvement in their interaction with a service organization (Patterson, Yu, & De Ruyter, 2006). Otherwise, (Kumar et al., 2010) have conceptualized "customer engagement" as the customers' behaviors having an impact on a firm's performance. Vivek et al. (2012) share the same viewpoint as Brodie; however, they not only explain "customer engagement" as the degree to which a person engages with and connects with the offerings and activities of the company but also clarify the further factor, motivation, which plays an important role in categorizing consumer engagement into two types, comprising personal engagement and interactive engagement.

From various research mentioning "engagement" and "engagement"-related concepts, we can understand that "movie engagement" is the intensity consumers/cultural audiences show their physical, mental and behavioral dedication to movies throughout the interaction and motivation-stimulated process. While personal engagement that is driven by intrinsic motivation entails interacting with the content to find inspiration and excitement, interactive engagement, motivated intrinsically and extrinsically, refers to connecting and taking part in the community through the interaction with the content and people to gain the same (Oh, Roumani, Nwankpa, & Hu, 2017). In the age of the virtual community booming, interactive engagement is superior to personal engagement (Castillo, Benitez, Llorens, & Luo, 2021). Putting in the context of the movie industry, personal movie engagement may include watching the movie or reading related content, while discussing the plot is a vivid example of interactive movie engagement.

2.5. Place attachment

Attachment is firstly defined as an emotion-laden target-specific bond between a person and a specific object (Bowlby, 1980). In other words, it is a tight relationship between the self and a specific property (Thompson, 2008). Various objects have been indicated to be emotionally connected to oneself, one of which is places (Rubinstein & Parmelee, 1992), or places of residence (Hill & Stamey, 1990). This emotional bond becomes stronger when people find the place easily recognizable and significant to themselves. However, the concept of place attachment does not stop at the mental link between people and places, it moreover mentions the physical attachment of individuals to places. (Proshansky H, 1983) give the meaning of place attachment as the attachment in which affects and emotions, knowledge and beliefs, behavior and actions are intertwined. Since place attachment emphasizes the place-people interaction (Baldwin, Keelan, Fehr, Enns, & Koh-Rangarajoo, 1996), the more the involvement and connection between individuals and objects or activities, the more people are attached to places. Because of the behavior-related nature of place attachment, this concept has been mostly used in tourism studies (Veasna, Wu, & Huang, 2013). Nevertheless, its application in the movie industry has become so ambiguous that no study has revealed the effect of place attachment in the association of movies and consumers' behavioral intentions.

Place dependence and place identity were utilized as two measuring constructs in the study of place attachment and feeling of place (Moore & Graefe, 1994). Both place dependence and place identity are concerned with the so-called "experience" of customers to places and the level they are involved in those. People develop place dependence when they clearly sense the value/performance of a specific place in comparison with comparable ones based on physical and functional facets, which is drawn only when experiences exist (Chen, You, Lee, & Li, 2021). The significant role of experience is additionally appreciated when Rapoport (1977) indicates that a place's identity is determined by the emotional and physical ties that are forged between someone and the place. Owing to the place-person interaction in place attachment, it not merely impacts effectively on place identity but also people identity or group identity (Relph, 1976). The significance of a place in terms of serving as a symbol for feelings and connections that give life meaning and purpose and represent a sense of belonging expresses some parts of a person or group.

2.6. Behavioral intentions

Emotional bonds have a profound influence on the investment of people in objects, which means the willingness to put themselves in the activities and behavioral intentions. Much practical research has demonstrated the effect of movies on behavioral intentions and the most outstanding one is movie-induced tourism, which implies the rise in traveling needs thanks to images in movies. Theoretical and empirical studies have consistently shown the positive influence of movies in motivating viewers to travel to the locations featured in the movie (Beeton, 2005; Hudson & Ritchie, 2006; Riley & Van Doren, 1992).

Due to the fact that the travel-related behavioral intentions inspired by movies may be overpowering, the majority of study on the subject merely ends with this behavioral intention.

However, many other worthwhile behavioral intentions should also be taken into account for the high value that cultural goods offer. The real numbers also back up this claim when it comes to the greater social good that movies have on society than is often recognized. Typically, many research show that Korean or Chinese historical movies have been successful in promoting this nation's image to friends around the world when their distinct culture is warmly appreciated. Also, the demand for the costumes and food featured in the movie significantly increased after it was released.

3. Methodology

In this study, we employed a qualitative research approach. It involved in-depth interviews to explore behavioral intention concepts and movie identity elements. The qualitative research approach is one in which the inquirer often makes information claims based essentially on constructivist perspectives (i.e., the numerous implications of personal experiences, meanings socially and truly developed with an expectation of developing a hypothesis or design) or advocacy/participatory perspectives (i.e., political, issue-oriented, collaborative. or alter oriented) or both. It also uses strategies of inquiry such as narratives, phenomenology, ethnographies, grounded hypothesis considers, or case studies. The researcher collects open-ended, developing information with the primary expectation of creating topics from the information (Creswell & Plano Clark, 2010).

Previous studies on the relationship between historical movies and behavioral intentions have exhibited certain limitations. Firstly, these studies predominantly focused on tourism-related behaviors, neglecting other potential behavioral outcomes influenced by historical movies. Secondly, a comprehensive examination of the elements comprising the identity of historical movies was lacking. In order to address these gaps, we employ a qualitative approach to delve deeper into the perception and behavioral intentions of cultural audiences, while also exploring the key elements that contribute to the identity of historical movies.

In March 2023, we conducted face-to-face interviews with 18 respondents, employing non-probability sampling techniques such as convenience sampling, judgment sampling, and snowball sampling. The sample size was determined based on reaching the saturation point, ensuring comprehensive data collection. All interviewees had prior experience with Vietnamese historical movies within the past 6 months. The selected interviewees represented a diverse range of age, gender, occupation, and academic backgrounds, providing valuable perspectives on historical movies and cultures. To initiate the interviews, interviewers contacted the respondents via phone or messaging, explaining the research purpose and requesting appointments. Each interview lasted approximately 60 minutes on average. The responses were coded and analyzed to extract meaningful information. Duplicate or inconsistent information was removed, and the remaining data were transformed into relevant items to establish and refine the concepts explored in this study.

4. Results and discussions

The interview sample consisted of a higher number of female respondents, surpassing the number of male participants. The age distribution revealed that the 15-23 age group constituted the largest segment, accounting for 38.9% of the participants, followed by the 24-33 age group representing individuals born in the 1990s, comprising 27.8% of the sample. Notably, despite having limited exposure to Vietnamese historical films, the 15-23 age group, including those born in the 2000s, demonstrated significant interest compared to other age groups, such as the 34-43-year-old

(8X generation group). This highlights the attention that young people are giving to Vietnamese historical films, even in their disadvantaged position relative to other film genres in the market.

Furthermore, a substantial portion of respondents (44.4%) belonged to the low-income group, earning below 10 million VND. Interestingly, lower-income individuals were found to watch films more frequently compared to those with higher incomes, indicating that the decision to watch movies is not influenced by wealth. This aligns with the trend of moviegoers opting for illicit websites or movie streaming apps that offer free or affordable viewing options (refer Table 2).

Table 2. Interviewees' profile

Interviewee	Age	Gender	Occupation	Income
A	19	Female	University student	< 5 million VND
B	20	Female	University student	< 5 million VND
C	20	Female	University student	5-10 million VND
D	20	Female	University student	< 5 million VND
E	21	Male	University student	5-10 million VND
F	21	Male	Freelancer	< 5 million VND
G	22	Female	Content creator	10-15 million VND
H	27	Female	Teacher	5-10 million VND
I	30	Male	Pharmacist	15-20 million VND
J	31	Female	Journalist	10-15 million VND
K	32	Male	Bank officer	> 20 million VND
L	32	Female	Architect	15-20 million VND
M	34	Male	Tour guide	> 20 million VND
N	35	Male	Event manager	10-15 million VND
O	42	Female	Businesswoman	> 20 million VND
P	44	Female	Teacher	15-20 million VND
Q	47	Female	Accountant	15-20 million VND
R	59	Female	Retiree	< 5 million VND

Source: Compiled by the authors

Motivations and Influences

Before delving into the elements that contribute to movie engagement, it is crucial to understand the intrinsic and extrinsic factors driving movie-watching motivation. The findings reveal a combination of internal and external factors shaping this motivation. A common response among participants is their desire to gain a deeper understanding of historical events, lives, social revolutions, and the fate of individuals. This fascination often arises from reading novels, tales, and other cultural products, or from participating in educational activities such as history classes, national defense training, and literary studies.

Additionally, the film's popularity on social media plays a significant role in customers' decisions to watch Vietnamese historical films, given the advancements in the digital era. Customers who frequently come across a film online exhibit curiosity and assess the movie's worthiness and suitability based on the film poster and trailer. While word-of-mouth recommendations from others were less common, a few participants mentioned being influenced by them, even if historical films were not their usual genre of choice. They perceive recommendations from friends as more reliable than movie evaluations posted on social media.

Overall, the findings highlight the diverse motivations and influences that drive individuals to watch Vietnamese historical films, including personal interests in history, exposure to related cultural products, engagement in educational activities, and the impact of social media popularity.As previously established, movie identity coherency refers to the characteristics that make a film distinctive or aid in recall. In addition to the elements found in previous studies in the role of building a film's identity, such as plot, actors/actresses, production house, and acting skills, we discovered new elements such as soundtracks, plot twists, costumes, setting, and the artwork or historical figures the film is inspired by. The most frequently stated of those is costume. It is said as the most powerful "weapon". According to respondent A: "*A historical film with gorgeous clothes accurately depicting the proper historical time will succeed in impressing me. Contrarily, controversial and historically inaccurate outfits will also stick in my memory of the movie forever, maybe even negatively*". Fans are often deeply affected by stunning costumes; "Phuong Khau" is a classic illustration of this. In truth, though, there are not many Vietnamese movies that can pull this off. Respondent B provided us with an illustration to clarify the significance of historical characters. He would immediately think of Trinh Cong Son, the character who served as the inspiration for the Victor Vu film "Em and Trinh," who has been a priceless figure for many generations. Soundtracks act as a link between the emotional content of a film and its audience. Despite the fact that many films include content that is debatable or contains moments that are disjointed, the film is remembered because of its strong soundtracks.

Emotional Attachment and Diverse Behavioral Intentions

The respondents' comments overwhelmingly revealed a strong emotional attachment to the locations portrayed in the films. After watching the movies, viewers expressed a desire to visit these places, gain a deeper understanding of their history and values, develop nostalgia, and engage in self-exploration. They formed unique connections and experienced specific emotions related to the depicted locations and characters. One respondent expressed pride in their nation and birthplace after watching a particular historical film.

Previous studies often focused solely on the influence of historical films on travel-related behavioral intentions, neglecting other behavioral aspects. However, our research has demonstrated that behavioral intentions extend beyond travel. Respondents expressed intentions related to consumption and activities. They were motivated to read books and articles about the past, purchase cultural products like traditional costumes and artwork, and engage in activities such as visiting monuments during national ceremonies. Their motivations were closely linked to their sense of national identity. For example, some expressed a desire to promote Vietnam's history by becoming history teachers. By solely concentrating on travel-related behavioral intentions, researchers may overlook other significant contributions that historical films make to various aspects of life.

Cultural viewers' insights

The majority of respondents expressed a preference for war films over other subgenres such as costume dramas and biographical films. They found war films to be more accurate in depicting historical figures and events, while other subgenres were seen as incorporating elements that may misrepresent history for different objectives. The consumption of war films evoked a sense of appreciation for being born in Vietnam, inspired by the remarkable spirit of the past, and gratitude for their current circumstances.

Costume dramas were perceived as helping viewers establish a sense of place, as the characters and scenes are presented in a personal and relatable manner. On the other hand, biographical films resonated with audiences because they featured locations that were already familiar through books and other literary and artistic works about historical figures.

This insight into audience preferences for different subgenres can guide Vietnamese historical filmmakers in understanding the tastes of their target audience. It emphasizes the importance of accuracy in war films and highlights the appeal of personal connections in costume dramas and the familiarity of biographical films based on existing knowledge. By recognizing these preferences, filmmakers can cater to the specific tastes and expectations of their audience in each subgenre.

5. Implications

5.1. Theoretical implications

The theoretical implications of this research are significant in several ways. Firstly, it contributes to our understanding of the relationship between different factors within historical films and their influence on audience behavior. By identifying variables such as historical accuracy, storytelling techniques, character development, and emotional engagement, the research sheds light on how these elements shape audience responses and behavior. This understanding can help filmmakers and scholars alike in crafting and analyzing historical films to better engage and resonate with audiences.

Secondly, the research highlights the importance of specific items for observing and measuring variables related to audience behavior orientation. By identifying factors such as knowledge acquisition, emotional response, attitude change, cultural appreciation, and behavioral intentions, researchers can develop more precise and comprehensive measures to assess the impact of historical films on audiences. This can lead to the development of more robust methodologies for studying audience behavior in the context of historical films.

Furthermore, the findings of this research can contribute to the development of models that predict and explain audience behavior resulting from exposure to historical films. By identifying influential variables and their interrelationships, researchers can construct frameworks that enhance our understanding of how historical films shape audience behavior and contribute to broader societal outcomes. These models can serve as valuable tools for filmmakers, policymakers, and cultural analysts in assessing the potential impact of historical films on society.

Lastly, this research provides a foundation for future quantitative investigations that seek to quantify the effects of historical films on audience behavior and societal changes. By establishing the groundwork for surveys, experiments, and statistical analyses, researchers can delve deeper into understanding the specific relationships between variables and the magnitude of their effects. This can lead to more nuanced and evidence-based insights into the enduring effects of historical films on audience behavior and broader societal dynamics.

Overall, the theoretical implications of this research expand our understanding of the complex interplay between historical films, audience behavior, and societal outcomes. They provide valuable insights and avenues for further exploration in this field, informing future research, film production, and cultural analysis.

5.2. Practical implications

Historical films hold significant potential for positive societal impact in Vietnam. To maximize their influence, filmmakers should prioritize key elements such as plot twists, acting, realistic settings, and attention to detail. By ensuring the coherence and quality of these aspects, filmmakers can enhance audience engagement and favorability towards historical films, leading to greater appreciation and reception among viewers.

One practical implication for historical films in Vietnam is the emphasis on promoting the imagery of locations and the country as a whole. Specifically, historical films should showcase the beauty and cultural significance of these places, creating a sense of attachment, pride, and curiosity among the audience. This can potentially result in increased tourism, as viewers are inspired to explore these locations firsthand. Additionally, such films can foster a deeper cultural appreciation and drive efforts towards the preservation of historical sites and traditions.

Governments and relevant organizations in Vietnam can play a crucial role in leveraging historical films to foster national pride, encourage tourism, guide career aspirations, and promote cultural values. By incorporating historical events, figures, or narratives in films, they can enhance citizens' sense of identity and instill a deeper appreciation for their heritage. This, in turn, can lead to increased civic engagement, tourism revenue, and cultural exchange.

Education is another area where historical films can make a significant impact in Vietnam. These films can be utilized as valuable educational resources to promote historical understanding and critical thinking. Governments and educational institutions can develop curricula, workshops, and discussion platforms centered around historical films, engaging students and the general public in thought-provoking conversations about history, societal values, and moral lessons derived from these films.

Furthermore, historical films in Vietnam have a crucial role in preserving and promoting cultural heritage. By supporting the production and distribution of films that showcase cultural traditions, rituals, languages, and artistic expressions, the government and cultural organizations can stimulate cultural appreciation, pride, and encourage the preservation and revitalization of endangered cultural practices. This can contribute to the overall preservation and promotion of Vietnam's rich cultural heritage.

To ensure the accuracy and authenticity of historical films in Vietnam, stakeholders including filmmakers, historians, educators, and policymakers should collaborate. By fostering partnerships and interdisciplinary collaborations, a more comprehensive approach can be taken towards the production, promotion, and utilization of historical films. This collaborative effort can help ensure that historical films accurately represent historical events and cultural nuances, contributing to their credibility and effectiveness as tools for positive societal impact in Vietnam.

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The Effects of Higher Education Service Quality on Training Outcome and Student Satisfaction: Case Study at Hong Duc University

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ABSTRACT

The principal objective of every university is to provide training service that aligns with societal demands and strives for learner satisfaction. This study analyzes the effects of faculty, infrastructure, support activities, and training program factors on training outcomes and student satisfaction. Data from 295 students in the fields of economics and engineering were collected and processed using Smart-PLS 3.3 software. The research findings demonstrate that all four pillars positively impact training outcomes and student satisfaction, with the lecturer factor exerting the most substantial influence on student outcomes; meanwhile, training programs were found to have the most significant impact on student satisfaction. Moreover, this study contributes novel insights to both theoretical understanding and practical application, thereby facilitating the continuous improvement of training management.

Keywords: Education Services, Training outcomes, Student Satisfaction, University.

1. Introduction

The increasing competitive pressure in the field of educational services has led higher education institutions to focus more on student satisfaction. Developing strategies to attract students and create an effective learning environment is part of the plans implemented by the management of these organizations to achieve successful learning outcomes, with concepts such as retention and attraction (Helgesen & Nesset, 2007). Institutions can attain student satisfaction by providing excellent service value, essential for ensuring sustainable competitive advantage in today's international education market (Huang et al., 2012).

Satisfied students continuously contribute to the advantage of universities through positive word-of-mouth and also enhance their position in dealing with other competitive counterparts. The

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intense competition in student attraction and retention requires universities to be cautious not only in providing quality education that ensures graduates possess the necessary knowledge and skills for their future careers and lives but also in terms of how students perceive their learning experiences within these higher education institutions. Kaur & Amanpreet (2020) state that in today's world, organizations and businesses need to emphasize quality as one of the most crucial factors for achieving and maintaining a good level of competition. Additionally, universities and other educational institutions are increasingly focusing on assessing students' perception of the quality of services they provide, as education is classified as a marketable service, the number of students paying full tuition fees is increasing, students' expectations of higher education institutions are rising, higher education is becoming more internationalized, and fierce competition is occurring in the higher education sector today.

According to Farahmandian (2013), one of the main reasons organizations fail is their failure to recognize the expectations and demands of their target customers. Only a few studies have examined students' perceptions of the quality of educational services. Moreover, studies conducted in developing countries on students' awareness of service quality often focus on students in private universities and organizations rather than students in public universities (Farahmandian, 2013). Furthermore, most studies on the relationship between service quality and student satisfaction have been conducted abroad (Bakrie et al., 2019; Jameel et al., 2021). In Vietnam, research on the quality of university services and student satisfaction has also been conducted by some scholars, mainly in private universities (Truong et al., 2016) or large public universities (Pham et al., 2019; Dinh et al., 2021), with few studies conducted in a locally managed public university. Moreover, a number of research only focus on the direct effect of quality in educational services instead of considering the mediating role of educational outcomes. Therefore, this study examines the quality determinants of student satisfaction at Hong Duc University, considering the mediating role of training outcomes, from that proposes solutions for the future development of university.

2. Literature Review

2.1. Education Service Quality

The quality of educational services can be understood in various ways depending on the approach taken. At each position, individuals perceive the quality of education from different perspectives. Students, teachers, administrative staff, employers, specialized agencies all have their definitions of educational quality from their respective viewpoints.

There have also been various perspectives on the quality of educational services in Vietnam. Trần Khánh Đức (2000) believes that the quality of education is evaluated based on the extent to which the training objectives set for the educational program are achieved. Đàm Chí Cường (2016) defines the quality of educational services as the characteristics of a set of factors related to the inputs, outputs, and processes of the education system in providing services that meet both internal and external strategies. Quality factors in educational services include libraries, equipment, curriculum content, department staff, teaching methods, dormitories. Within the scope of the research topic, the author acknowledges that the quality of educational services in university is essentially the perception of students regarding the quality of services provided by the institution, which is related to various factors such as lecturers, staff, facilities, educational programs, support services, extracurricular activities, training costs, and the reputation and image of the university.

2.2. Student Satisfaction

Robinson & Long (1987) argue that the primary customers of higher education institutions are students, followed by labor users as the second customer group, and then government agencies and families. Hill (1995) also emphasizes that for a university, students are referred to as the primary customers of higher education training services, and universities should focus on meeting the expectations and desires of students. Karapetrovic & Willborn (1997) research mentioned the concept of actual customers in universities that, there are two types of customers: those who have the effective capacity to make demands on the quality of the training services of a course, such as labor users, specialized organizations, alumni, government, and social organizations, and students, who are the primary customers directly involved in the training process, provide feedback on the quality of the training process, and establish requirements for the quality of the output of the university. Therefore, the customers of higher education services consist of various groups, each with different requirements and feedback, which help the university establish quality courses that meet customers' needs and satisfaction. Among those customer groups, students are the primary customers of universities and customers of both the teaching and learning processes.

LeBlanc & Nguyen (1999) argue that student satisfaction (perceived value) with the quality of education is an overall evaluation made by a student based on their perception of what they receive, as well as the fulfillment of their learning desires while studying at the institution. Chute and colleagues (1999) also view student satisfaction as a psychological factor, which is the perception of the quality of the information system, the quality of the faculty, and the quality of the management support services. In this study, the authors use the concept of student satisfaction as the student's perception of all factors related to the quality of the educational services provided by the university they are studying in.

2.3. The impact of education service quality on training outcomes and student satisfaction

Student satisfaction and the quality of training services have a reciprocal and close relationship. Many scholars have researched and examined the relationship between these two concepts. Most studies suggest that the quality of training services leads to student satisfaction, with the quality of training services being a prerequisite and basis for evaluating student satisfaction. Guolla (1999) points out that positive perceptions of the quality of training services can lead to student satisfaction, and satisfied students can attract new students through positive word-of-mouth about the institution. They can also return to the university to participate in other courses. Tjahjono (2000) also confirms a positive relationship between the quality of education and the institution's image and student satisfaction. He suggests that when good quality education is provided, it will enhance students' perception of the institution's image, thereby increasing their satisfaction and affiliation with the institution. Ham & Hayduk (2003) confirmed a positive correlation between the perception of the quality of training services and student satisfaction. Student satisfaction plays an important role in the success of a university and is a crucial tool for improving the perceived quality of its services.

In summary, studies affirm that the quality of training services positively correlates with student satisfaction. Therefore, higher education institutions aiming to enhance student satisfaction and competitiveness must improve the quality of their training services.

2.4. The impact of lecturer quality on training outcomes and student satisfaction.

Lecturers directly provide educational services to students, so the competence and expertise of lecturers are among the factors that contribute to the quality of the services they provide (Kuh &Hu, 2001). Through modern teaching methods, lecturers provide opportunities and experiences for students while fostering interactive activities in the classroom, motivating students to learn and explore, and enabling them to develop their capabilities, which tend to contribute to higher levels of student satisfaction (Marsh & Roche, 1993). Wiers-Jenssen. 2002 showed that when lecturers possess strong expertise and effective teaching methods, students are more likely to acquire knowledge, achieve better learning outcomes, and consequently have a higher level of satisfaction with the educational services provided by the institution. Additionally, lecturers are in regular direct contact with students, leading students to perceive the image of lecturers as representative of the quality of services provided by the institution (Kember et al., 2008; Clemes et al, 2007). The literature reviewed demonstrates a clear relationship between lecturer quality and training outcomes, particularly in student satisfaction (Hong, 2022). Positive student-faculty interactions, effective teaching strategies, and the ability to establish relevance are key factors that contribute to higher levels of student satisfaction. These findings highlight the importance of investing in lecturers' professional development and support to enhance their teaching quality, ultimately improving training outcomes and student satisfaction in educational settings.

H1a: The quality of lecturers positively affects training outcomes.

H1b: The quality of lecturers positively affects student satisfaction.

2.5. The impact of educational programs on training outcomes and student satisfaction.

The educational programs refer to the curriculum and syllabus. In higher education, numerous studies have indicated that the characteristics of the educational service environment have a positive relationship with students' perceptions of service quality (Johnson & Smith (2007). The quality of the learning environment encompasses factors related to educational programs, infrastructure, and social factors such as extracurricular activities. Previous research has highlighted the significance of educational programs as a critical factor in assessing the quality of educational services. Biggs & Tang (2011) stated that well-designed educational programs aligned with learning outcomes contribute to better training outcomes and higher levels of student satisfaction. A well-designed curriculum includes the structure of course content, duration, learning outcomes for each foundational and specialized subject, as well as the allocation of time between theory and practice to ensure students grasp essential knowledge (Entwistle, 2009; Ramsden, 2003; Hattie & Timperley, 2007). A high-quality educational program meets training objectives and equips students with crucial knowledge and skills for future employment (Hong, 2022). Research by Kwek et al. (2010) has indicated that the educational program is the most crucial factor influencing students' perceptions of training quality. These findings underscore the significance of investing in the development and continuous improvement of educational programs and curriculum to create meaningful and engaging learning experiences for students.

Based on these findings, the following hypotheses are proposed:

H2a: The educational program positively affects training outcomes.

H2b: The educational program positively affects student satisfaction.

2.6. The impact of facilities on training outcomes, student satisfaction.

Facilities play a crucial role in educational institutions, impacting various aspects of the learning environment. Infrastructure refers to the facilities utilized in teaching, learning, and other educational activities to achieve educational goals. The university infrastructure includes equipment, classrooms, laboratories, practice rooms, learning resources, and libraries, all of which impact students' learning experiences and, in turn, their perceptions of the institution. Gamage et al. (2008) also emphasized the importance of university infrastructure in students' perceptions of service quality. In the same point of view, Brown (2018) emphasizes the significance of facilities in shaping student satisfaction and the need for well-designed and adequately equipped facilities to enhance training outcomes. The facility quality has a positive effect on overall student satisfaction, underscoring the importance of well-maintained facilities in achieving positive training outcomes (Khalid & Mahmood, 2020); well-maintained facilities contribute significantly to student satisfaction and positively affect training outcomes, such as increased engagement and motivation (Tan, 2019). Thus, facilities are associated with improved training outcomes, including increased engagement, motivation, and academic performance. Institutions prioritizing developing and maintaining high-quality facilities are more likely to create an environment conducive to positive training experiences and enhanced student satisfaction. Based on these findings, the following hypotheses are proposed:

H3a: Facilities positively affect training outcomes.

H3b: Facilities positively affect student satisfaction.

2.7. The impact of support activities on training outcomes and student satisfaction.

Support activities refer to the learner support services, such as academic advising, tutoring, and technical support, which were positively associated with improved training outcomes and higher levels of student satisfaction (Yazedjian & Ross, 2017). Schneider (2002) found that another factor that influences students' learning quality is extracurricular activities. Besides providing favorable conditions for learning, a good learning environment ensures students' participation in meaningful extracurricular activities, contributing to character development, skills, and physical fitness (Hong, 2022). It fosters a relaxed and enjoyable atmosphere that allows students to unwind and interact with others after intensive study hours. The findings of Annetta & Cavnar (2017) indicated that access to comprehensive learner support services, including technical support, counseling, and academic resources, positively influenced student satisfaction and improved training outcomes.

Based on these findings, the following hypotheses are proposed:

H4a: Support activities positively affect training outcomes.

H4b: Support activities positively affect student satisfaction.

2.8. The impact of training outcomes on student satisfaction

Training outcomes refer to the knowledge, skills, and competencies that students acquire due to their educational experiences. Student satisfaction, conversely, pertains to the level of contentment and fulfillment students experience in relation to their education (Johnson & Johnson, 2018). Clemes and colleagues (2007) believe that training quality, such as personal development and future career opportunities, plays an essential role in shaping students' perceptions of the quality of the educational service. This is the ultimate goal of students when pursuing a training program or a specific course. Students' initial expectations when participating in studies at the institution are to acquire the knowledge, capabilities, and skills necessary for future career development and access to employment information after graduation (Liu & Cao, 2019). Suppose the students' results at the course's end meet their initial expectations. In that case, they will highly evaluate and feel satisfied with the educational service the institution provides.

Conversely, if the results do not meet their expectations, students will have a lower evaluation and be less satisfied. Liu and Cao (2019) synthesized the findings from multiple studies to examine the relationship between training outcomes and student satisfaction across various educational contexts. The results indicated a significant positive relationship between training outcomes and student satisfaction. Higher training outcomes, such as improved academic performance and enhanced skill development, were associated with increased student satisfaction (Johnson & Johnson, 2018; Huang & Huang, 2016). Thus, higher training outcomes, such as improved academic performance, enhanced skills, and increased self-efficacy, tend to contribute to greater student satisfaction. Additionally, student satisfaction can mediate the relationship between training outcomes and other factors, such as post-training transfer.

H5: Training outcome positively affects student satisfaction.

3. Methodology

3.1. Research model

on the constructed hypotheses, the author proposes the following research model:

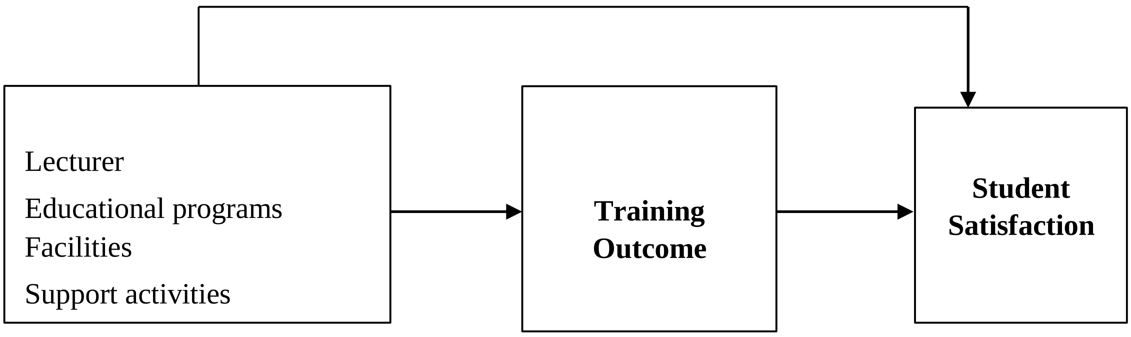

Figure 1: Conceptual Framework

3.2. Questionnaire development

The research model consisting of 6 factors, 29 questions including Lecturer (LEC), Educational programs (EPR), Facilities (FAC), Support activities (SAC), Training outcome (TOC), Student satisfaction (SST). The research selectively inherits the scales of Clemes et al, (2007), Kember et al., (2008), Firdaus (2005), Hong (2022) and Sumaedi & bakti (2011).

3.3. Procedure and sample

According to Hair et al. (2017), a minimum sample size of 200 observations can be sufficient in many cases when employing PLS-SEM. However, larger sample sizes may be required for more complex models or when aiming for higher levels of precision. This research study utilizes cross-sectional data obtained from a survey conducted among second-, third-, and fourth-year graduate students from economic and technical major at Hong Duc University.

Prior to the official study, 102 responses were collected through an experimental study conducted at several faculties in HDU to assess the validity and applicability of the scale. The survey was conducted among students from 20 faculties from June to October 2022, both through offline and online methods using a Google Form. A total of 500 survey questionnaires were distributed to the students. The relevance of the observational variables and the study's objectives were explained to the students before conducting the surveys, both in online and offline classroom settings. The data collection process involved teams of researchers supervised by professors, who conducted communication research and gathered information at the universities. After collecting and scanning, 295 valid votes were for further analysis. Among the valid samples, males accounted for 46.1%, and females accounted for 53.9% (with the online survey constituting 71.0% and 29.0% being hardcopy responses). In terms of the study subjects, 63% of the respondents were IT, agriculture, construction, and social science engineers, while 41% had a major related to business. Based on the respondents' academic years, 18% were second-year students, 42.7% were third-year students, and 39.3% were fourth-year students.

Table 1. Descriptive of respondents' general information

Variable	Frequency	Percentage
Gender		
Male	136	46.1
Female	159	53.9
Major		
Business-related	111	37
Engineering-related	184	63
School years of student		
Year 2	53	18
Year 3	126	42.7
Year 4	116	39.3
Range of age		
Under 20 years	56	19
20 years	111	37
21 years	96	33
22 years	18	6
Above 22 years	14	5

4. Results & Discussion

4.1. Results

4.1.1. Findings of the evaluation of the measurement model

The evaluation of the constructs' validity can be performed through an examination of convergent and discriminant validity. Convergent validity ensures a strong correlation between measurement and other measurements of the same construct. This criterion is met when the Average Variance Extracted (AVE) value exceeds 0.5, and Cronbach's alpha exceeds 0.7 (Hair et al., 2017). As demonstrated in Table 2, all constructs exhibited AVE values ranging from 0.575 to 0.719 and Cronbach's alpha values ranging from 0.794 to 0.891, indicating the presence of convergent validity. Discriminant validity is also crucial in determining the extent to which a construct differs from others.

Table 2. Reliability and convergent validity results for measurement models.

Code	Constructs	Cronbach's Alpha	Rho_A	CR	AVE	Inner VIF
FAC	Facilities	0,882	0,898	0,911	0,632	1,373
LEC	Lecturer	0,869	0,872	0,911	0,719	1,507
SAC	Support activities	0,866	0,867	0,909	0,714	1,584
EPR	Educational program	0,794	0,864	0,860	0,575	1,327
TOC	Traing Outcome	0,891	0,892	0,917	0,648	1,514
SST	Student Satisfaction	0,868	0,870	0,910	0,716	

To evaluate the discriminant validity, the Fornell-Larcker criterion is commonly employed. According to Fornell and Larcker (1981), the square root of the Average Variance Extracted (AVE) should have a higher significance than its correlation with any other construct. In Table 3, it can be observed that all constructs fulfilled the requirement for discriminant validity. Additionally, in accordance with the findings of Henseler et al. (2015), the cross-factor loading values and heterotrait-monotrait ratio (HTMT) criteria were also examined, yielding similar results. Consequently, the constructs can be considered to possess convergent validity, and the requirement for discriminant validity is adequately met.

Table 3. Results of Fornell-Larcker Cri terion

Constructs	1	2	3	4	5	6
Facilities	**0,795**					
Lecturer	0,332	**0,848**				
Training Outcome	0,411	0,458	**0,805**			
Student Satisfaction	0,459	0,469	0,482	**0,846**		
Support Activities	0,464	0,456	0,467	0,485	**0,845**	
Educational Program	0,285	0,431	0,369	0,435	0,373	**0,758**

4.1.2. Structural Model Measurement Results and Analysis

The measurement results and analysis of the structural model estimation are presented in Table 4. Hypotheses H1b, 2b, 3b, and 4b proposed a direct relationship between Lecturer, Training program, Facility, Support, and Student Satisfaction. The results demonstrated that these relationships were statistically significant, with β values ranging from 0.163 to 0.202 and P values ranging from 0.000 to 0.05. Consequently, Hypotheses H1b, 2b, 3b, and 4b were supported. Moreover, the relationship between perceived Lecturer, Training program, Facility, Support, and Training Outcome was found to be positively significant, with β values ranging from 0.136 to 0.236 and P values ranging from 0.000 to 0.004. Therefore, Hypotheses H1a, 2a, 3a, and 4a were supported. Additionally, the relationship between Training Outcome and Student Satisfaction was positively significant, with a β value of 0.178 and a P value of 0.010. Hence, Hypothesis H5 was supported.

Table 4: Results of structural equation model estimation

Hypothesis	Path	Coeff	STAV	T	P	Decision
H1a	Lecturer -> Training Outcome	0,238	0,062	3,842	0,000	Supported
H1b	Lecturer -> Student Satisfation	0,168	0,054	3,098	0,002	Supported
H2a	Educational program -> Training Outcome	0,130	0,058	2,235	0,026	Supported
H2b	Educational program -> Student Satisfaction	0,178	0,057	3,087	0,002	Supported
H3a	Facilities -> Training Outcome	0,193	0,067	2,888	0,004	Supported
H3b	Facilities -> Student Satisfaction	0,203	0,051	3,991	0,000	Supported
H4a	Support activities -> Training Outcome	0,220	0,060	3,662	0,000	Supported
H4b	Support activities -> Student Satisfaction	0,165	0,058	2,852	0,005	Supported
H5	Training Outcome -> Student Satisfaction	0,180	0,054	3,354	0,001	Supported

In Table 5, the analysis conducted using the PLS algorithm provides the results for the R2 (R-square value), which is utilized to assess the model fit or explanatory power of the data. According to Hair et al. (2017), the recommended values for R2 are 0.75, 0.50, or 0.25. In this case study, the results indicate that R2 (TOC) is 0.343 and R2 (SST) adjusted is 0.432, which are deemed appropriate. Consequently, the independent variables in the model explain 34.2% of business intention and 43.1% of intention to start a business. These findings demonstrate that the R2 value effectively elucidates the impact of factors on training outcomes and student satisfaction in this particular case study.

Table 5: presents the results for R2 and Q2.

Endogenous constructs	R^2	Q^2
Training Outcome	0,343	0,218
Student Satisfaction	0,432	0,291

The Q2 value represents the predictive capability of the independent variables on the dependent variable. Tenenhaus et al. (2005) state that Q2 serves as an indicator to evaluate the overall quality of the component model. Consequently, if all component models have Q2 values greater than 0, it implies that the overall structural model of the study possesses satisfactory overall quality.

4.2. Discussion

4.2.1. Educational service quality and training outcome

Examining the relationship between these factors and student outcomes, it is evident that lecturers have the strongest influence. Specifically, lecturers who possess strong academic qualifications and subject knowledge, effective communication and teaching skills, proficient delivery methods that are easily understandable, extensive practical experience integrated into lectures, a friendly and approachable attitude, attentiveness to students' perspectives, and readiness to support students, along with a fair and accurate assessment of student's academic performance, are the most influential factors in determining student outcomes.

If the lecturer is the most influential factor, then Support activities follow with a coefficient of 0.220. Students believe that their academic performance would be better if the university offered programs and extracurricular activities to help them better understand theory and practice. Career-oriented activities such as job fairs, recruitment events, and hiring programs also contribute to students' confidence, prevent boredom, and generate enthusiasm, leading to higher academic achievement. This finding is similar to the research results of Wiers-Jenssen (2002) and Kember et al. (2008).

The learning environment and facilities are also evaluated as influential factors affecting outcomes. Specifically, clean and comfortable classrooms equipped with adequate learning resources, well-maintained and spacious libraries with abundant and diverse study materials, well-equipped and up-to-date computer labs, and expansive and pleasant campus grounds that facilitate learning have a significant impact on students' academic performance. Particularly, the classroom and library factors are crucial as university education requires students to engage in extensive self-study. This finding matches to previous research of Brown (2018), Khalid & Mahmood (2020), and Tan (2019).

Therefore, the provision of sufficient learning resources by the institution holds great significance in enabling students to actively pursue their studies.

The training program has the least impact on student outcomes. This does not mean that the curriculum does not play an important role. In this case, the curriculum of the institution is suitable for the needs of the learners, and the learning conditions and meets the program's learning outcomes. In fact, all curricula are built based on market needs analysis, employer requirements, and national competency frameworks, so they are very well-aligned. The research results are not surprising because the nature of the faculty is the most important in imparting knowledge and methods, which in turn allows students to actively seek and enhance their knowledge, Biggs & Tang (2011) and Research by Kwek et al. (2010) finding.

Educational service quality and student satisfaction.

Service providers always strive to satisfy customers, as each customer becomes an ambassador who helps spread the image and brand to other potential customers, as well as build the institution's reputation. When considering the factors that impact student satisfaction, it is observed that the physical infrastructure and learning conditions are the strongest influencing factors. For today's youth, learning is not simply about book knowledge but also about the experience of services. Therefore, satisfaction stems from conditions and accompanying services such as infrastructure and supplementary activities. Students will be more satisfied if they can study in beautiful schools with well-equipped facilities and spacious campuses. The curriculum also has an impact, but it does not strongly influence satisfaction because most students thoroughly research their chosen field of study when selecting a university. Therefore, it is understandable that the curriculum's impact on satisfaction is not very strong; this finding is opposite to the Biggs & Tang (2011), Tan (2019), and Huang & Huang (2016).

4.2.2. Training outcomes and student satisfaction

Student outcomes and student satisfaction are the most relevant relationships in this study. Student outcomes play a direct and intermediate role. Student satisfaction is highly dependent on student outcomes, or more precisely; student outcomes have a significant impact on student satisfaction. Essentially, every student desires to achieve good results in their studies, so the outcomes of each subject and the entire program serve as measures of the quality of education provided by the institution and for each learner. Students with good student outcomes will be more satisfied than those with poorer results. This finding is similar to a lot of previous findings of Liu and Cao (2019), Johnson & Johnson (2018), and Huang & Huang (2016). This means that in all contexts, student outcome is closely related to student satisfaction.

5. Practical Implications and Conclusion

5.1. Implications

The research findings serve as an important foundation for proposing solutions to the training process and enhancing learner satisfaction. Specifically, the following implications can be derived: Firstly, there is a need to further improve the quality of the faculty, who serve as knowledge conveyors, in order to effectively deliver educational messages to each student and remain the most influential factor. Secondly, infrastructure improvements and classrooms are required to provide students with an optimal learning environment. Particularly, the installation of air conditioning and microphones in each classroom is crucial for the complete transmission and absorption of knowledge. Thirdly, a training strategy should be implemented that allocates appropriate programs aligned with the learning capacity of each field, ensuring that students feel most comfortable. Emphasis should be placed on core teaching activities and complementary activities such as practical business visits, entrepreneurs exchanges, and alumni discussions regarding the theoretical content learned.

5.2. Limitation and future study

With the sampling size large enough, the scientific research methodology, and the research results explained the impact of factors on the training results and student satisfaction at the university, thus there are contributions both theoretical and practical to the training management activity. However, the research was conducted only at one university in Thanh Hoa province so it was not representative, difficult to extend to the whole. In addition, there are many factors affecting the quality of training and student satisfaction, such as staff officers, the price of training services, training trends that have not been considered. So these studies need to be continued the next time.

5.3. Conclusion

Training to meet societal demands and strive for learner satisfaction is the guiding principle of every university. Training is a service-oriented process influenced by various factors such as faculty, infrastructure, support activities, and training programs. Therefore, it is essential to develop appropriate strategies tailored to specific circumstances. This study analyzed the impacts of 4 pillars in training: Lecture, faculties, curriculum development and training, and infrastructure, on training outcomes and learner satisfaction. The research findings indicate that all factors positively impact training outcomes and learner satisfaction, with the lecturer factor having the strongest influence on training outcomes meanwhile infrastructure and training outcomes have most significant impact on student satisfaction. The study also contributes novel insights to both theory and practice, aiding in the continuous improvement of training management.

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APPENDIX

Appendix 1: Study concepts and items

Variable	Code	Measured
Age	Age	How old are you?
Gender	Gender	What is your gender (male or female)?
Age	**Age**	How old are you
Major	Major	What is your major?
School years	**School years**	What school years are you in?
Lecturer (LEC)	LEC1	The lecturer possesses a solid and extensive level of expertise and specialized knowledge.
	LEC 2	The lecturer demonstrates excellent communication skills and effective teaching methods.
	LEC 3	The lecturer maintains a friendly attitude, always ready to listen to and support students.
	LEC4	The lecturer consistently evaluates students' academic achievements in a fair and accurate manner.
Training program (TPR)	TPR1	The training program has clear objectives and is designed to be suitable for practical requirements.
	TPR2	The content of the training program ensures the achievement of stated objectives and outcomes.
	TPR3	The training program equips learners with a substantial amount of knowledge, skills, and a high level of autonomy and responsibility.
	TPR4	The program content is designed flexibly to accommodate students' preferences (course selection, schedule, etc.).
	TPR5	The training program provides a reasonable allocation of theory and practical components.
Facility (FAC)	FAC1	The school campus is spacious and well-ventilated, providing a conducive environment for learning.
	FAC2	The institution offers essential facilities such as a cafeteria, parking area, and dormitories, catering to the needs of the students.
	FAC3	The classrooms are adequately spacious, well-ventilated, and equipped with modern teaching and learning aids, including projectors, computers, and microphones.

	FAC4	The library is well-maintained, expansive, and houses a rich and diverse collection of resources.
	FAC5	The computer labs are well-equipped and regularly updated with both hardware and software.
	FAC6	The campus provides a wide and strong WiFi coverage with reliable internet connectivity.
Support activities (SAC)	SAC1	The University consistently facilitates opportunities for students to participate in extracurricular programs.
	SAC2	The extracurricular programs offered by the University are highly beneficial.
	SAC3	The University regularly provides information on employment opportunities for students.
	SAC4	The University frequently organizes career networking activities for students.
Training outcome (TOC)	TOC1	Students have acquired a foundational knowledge and skills in various fields related to their academic discipline.
	TOC2	Students can confidently apply their specialized knowledge in practical work settings.
	TOC3	Students are self-assured in using foreign languages and computer literacy in their daily communication and work.
	TOC4	Students have developed both professional and soft skills relevant to their field of study.
	TOC5	Students have cultivated their autonomy and sense of responsibility.
	TOC6	Students believe that the knowledge and skills obtained through the training program will facilitate their ability to secure suitable employment opportunities in the future.
Student satisfaction (SST)	SST 1	You are satisfied with the quality of educational services provided by the University.
	SST 2	You are content with your decision to pursue studies at the University.
	SST 3	You take pride in being a student of Hong Duc University.
	SST 4	You intend to recommend Hong Duc University to your relatives and acquaintances.

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The Impact of Lecturers On Students' Professional Attitudes: A Case Study of The University of Economics – University of Danang

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ABSTRACT

Students' professional attitudes are critical to their academic achievement and career development. The article reports the results of research on the factors of lecturers affecting the professional attitudes of students at the University of Economics - University of Danang. The study is combined applying qualitative and quantitative methods. The results of the study (i) identified and characterized two key factors that have a positive impact on students' professional attitudes: "professional" and "impressive" and (ii) evaluted the recent data on these key factors. In addition, the article proposes to apply research results in human resource management at the University to improve the quality of the training process.

Keywords: attitude; professional attitude; behaviors; career development.

1. Problem Statement

Students' professional attitudes are important factors for their academic achievement and career development. Students with a positive professional attitude will have positive behavior in learning as well as their efforts. Thus, it helps them to improve professional competence and achieve a good professional qualification. Students' positive professional attitudes not only positively affect their academic performance and career development, but are also an important factor for success of career and life. There are many studies on students' professional attitudes (Moriam Quadir, 2021; Muhammad Abo ul Hassan Rashid, 2018; Ronald Osei Mensah, Agyemaang Frimpong, 2020). These studies affirmed of the impact of students' professional attitudes on academic performance and career development; the studies's result identified factors affect to student's professional attitudes, including the factor of lecturers.

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In the years not long age, Danang University - University of Economics has always focused on improving the quality of the training process, considering it as one of the key areas of activity in the university's operation. In order to improve the quality of education, the university has taken integrated measures to promote that process, in which the student and lecturer factors have been got special attention. But to day there isn't publised the research about affects of lecturer factors on results and student's professional attitudes in Danang University of Economics and other universities of The University of Danang. Therfore the research on the impact of lecturer factors on students' professional attitudes is carried out for that purpose.

The research will contribute on giving a good literarture on the characteristics of the lecturer factor. It may lead to policies and practices with regard to the functional areas of human resource management such as recruitment, training and human resource development.

2. Literature Review

According to Merriam-Webster (1997), he defined professionalism as a "set of attitudes and behaviors believed to be appropriate to a particular occupation". Others have described professionalism as "constituting those attitudes and behavior that serve to maintain patient interest above [physician] self-interest," and "displaying values, beliefs and attitudes that put the needs of another above your personal needs". A professional attitude could be defined as a predisposition, feeling, emotion, or thought that upholds the ideals of a profession and serves as the basis for professional behavior (Hammer, 2000). Professional behavior can also be described as "behavioral professionalism" — behaving in a manner to achieve optimal outcomes in professional tasks and interactions (Pukson,1999). There are many reseaches about teacher's professional attitude affect to student's academic performance of student's motivation. Howerver, almost no reseach mentioned about the student's professional attitude is impacted by lecturer's characteristics. The Olubukola's research shown that a significant relationship between all the sub-variables of the independent variables and students' academic performance, included: Teachers' Communication Attitudes, Teachers' Classroom, Management Attitude, Teachers' Pedagogical Attitude, Teachers' Subject Mastery (Olubukola, 2018). Ronald Osei Mensah and Agyemang Frimpong (2020) have shown the impact of teaching activities such as: teaching learning method, class organizing to students' learning attitudes on social topics.

Moriam Quadir (2021) identified the factors affecting the learning motivation of students at the English Training Center in Bangladesh, which are teaching style, teaching methodologies, attitude and behavioir of the teachers, their competency and class activities/task assigned to the learners. Muhammad Abo ul Hassan Rashid (2018) identified the positive influence of a lecturer's professionalism and appearance on students' academic achievement. This study also showed that lecturer's professionalism had a 54.3% ($\beta = 0.543$) impact on academic achievement while lecturer's appearance was 20% ($\beta = 0.2$).

It was found that the personality of teacher is among the key components of teacher's professional attitude affecting significantly on the academic performance of the students (Khan, et al., 2017). Another research about lecturers' competences and dtudents' academic performance results indicate that subject knowledge, teaching skills, lecturer attendance and lecturer attitude have significant positive influence on students' academic performance (Allexander Muzenda,2013).

Attitude affects behavior (Robbins and Judge, 2012) and employees' attitudes such as job satisfaction, employee engagement will make them have positive behaviors such as willingness to serve customers, organizational commmitment, organizational citizenship behavior. Employees who have a positive attitude towards the organization will have organizational citizenship behaviors such as being dedicated to work and supporting colleagues, performing tasks that exceed the organization's expectations, willing to carry out other tasks, community service, helping to increase the organization's image of social responsibility.

On the literature review above the author carry the research and publication on the impact of attitudes on behavior as well as with studies on the impact of lecturers on students' professional attitudes in the case stydy of the Danang University of Economics – University of Danang, the first it can be concluded that the lecturer factor plays an important role in influencing students' positive behavior in learning, training career skills and thereby improving the quality of the education and the second carry the analysis of recent data so that proposed to apply research results in human resource management at the University to improve the quality of the training process.

3. Methodology

The study was carried out at Danang University of Economics – University of Danang. In this study, the author applied a combination of both qualitative and quantitative methods.

Base on the literature, the authors believe that there is a positive influence of the lecturer factor on the students' professional attitude and the positive role of the student's professional attitude on their academic performance and future career development. Base on proposed items of lecture's characteristics, authors had been hold a group interviews and meeting with students, therefore define list of 16 lecturer's characteristics (Tab1).

Combining the research of documents and synthesis from interviews with students, the authors has identified the lecturer factors affecting on students for the next step of quantitative research. In the quantitative research, the author conducts EFA and CFA by using R3.3.3 software. The analysis define 2 key lecturer's factors, in which the first factor including 9 items and the second – 4 items.

4. Data analysis and Results

Exploratory factor analysis is conducted on 16 questions of lecturer's characteristics, those have positive impact on student's professional attitude (Table 1).

Table 1. List of lecturer's characteristics.

Code	Statement describe about lecturer's characteristic
Q1	Lecturer designs and implements a variety of teaching activities
Q2	Lecturer recognizes and encourages student's success
Q3	Lecturer has an attractive appearance
Q4	Lecturer's behavior and speech are appropriate
Q5	Lecturers provide complete and clear information and resources for learning activities
Q6	Lecturers are willing for student to make an appointment for a consultant.
Q7	Lecturers interact with students through telecommunications and electronic communications (by phone, SMS, email, ...)

Q8	Lecturers are willing to interact with students through websites and ssocial networks (Messenger, Facebook, Zalo)
Q9	Lecturers professionally organize and design online class
Q10	Lecturers professionally organize and design offline class
Q11	Lecturers are able to organize and carry out practical exercises in teaching, projects, and internship programs
Q12	Lecturers are qualifed and professsional
Q13	Lecturers participate in student activities
Q14	Lecturers actively participate in social activities
Q15	Lecturers participate in many professional activities both inside and outside the suniveristy
Q16	Lecturers are role models for students about career success

A sample of 119 students were taken through convenient sample technique. There are 94 male and 25 female (Figure 1) from diffент major.

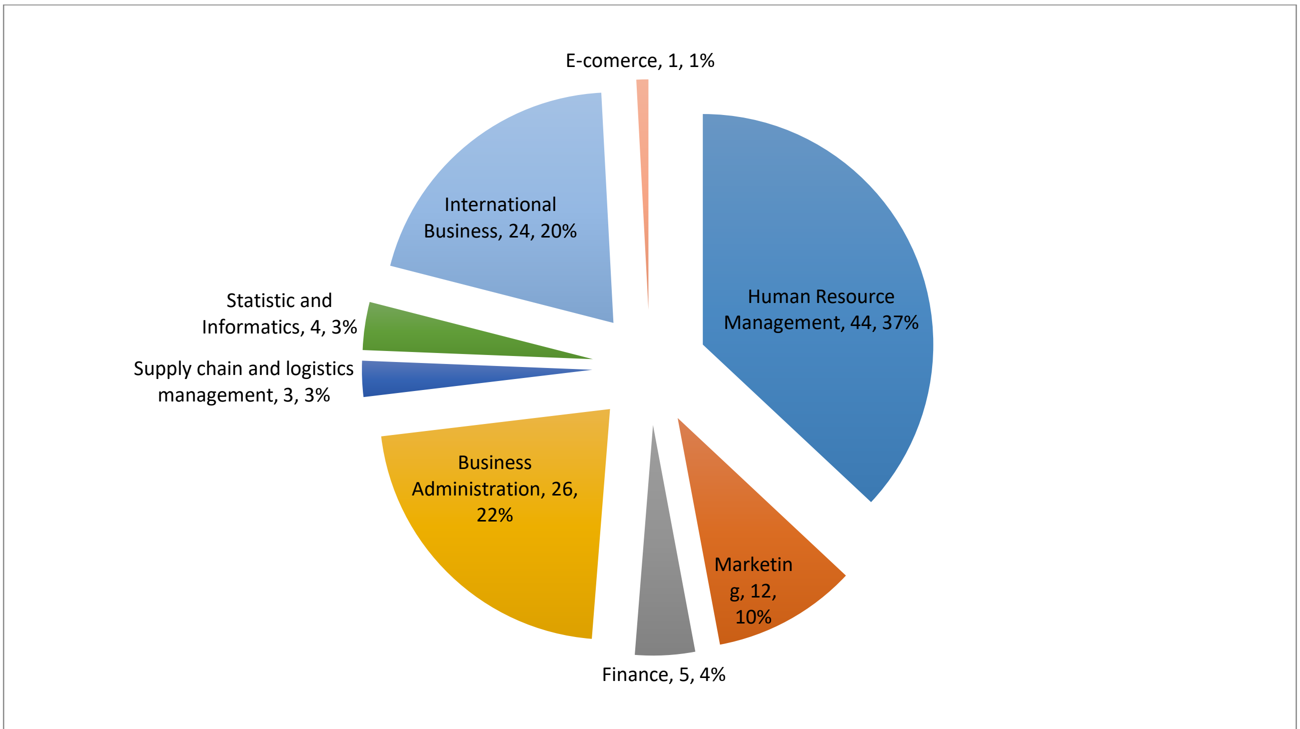

Fig. 1. Sample survey data

Conducting EFA and CFA by using R3.3.3 software, it shown 2 factors (Table 2) that the scales are reliability (Table 3), as follows:

Table 2. Two key lecturer's factors.

Professional	Impressive
Q1 - Lecturer designs and implements a variety of teaching activities	Q3 - Lecturer has an attractive appearance
Q4 - Lecturer's behavior and speech are appropriate	Q12 - Lecturers are qualifed and professsional
	Q15 - Lecturers participate in many professional activities both inside and outside the suniveristy

Q6 - Lecturers are willing for student to make an appointment for a consultant.	Q16 - Lecturers are role models for students about career success
Q7 - Lecturers interact with students through telecommunications and electronic communications (by phone, SMS, email, ...)	
Q8 - Lecturers are willing to interact with students through websites and ssocial networks (Messenger, Facebook, Zalo)	
Q9 - Lecturers professionally organize and design online class	
Q10 - Lecturers professionally organize and design offline class	
Q11 - Lecturers are able to organize and carry out practical exercises in teaching, projects, and internship programs	
Q13 - Lecturers participate in student activities	

Table 3. List of parameters of factor analysis

Parameter	**Statement describe about parameters**
MSA	Overall MSA = 0.87
Bartlett	Barlett test: Sig. = 0.000
Loading	Factor loadings: 0,57(Q1) – 0,77(Q3,Q9)
Alpha	Cronbach alpha(std.alpha) = 0,88(Professional); 0,75(Impressive)
CFI	Comparative Fit Index (CFI) = 0.885
TLI	Tucker-Lewis Index (TLI) = 0.859
RMSEA	RMSEA = 0.097
P-value	P-value RMSEA = 0.001

The values of the parameters are in accordance with the requirements of the reliability.

The recent data of items of “Professional” show (Table 4, Figure 2) that “Lecturer’s behavior and approriate” is most important and the second is “Lecturers interact with students through telecommunications and electronic communications (by phone, SMS, email, ...).”

Table 4. Means of “Professional” factor

Item	**Q1**	**Q4**	**Q6**	**Q7**	**Q8**	**Q9**	**Q10**	**Q11**	**Q13**
Mean	3.9	4.4	4.1	4.3	4	3.9	4.1	4	3.9

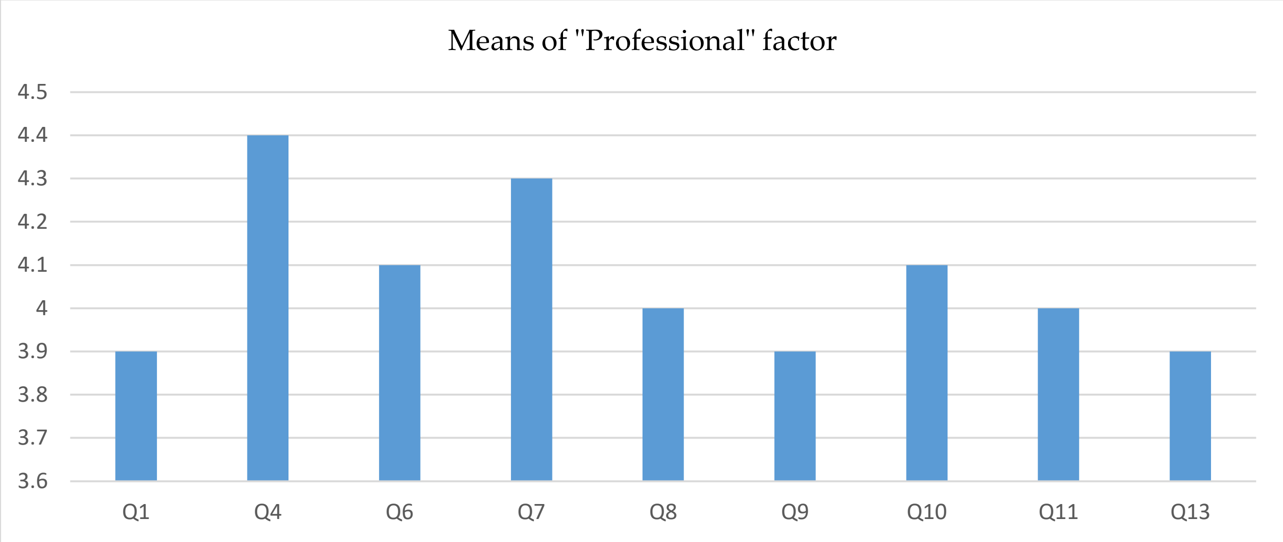

Figure 2. Means of "Professional" factor

The recent data of items of "Impressive" show (Table 5, Figure 3) that "Lecturers are qualiffed and professional" is most important.

Table 5. Means of "Impressive" factor

Item	Q3	Q12	Q15	Q16
Mean	3.5	4.3	4	4.1

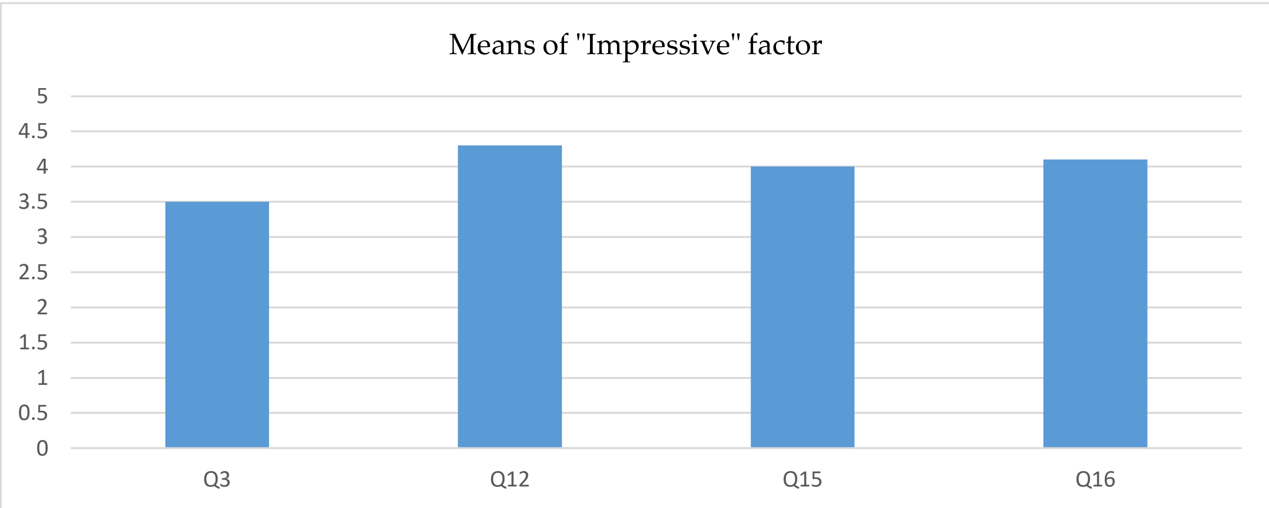

Figure 3. Means of "Impressive" factor

5. Conclusions

This study was conducted to determine the lecturer factors affecting the professional attitude of students at Danang University - University of Economics. On the basis of findings, the university and lecturers could have appropriate adjustments to increase the quality of the education.

The research results identify two factors of lecturers that affect students' professional attitudes, which are "professional" and "impressive". The statements of these factors are described in Table 2. Research results also help lecturers and students pay attention to personal professional development. Besides, the statement describing lecturer's professional and impressive factors should be included in candidate assessment form for recruitment or the assessment of training needs. From the lecturer's side, attention should be paid to not only the professional development as described in the "professional" factor, but also the appearance, attitude and behavior as described in the factor of "impressive". The most importance of "professional" is "Lecturer's behavior and approriate" and for "impressive" is "Lecturers are qualiffed and professional".

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A Systematic Literature Review of Value Co-Creation in Higher Education: Theories, Antecedents, Processes, and Consequences

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ABSTRACT

Value co-creation is a marketing strategy adopted by higher education institutions to achieve competitive advantage and moving towards a sustainable future. The study summarizes the most frequently used theories, antecedents, processes, and consequences of value co-creation in higher education, identifies limitations from existing literature, and highlights multiple avenues for further research. The systematic literature review was used to analyze 58 relevant articles collected in Scopus and Web of Science databases from 2003 to 2022. Through a methodical screening process, including several inclusion and exclusion criteria, this study revealed seven used theories, three groups of antecedents, three groups of consequences, and three processes of value co-creation. Although scholars previously systematized articles on value co-creation in higher education, the study is the first attempt to review recently relevant literature (2003-2022) and divide it into the employed theories, antecedents, processes, and consequences. These findings have implications for scholars on further research directions to enrich the literature on value co-creation.

Keywords: Value co-creation; Co-creation; Co-production; Higher education; Systematic literature review

1. Introduction

Value co-creation was widely known and popularized in the early 2000s [1–3]. Since then, value co-creation has become a topic of interest in the marketing literature [4], and has attracted the attention of scholars worldwide, with the number of articles being published in a growing variety of contexts [5–7]. In [1–3], authors conceptualized value co-creation as the co-creation of personalized customer experiences. Although researchers have stated many different definitions of value co-creation over time [5, 8, 9], the common point of value co-creation is a collaborative process

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involving both the business and the customer to create value. The concept of value co-creation has been researched in service areas that require high interaction between customers and businesses, such as healthcare [10–13], tourism and hospitality [14–17], and public service [18, 19]. In terms of a practical view, value co-creation has gradually evolved to become an effective process and is adopted by many organizations to improve efficiency and build strong customer relationships [7].

Higher education institutions should use value co-creation as a marketing strategy to gain a competitive edge and move toward a secure future in the service sector [20]. This is especially important as universities face new challenges such as budget cutting, growth in education quality standards to meet employer requirements in an increasingly competitive job market, and increased competition in the education market [21–25]. According to [26], value co-creation strategy benefits students and universities more. Therefore, to make marketing strategies effective and achieve the highest value for students and universities, identifying necessary elements as antecedents, processes, and consequences of value co-creation is very important.

The topic of value co-creation has been explored for a long time; compared with other research fields, literature development on value co-creation in higher education institutions is still in its early stage. Most works are concept development articles or case studies, while quantitative research is scarce. Therefore, more research should be carried out to understand value co-creation in higher education [25, 27, 28].

The systematic literature review is an increasingly used procedure to synthesize existing literature, recognize research gaps and recommend future research directions regarding methodology, theories, relevant variables, and research context in a given topic [29, 30]. In other words, this approach enables scholars to develop more complex empirical models by integrating different theoretical approaches to enrich the literature. Consequently, several academic efforts have been made in higher education to review and synthesize articles on value co-creation [25, 31–33].

Although the importance of value co-creation in the context of higher education, given the increasing active students' role in co-creation is acknowledged, according to what we know, reviewing recently related literature and classifying of theoretical perspectives, antecedents, processes, and consequences of value co-creation are still rare. This indicates a research gap in value co-creation in the higher education context that needs further research.

For that reason, the study aims to perform a comprehensive analysis of articles in the field of higher education through the systematic literature review approach. We propose three specific research questions to provide direction for this study.

Research question 1: What are the most frequently used theoretical perspectives in value co-creation literature in higher education?

Research question 2: What are the antecedents, processes, and consequences of value co-creation in higher education?

Research question 3: What are the limitations and future research directions from existing literature on value co-creation in higher education?

Accordingly, the study begins with a conformity analysis of value co-creation applied to higher education and then describes the study methodology employed. Next, existing literature on value co-creation will be analyzed based on used theoretical perspectives. The findings from the analysis will address the first research question. Finally, the study identifies antecedents, processes, consequences, limitations, and future research directions on value co-creation to address the last two research questions.

2. Literature review

2.1. Value co-creation in marketing literature

Value co-creation is a broad concept and encompasses many different approaches [34]. Originally proposed by authors [3], businesses and customers create value together, an essential element of co-creation, including jointly defining and solving problems. In the study of [8], authors defined value co-creation as integrating existing service system resources with those available from various service systems for the benefit of all parties. Value co-creation means facilitating an organization-centric perspective to a more balanced perspective where the organization and customer interact and co-create experiences together [35]. However, in later years, researchers expanded the value co-creation concept to include multiple actors involved in complex interactions. For example, [36] considers value co-creation as a reciprocal process in which value is transferred when all parties involved realize their role in the process and fulfill their responsibilities.

Similarly, value co-creation is a joint, collaborative, and simultaneous process of creating value for stakeholders [5]. Customer participation in the various production and use stages through operant resources such as knowledge, skills, and efforts is the co-creation of value [9]. According to [37], value co-creation creates value between actors in a service ecosystem on a service platform. As such, value co-creation has gradually transformed from a two-way interaction between two parties (customer and business) to a process involving multiple parties involved in complex interactions between them. Although there are differences in definition, the common point of value co-creation is a collaborative process involving the provider and the customer to create value. The resource integration process takes place in which value is mutually created for the actors involved (customers, businesses, and other stakeholders in the service ecosystem).

Value co-creation has become a key concept in service marketing and business management [38] and is a widely used term to describe a mindset shift from the organization as a value definer to a more participatory process in which customers and organizations come together to create value [5, 39]. Greater involvement of customers in the value creation process leads to integrating their skills and knowledge, which fosters both new and critical competencies [3], and promotes innovation and development of market trends [8]. At the same time, customers also benefit from getting what they want or reducing costs, time, and energy [40], thereby achieving greater satisfaction [41].

2.2. Value co-creation in higher education

The study of [20] called for adopting a new marketing strategy in higher education institutions focusing on long-term value co-creation. Education is often seen as a very specific service, as students are customers. Besides, their presence is mandatory throughout the co-creation process, and they also determine service value [42]. Value is co-created through joint efforts of several parties, such as higher education institutions, faculty, staff, students, government agencies, and other stakeholders, and is determined primarily from the viewpoint of beneficiaries such as students and parents [43, 44]. Students must engage in learning, actively read the material, work in groups, communicate with faculty and support staff, and generally make an effort to apply their skills and knowledge as operant resources for operand resources (documents and exercises) to create value while lecturers are guides and facilitators. Compared to other actors, the role of lecturers becomes very important because they mainly interact with students in the university environment. Students are not silent individuals in the learning environment but are seen as motivated partners in collaborative learning based on dialogue, experimentation, and mutual learning with academic staff and peers [45].

Authors in [46, 47] suggested that higher education can be rationally and valuable analyzed through a service-dominant logic with a focus on value co-creation, which can provide an opportunity to improve education performance and student learning. An article by [44] highlighted the complexity of higher education services and recommended that European Higher Education Area assumes a co-creation perspective. Resources are provided by academic staff, students, and university services, which require an interactive approach through which the parties integrate these resources. They suggested a shift of perspective from a value delivery approach – doing something "to" students – to a co-creation approach – doing something "with" students. According to [48], three forms of student participation in pedagogical planning: students as co-creators of teaching approaches, students as co-creators of course design, and students as co-creators of curricula.

Researchers in [49] argued that promoting research based on value co-creation in service-dominant logic can be more useful for managing higher education institutions because this viewpoint seems to enable greater convergence between effective learning and marketing goals. This is reflected in activities in higher education institutions as it will first encourage lecturers, administration staff, and managers to recognize and appreciate the resources of students and utilize those resources to maximize educational value. Second, it will make learners more aware of their roles and responsibilities for the created education value during the course and after graduation.

3. Methodology

3.1. Search strategy and selection criteria

The method was applied for this study is the systematic literature review [30]. Assume that conceptual, qualitative, quantitative, and mixed studies are eligible to promote a better understanding of the different aspects, antecedents, processes, and outcomes of value co-creation [50]. However, one of the challenges in analyzing the full literature on any particular field is the ever-expanding literature on development in that field [51]. Therefore, it is essential to use inclusion and exclusion criteria to carry out the review procedure.

Accordingly, the criteria were applied to the study are as follows: Articles were published and written in English within the time frame 2003-2022, and only articles in international scientific peer-reviewed journals from the databases of Scopus and Web of Science were included in the analysis (book, book chapter, conference papers, and other publications are excluded).

The keywords were used to search articles in the database: "Value co-creation" or "Co-creation" or "Co-production" and "Higher education". Articles were extracted with keywords in the title, abstract, and keyword list.

By using these criteria, 137 studies were identified for further analysis. There are 35 duplicate and incomplete articles were deleted. After that, we evaluated the remaining 102 research papers for their relevance to our study. We read carefully the abstracts of each article to assess the relevance of the articles to our research objectives and found that 44 articles were unrelated to the research topic. After removing these papers, 58 articles were selected for systematic literature review (see Figure 1).

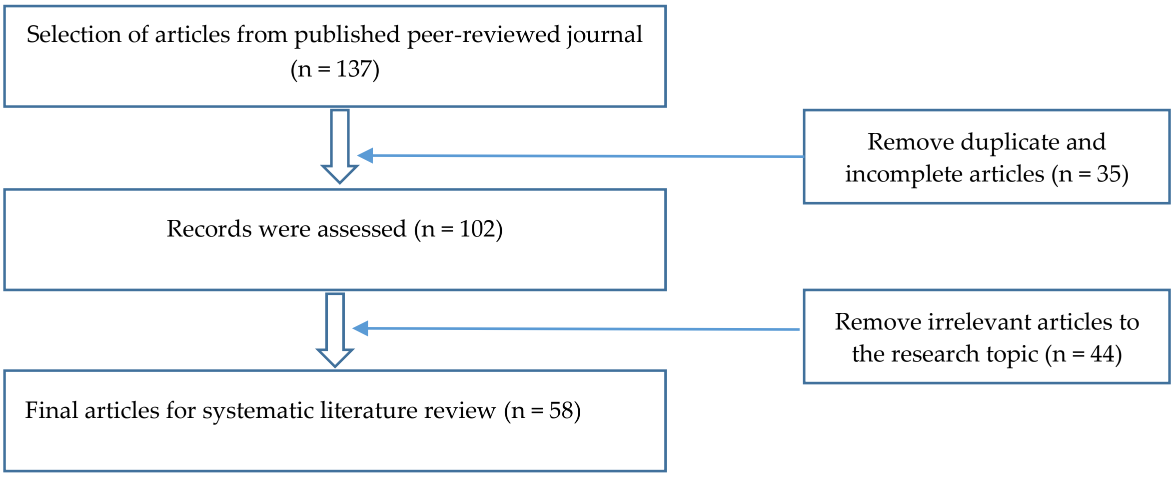

Figure 1. Steps of selecting final articles for systematic literature review

Source: The authors

3.2. Synthesis and analysis process

We thoroughly analyzed 58 final articles after a rigorous screening process. Data from a full review of articles was inserted into a table on an Excel sheet, categorized in the fields: author, year of publication, journal, theory, methodology, findings, and limitations.

Next step, the study used the statistical method of frequency occurrence in 58 articles to obtain results related to the various theoretical perspectives used in the value co-creation literature in higher education. In research results section, we described the most frequently used seven theoretical perspectives in details.

Based on data represented in the Excel sheet and content analysis technique of the articles, each author of us classified articles and identified the major themes related to antecedents, processes, and consequences of value co-creation literature in higher education. After that, we discussed, meticulously examined and agreed upon three groups of antecedents, three groups of consequences, and three processes of value co-creation.

Regarding the third research question, we combined limitations represented in these papers with our evaluation to identify research gaps in existing literature on value co-creation in higher education along with future research directions.

4. Results

4.1. Statistical analysis

Table 1. Articles description

Ranking	Author	Year of publication	Journal
1	Kotzé & du Plessis	2003	Quality Assurance in Education
2	Holbrook	2006	Journal of Business Research
3	Etgar	2008	Journal of The Academy of Marketing Science
4	Fluckiger *et al.*	2010	College Teaching
5	Bovill *et al.*	2011	International Journal for Academic Development
6	Díaz-Méndez & Gummesson	2012	Journal of Service Management
7	Fagerstrøm & Ghinea	2013	Journal of Higher Education Policy and Management
8	Duque	2014	Total Quality Management & Business Excellence
9	Bovill	2014	Innovations in Education and Teaching International
10	Judson & Taylor	2014	Higher Education Studies
11	Elsharnouby	2015	Journal of Marketing for Higher Education
12	Hasan *et al.*	2015	Jurnal Teknologi
13	Yang *et al.*	2016	Journal of Computer Assisted Learning
14	Bryson	2016	International Journal for Academic Development
15	Nguyen Hau & Thuy	2016	Service Business
16	Giner & Rillo	2016	Journal of Computational and Applied Mathematics
17	Robinson *et al.*	2016	Journal of Marketing for Higher Education
18	Pantoja Díaz *et al.*	2016	Abstract and Applied Analysis
19	Iyanna	2016	Journal of Applied Business Research
20	Hasan & Rahman	2016	Journal of Theoretical and Applied Information Technology
21	Wardley *et al.*	2017	Higher Education
22	Pappalepore & Farrell	2017	Journal of Hospitality, Leisure, Sport & Tourism Education
23	Sutarso *et al.*	2017	European Research Studies Journal
24	Encinas Orozco & Cavazos Arroyo	2017	Cuadernos de Administración
25	Foroudi *et al.*	2018	Technological Forecasting & Social Change
26	Kaur *et al.*	2018	Teaching in Higher Education
27	Maxwell-Stuart *et al.*	2018	Studies in Higher Education
28	Perello-Marín *et al.*	2018	Sustainability
29	Celuch *et al.*	2018	Marketing Education Review
30	Dollinger *et al.*	2018	Journal of Marketing for Higher Education
31	Ribes-Giner *et al.*	2018	International Journal of Engineering Education
32	Ranjbarfard & Heidari Sureshjani	2018	Interactive Technology and Smart Education

33	Temple Clothier & Matheson	2019	Journal of Further and Higher Education
34	Sahi *et al.*	2019	Journal of Service Theory and Practice
35	Monavvarifard *et al.*	2019	Journal of Cleaner Production
36	Monavvarifard *et al.*	2019	Journal of Cleaner Production
37	Pee	2019	Studies in Higher Education
38	Owusu-Agyeman & Fourie-Malherbe	2019	Studies in Continuing Education
39	Voropai *et al.*	2019	Economics and Sociology
40	Bond *et al.*	2020	International Journal of Educational Technology in Higher Education
41	Janjua & Ramay	2020	Journal of Business & Economics
42	Dollinger & Lodge	2020	Journal of Higher Education Policy and Management
43	Torkzadeh *et al.*	2020	Journal of Strategic Marketing
44	Smørvik & Vespestad	2020	Journal of Marketing for Higher Education
45	Cho *et al.*	2020	Teaching & Learning Inquiry
46	Magni *et al.*	2020	International Journal of Managerial and Financial Accounting
47	Nguyen *et al.*	2021	Sustainability
48	Manzoor *et al.*	2021	Sustainability
49	Cavallone *et al.*	2021	Studies in Higher Education
50	Leem	2021	International Journal of Engineering Business Management
51	de Azambuja *et al.*	2021	Journal of Promotion Management
52	Thangaiah *et al.*	2021	International Journal of Advanced Computer Science and Applications
53	Wang *et al.*	2022	International Journal of Educational Technology in Higher Education
54	Doyle & Buckley	2022	Interactive Learning Environments
55	Tarı Kasnakoğlu & Mercan	2022	Journal of Marketing for Higher Education
56	Ghorbanzade & Sharbatiyan	2022	Interactive Technology and Smart Education
57	Zarandi *et al.*	2022	International Journal of Educational Management
58	Goi *et al.*	2022	Journal of Marketing for Higher Education

Source: The authors

The statistic in Figure 2 shows that most of the studies were published after 2014. Only 2 of the 58 research papers were published in the time period of 2003–2006 and 2007-2010. During the next time periods (2011-2014), there was an increase of 4 articles in this number. Remarkably, after that, the number of research on this topic witnessed a nearly three-fold rise (22 compared to 6) before there was a slight growth with only 4 papers in the time period from 2019 to 2022.

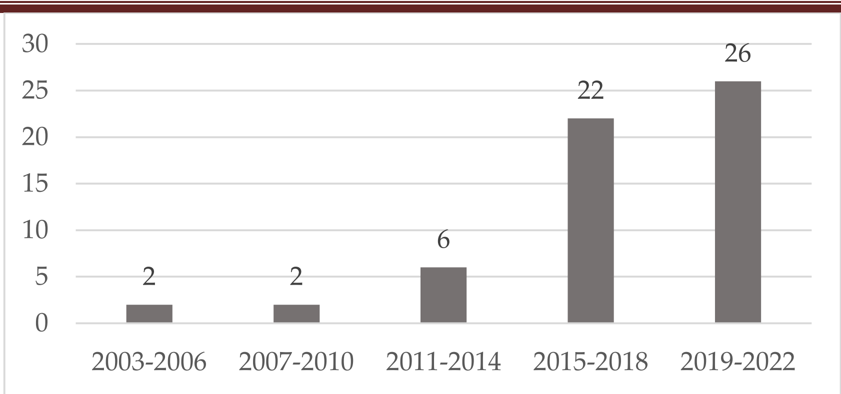

Figure 2. Allocation of research papers with regard to time period

Source: The authors

In terms of research paper allocation by journal, Table 1 shows that research articles on value co-creation were widely published in reputed journals in various fields. Journal of Marketing for Higher Education (6 papers), Studies in Higher Education (3 papers) and Sustainability (3 papers) constitute the highest quantity of articles. Generally, based on the recognized Scopus classification (2022), Figure 3 demonstrates that articles were published in Q1 and Q2 journals account for the majority of the literature on value co-creation (75%). In the meantime, 18.2% and 6.8% of research papers were issued in Q3 and Q4 ranked journals, respectively.

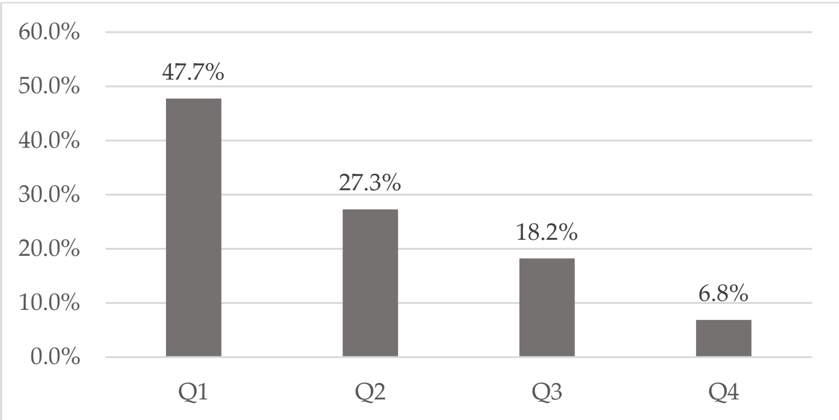

Figure 3. Allocation of research papers with regard to journals

Source: The authors

4.2. The most frequently used theoretical perspectives

Findings from the systematic literature review indicated one-third of the articles used at least one theoretical perspective. Authors in [52] introduced a service-dominant logic, including the concept of value co-creation with bringing a new approach to creating value. The service-dominant logic is a generalizable mindset, which even can be applied in many various contexts, including higher education [35]. That is why it is worth noting that 14 out of the 58 papers used Service-dominant logic. In addition, to participate in the value co-creation process, customers need intrinsic motivation, trust in the service provider, self-efficacy and identity with the business in online and face to face environments. Therefore, articles also used self-determination theory, social identity theory, uses and gratification theory, self-efficacy theory, commitment-trust theory. The combination of theories to explain the relationships is better and more comprehensive to enrich the existing literature on value co-creation in higher education context. The most adopted frequently seven theories in the value co-creation literature are presented below.

4.2.1. Service-dominant logic

According to the service-dominant logic [52], when interacting, customers must use their resources and integrate with those the businesses provide to create experience and outcome value for themselves. In the context of higher education, lecturers use resources like materials, skills, and experiences. In contrast, students use their time, experiences, knowledge, and financial resources, as well as communicate with academic staff and various students involved in the value co-creation process and derive benefits.

4.2.2. Self-determination theory

Self-determination theory divides motivation into intrinsic and extrinsic motivation. In particular, intrinsic motivation is assessed as a significant factor for performing a person's behavior because it is directly related to their own quality, performance, perseverance, and creativity [53]. This theory demonstrates the motivation for customers to engage in value co-creation activities. When students are strongly motivated in the learning process, they will try their best and utilize disposal resources to participate in value co-creation activities.

4.2.3. Social exchange theory

Social exchange theory states that when service providers allow customers to participate in service delivery, they also expect something in return, namely referrals from the customer, since the interaction must benefit each party involved in the exchange [54]. In higher education, social exchange occurs in value co-creation through students' voluntary actions, like positive word of mouth, outside their basic obligations.

4.2.4. Social identity theory

Social identity leads to a tendency to act and feel consistent with one's group membership, and therefore, it is associated with more positive feelings about group members, cooperation, and group-related positive attitudes and behaviors [55]. Therefore, university identity is crucial in promoting student value co-creation in higher education.

4.2.5. Uses and gratification theory

The use and gratification theory of [56] describes customers' motivations to engage in virtual or online environments. This theory identifies four types of benefits that individuals can derive from using media: cognitive benefit, social integrative benefit, personal integrative benefit, and hedonic benefit. By combining these dynamics with other relevant drivers in the context of higher education institutions, it is possible to form a complete overview of driver force stakeholder engagement in co-creation activities in the online context.

4.2.6. Self-efficacy theory

The author in [57] argues that decision-making, method of action, hardworking, effort, and flexibility are affected by self-efficacy. In general, people are more likely to do things they can and avoid things they cannot do. The self-efficacy theory states that one's feelings of individual capability impact all behavioral and mental change processes. Thus, it is obviously that self-efficacy can serve as a fundamental factor in co-creating value in the educational context.

4.2.7. Commitment-trust theory

The commitment-trust theory of relationship marketing by [58] suggests that trust is central to relationships. Trust occurs when someone believes in the integrity and reliability of a person or partner. Trust influences value co-creation behavior, as customers need to trust the service provider before participating in the value co-creation process. In higher education, trust in lecturers helps students form relationships that motivate them to cooperate and participate.

4.3. Research theme

4.3.1. Identification of articles by research theme

The following research themes were classified according to content analysis of the articles, with some articles relating to more than one theme: (1) Antecedents of value co-creation; (2) Processes of value co-creation; (3) Consequences of value co-creation.

Table 2. Themes

Ranking	Research theme	Number of research papers	References
1	Antecedents of value co-creation	28	[23, 24, 28, 33, 59–82]
2	Processes of value co-creation	4	[23, 26, 83, 84]
3	Consequences of value co-creation	41	[11, 20, 24, 26–28, 45, 48, 62, 64–66, 68, 69, 73, 75, 76, 79–81, 84–104]

Source: The authors

4.3.2. Antecedents of value co-creation

Many articles identified various antecedents of co-creation among students, academic staff, higher education institution and other stakeholders. This research theme can be classified by three groups: (1) Student-related factors, (2) University-related factors, and (3) Supporting factors in co-creation context.

a) **Student-related factors**

Personal factors, operand and operant resources, cognitive outcomes, and relational drivers strongly influence individual behavior. In higher education, these drivers impact student's value co-creation, especially student motivation and operant resources (Table 3).

Table 3. Illustration of the Student-related factors

Antecedents	Authors
Personal factors	
Perceptions	[24]
Goals	[24, 74]
Motivation	[24, 59, 62, 82]
Trust in faculty members	[65, 66]
Identity expression, joy of learning, the satisfaction of accomplishing	[60]
Participants' personal perspectives	[24]
Sharing experience, need fulfillment, hedonism & self-satisfaction, and perceived empowerment.	[59, 82]
Autonomy/freedom of expression	[75]
Cognitive outcomes	
Functional value, epistemic value, emotional value, conditional value	[23]
Social value	[23, 77]

Learning benefits, social benefits	[59, 82]
Student's operand and operant resources	
Financial resources	[28]
Social resources	[28, 61]
Physical resources/self-efficacy/willingness	[28, 61, 65, 66]
Knowledge and skills	[28, 67, 74]
Ability/competence	[59, 62, 82]
Past experiences	[24, 61]
Relational drivers	
Level of learner engagement	[67]
Involvement	[74]
Participation	[68, 69, 71]
Affective commitment	[72, 79]
Satisfaction	[33, 63, 78]
Loyalty & attachment	[59, 82]

Source: The authors

b) **University-related factors**

In terms of university-related factors, many studies showed that university resources, policy and culture, support and feedback process, and technological-related factors influence students' value co-creation (Table 4).

Table 4. Illustration of the University-related factors

Antecedents	Authors
University resources	
Website applications	[80]
Website features	[80, 81]
Having multichannel platforms	[59, 82]
Higher education institution image	[63]
Perceived higher education institution reputation, perceived faculty competency	[78]
Teaching quality, infrastructures of information and communication technology	[65, 66]
Good management	[59, 82]
University resources	[61]
Policy and culture	
Open innovation culture, leadership style, promotion and awareness programs, participation in clear and fair policy, rewards and remuneration, organization recognition	[59, 82]
Sustainability-oriented activities, sustainability-oriented values	[65, 66]
Alignment of the expected values from stakeholders	[77]
Support and feedback process	
Out-of-room support services/student support/support from top management/organization support	[59, 64–66, 75, 82]
Perceived ease, perceived usefulness, perception of the degree of student orientation	[72]
Detailed and timely feedback from lecturers	[75]

Technological-related factors	
Reliability and easy access platform, educative and informative, responsiveness & interactivity, online platform simplicity, embedding social media applications	[59, 82]
Web communication, digital mindset	[33]

Source: The authors

c) **Supporting factors in co-creation context**

Some factors depend on the different contexts in which co-creation occurs and must be clearly defined and well-designed. They will then actively support student co-creation in learning activities. The study of [76] emphasized multiple interactions, the lecturer's transformative role, and group cooperation in teaching student-generated content. In an active learning environment where students can participate in the educational process and value co-creation in the virtual learning environment, the authors [70] explored significant antecedents, including partnership requirements, collaborative learning services, and social networks. Several studies also pointed out other factors, such as the variety of tasks [105], authenticity and clarity of activities [24], and role clarity [62].

4.3.3. Processes of value co-creation

Based on previous studies, scholars have divided value co-creation process into different stages.

Two authors of [2] described four basic elements of value co-creation: dialogue, access, risk-benefit assessment and transparency (DART), which are central elements in creating value with customers. This model is emerging as the basis for consumer and firm interaction, especially personalized interactions. Customers pursue freedom of choice to interact with a company through experiences. They also want to interact in their preferred language and style. Dialog is an important aspect of the process of co-creation. Dialog implies interactivity, deep engagement, and a propensity to act – on both sides. The business and the consumer must become equal in dialog and joint solve issues of interest to both. Access enhances the consumer experience, facilitating more efficient exchange and interaction [106]. Firms provide customers with access to tools and information to co-create value experiences [2, 3]. Risk-benefit assessment is the third building block in DART model. The risk here means to the probability of harm to the consumer. Firms should not only communicate the benefits but also inform fully about the potential risks associated with the products and services of their proposals to help their customers make informed decisions and strengthen trust between them [2, 3]. All stakeholders involved in value co-creation must assess the risk of the co-creation outcome [106]. Transparency involves the "symmetry of information during interactions, which enables the rise of strategic information and trust capital for both partners" [107]. As information becomes more accessible, creating new levels of transparency becomes increasingly desirable. Transparency is crucial for active dialogue, facilitating trust and equality, and enhancing customer experience.

According to [84], higher education institutions and students must become equal and joint solve problems to bring an active dialogue. Their field study indicated how a university co-creates value through a recruitment campaign on social networks by using Facebook groups. As a result, the university helped applicants overcome their extensive problem-solving situation. Instead of only relying on information from the marketing office, they have information from communication with current students and other applicants and share their experience with others. An active dialogue, access, transparency, and helping applicants assess the risk-benefit of their decision (what and where to study?) facilitated interaction between the higher education institution and applicants and among applicants themselves.

The authors in [108] state that value-in-use and co-production compose co-creation. Co-production is the initial step for customers to influence a company's value offer. Knowledge, equity, and engagement may assess company-customer co-production. Value-in-use happens when customers and suppliers utilize the co-produced service or product. Personalization, experience, and relationship may also evaluate value-in-use. These indicators are processes rather than outcomes, which continue developing and changing over time.

The authors of [26] declared that value co-creation also comprises co-production and value-in-use in the context of higher education. Co-production can be identified through knowledge (the way students and academic and senior staffs exchange and integrate experiences, information, and other resources into the value proposition of education), equity (the organization's ability to provide equal access to the design and development of the higher education value proposition to students) and interaction (quality of the interactions between the learners and universities to integrate various resources and co-create the value proposition). These questions mention how the learners co-produce value propositions in higher education. Value in use measures how students use the value proposition after it is delivered, which can be expressed through their experience (how does value co-creation affect learners' experiences in university), personalization (in what degree learners can personalize their value proposition of higher education) and relationship (how does value co-creation influence relationship between students and their universities). Differently from co-production, these questions aim to understand how the value of co-production affects the value students feel or use.

The author in [83] states that several big changes in consumer culture encourage customization and co-production with an increasing need of experiences rather than products for need satisfaction. Consumers change their interactions with companies from a single transaction to a relationship exchange over time. Relationships define exchanges as open systems where value is created in the interaction process. Therefore, the potential for more direct consumer involvement in production activities is greater. The author developed a co-production model as a prolonged dynamic process, including five distinctly various stages that can be applied to various fields. Through which customers who consider participating in co-production must pass. The co-production process includes: (1) Forming necessary antecedent conditions. If customers engage in value co-creation, a group of conditions is required. They include macro-environmental conditions, consumer linked, product linked and situationally linked conditions; (2) Forming motivations that stimulate customers to participate in co-production. Although there are a group of conditions that set the context for value co-creation, motivation of the customers need to be integrated into that context. It includes economic, psychological and social drives; (3) Calculating the co-production related cost-benefits. Consumers perform a cost– benefit analysis comparing the benefits they expect to accrue from co-production, and weighing them against the relevant costs (use of their resources, time, psychological effort) of engaging in such activities. The outcome of this analysis is a conscious decision either to move into and engage in co-production or else to avoid such involvement; (4)

Activating as customers engage in the actual co-production activities. The activation phase was focused on consumption, assembly, manufacturing, design, and initiating. The author in [109] states that there are equivalents in higher education – consumption/learning, assembly/course production, manufacturing/course writing, design/course design, and initiating/curriculum planning; (5) Generating outputs and evaluating the outcomes of the process. After activation, consumers compare the values received with the goals set up in the second stage of the process. In higher education, students evaluate co-creation process by comparing of the end value determined by the student (the beneficiary) and to their initially prompted motivations to consider engaging in the co-creation to begin with.

As stated by [109], the term co-production is used by [83] similar to co-creation, and has been mostly accepted as being a linked and nested subordinate concept of co-creation. Students have the right to choose whether to engage in value co-creation or not and how engaged they will be. For effective learning, learners need to decide to engage in the process of co-creation, and the process needs to be accordant with student engagement. Applying 5 stages of [83] to higher education will provide a setting where value co-creation can take place effectively and ultimately benefit the students. Without students' engagement or willingness to learn, the class would fail to deliver.

Although there are differences in dividing stages of value co-creation from scholars, the common point of value co-creation is a collaborative process between business and customer to create value. Process of resource integration takes place in which value is mutually created for the actors involved (customers, businesses, and other stakeholders in the service ecosystem). Customers do not passively receive what businesses provide, but actively use their own resources to participate in the service process, co-create value, be beneficiary and at the same time decide their perceived value of the service. Businesses only make value propositions, but cannot provide value to customers. In higher education, value is created by students as they use the knowledge gained and develop for a variety of purposes in various environments. The value of education and knowledge are determined by students towards their individual needs, abilities, intentions and situations. It may be different things for various students. A training program is not of equal value to all students enrolled.

4.3.4. Consequences of value co-creation

Determining the outcomes of value co-creation in higher education is significant. This shows an understanding the impact on the various stakeholders participating in co-creation and motivating them to become more involved in this phenomenon. This research theme can be distributed into three groups (student level, academic staff level and university level).

a) **Student level**

If students participate in the co-creation process, they will obtain different benefits in the short and long term and even in terms of affective outcomes. Many studies showed that satisfaction with the learning process is an important advantage (Table 5).

Table 5. Demonstration of the benefits of co-creation from student level

Consequences	**Authors**
Short-term cognitive outcomes	
Learning performance/Perceived/cognitive learning outcomes	[76, 90, 91, 103, 104]
Functional value, emotional value, personalized value	[104]
Social value	[104]
Self-efficacy and confidence	[24, 45]
Satisfaction	[11, 26, 28, 62, 64, 68, 69, 87, 96, 97, 103]
Process value, outcome value	[11]
Perceived teaching quality	[62]
Service quality	[94, 103]
Networking	[33]
Quality interactions	[26]
Positive experiences	[95]
Experiencing enhanced engagement, motivation, and enthusiasm	[45, 48]
Long-term cognitive outcomes	
Enhanced cognitive abilities, psycho-social state, moral development	[20]
Graduates' capacities	[26]
Personal growth	[75]
Lifelong learning skills development	[86]
Increased student employability	[24]
Affective outcomes	
Happiness	[89]
Affective commitment	[62]

Source: The authors

b) **Academic staff level**

Lecturers are important partners and interact regularly with students in the learning process. They also get positive benefits from co-creation with students (Table 6).

Table 6. Demonstration of the consequences of co-creation from lecturer level

Consequences	**Authors**
Effective teaching and positive experience	
Effective teaching experience	[88, 102]
Rich of experience of learning from students	[45]
Experiencing enhanced engagement, motivation, and enthusiasm	[48]
Effective time management	
Frees up time for teachers helping students, a better balance between administrative hours and lesson preparation.	[88]
Relationship Strength with students	
Improvement in student-staff relationship quality	[86]

Source: The authors

c) **University level**

When a university provides resources, develops appropriate policies, and creates a favorable environment to support students' co-creation, the benefits received by the university include many factors, especially the image, reputation and loyalty (Table 7).

Table 7. Demonstration of the consequences of co-creation at university level

Consequences	**Authors**
University marketing	
University brand image	[26, 80, 81, 97]
University reputation	[81]
Enhanced Marketing performance	
Financial contribution, conversion rate for applicants	[84]
Retention	[103]
Positive word of mouth	[97], [100]
University sustainability	[65, 66]
Organizational commitment	[75]
Loyalty	[62, 79, 93, 94, 96, 101]
Trust	[69]
Student-university identification	[26]
Other improvement	
Improved services, better-informed university marketing, better understanding of the student perspective	[24]

Source: The authors

4.4. Limitations and future research directions

Most works on value co-creation in higher education are qualitative and conceptual, while quantitative research is scarce. Therefore, to explain the relationships better and more comprehensively, quantitative studies need to continue to test the proposed models with the integration of different theoretical approaches. Many other antecedents need to be studied further to encourage student's value co-creation, such as university marketing activities on social networks [81], culture's influence on stakeholders' value co-creation behavior [69], and students' different resources. In addition, scholars should examine the expected benefits from value co-creation in higher education, such as self-confidence [91], graduates' capacities, university image, positive word of mouth.

In terms of co-creation and co-creation outcomes, investigating differences between students is rare. Future research should compare the results by gender, academic performance, academic year ranking, and learning modes [64, 75, 97]. Besides, students may respond differently to a particular learning intervention due to personality, experience, or aptitude differences. Investigating the comparative effectiveness of different approaches to trigger value co-creation is important [90].

Although value co-creation in higher education encompasses more aspects and stakeholders as it forms a complex network [110], existing literature was primarily viewed from the student's point of view. As a result, future research should consider the organization's perspective and other relevant stakeholders to confirm and enrich research findings. Scholars should think about forms of co-creation involving the external stakeholders, such as connections with other universities and partnerships, or at least three groups of universities, students and employers [94, 97].

Studies have focused mainly on face-to-face teaching, while virtual learning environments have the potential for value co-creation. So, further studies may consider value co-creation in online teaching or a combination of face-to-face and online teaching. Furthermore, with the continuous development of emerging trends in the use of technology, future studies should examine the impact of educational technology or platforms on student value co-creation behavior [70, 85, 99].

Literature development of value co-creation in higher education institutions is still in its early stage [25, 27, 28]. Although there was an increasing interest of the concept among developing economies where students often have low academic skills, scientific evidence on how value co-creation can affect students is still rare [89]. Therefore, more studies are needed to better understand value co-creation in higher education, especially in developing nations.

Most of the study used a cross-sectional approach to examine value co-creation and its outcomes. However, the nature of co-creation experience and related activities are temporary and changeable. Therefore, future research should include a longitudinal study to eliminate the effect of measurement at a particular time. For example, re-interviewing students after attending higher semester, or surveying students after graduation.

5. Conclusions and implications

5.1. Conclusions

This study is an attempt to develop a systematic literature review on the topic of value co-creation in higher education. The study analyzed 58 articles from 44 reputed journals between 2003 and 2022. The findings revealed seven main used theories: Service-dominant logic, Social exchange theory, Self-determination theory, Social identity theory, Uses and gratification theory, Commitment-trust theory, and Self-efficacy theory. Scholars developed different and applicable three value co-creation processes in higher education. Moreover, antecedents of value co-creation are closely linked to the student (personal drivers, cognitive outcomes, student's operand and operant resources, relational drivers), university (university resources, policy and culture, support and feedback process, technological-related factors) and supporting factors in co-creation context. The consequences of value co-creation can be grouped in the learner level (short-term cognitive outcomes, long-term cognitive outcomes, affective outcomes), academic staff level (effective teaching and positive experience, effective time management, relationship strength with students), and university level (university marketing, enhanced marketing performance, other improvement).

Further study in the future should focus on developing nations, the perspective of the organization and other relevant stakeholders, the context of online teaching and use of technology, differences between students in terms of co-creation and co-creation outcomes, quantitative methods with the integration of different theoretical approaches regarding antecedents and expected benefits from value co-creation.

5.2. Implications

In terms of academic view, this research provides a comprehensive understanding of the relevance of value co-creation strategy in higher education and the development of value co-creation literature across used theories. This study also describes the antecedents, processes, and consequences of value co-creation, identifies limitations from existing literature and suggests future research directions to enrich the literature on value co-creation in the higher education context.

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Enhance the Efficiency of Students' Subject Selection in Digital Era Based On Collaborative Filtering: A Case Study

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ABSTRACT

Currently, most forms of subject scheduling for each student in universities and colleges are determined based on credit registration. This allows students to have an objective assessment and choice of subjects based on their abilities, goals, and majors. With appropriate choices, students can achieve high academic results and leverage their strengths and interests, leading to an efficient learning process and minimizing the time to complete a subject. Therefore, the selection of subjects that match students' strengths and maximize knowledge in their fields of competence plays a vital role. Consequently, recommender systems have been proposed and applied in the education sector to assist students in easily selecting subjects. These systems exploit the extensive student grade database in the institution's data system to simplify data access and provide suitable subject recommendations to students. In this study, we applied collaborative filtering techniques to analyze the students' data and give them appropriate suggestions in the subject selection process. The experimental results demonstrate that the collaborative filtering approach has an effective output as well as satisfactory results in improving the subject selection process for students.

Keywords: Collaborative filtering, Subject selection, Recommendation system.

1. Introduction

In the digital era, various information can be gathered and brings a lot of opportunities and challenges for individuals and organizations based on big data. This has led to the emergence of customized service systems tailored to the specific needs and preferences of users. Particularly in the field of e-commerce, recommendation systems have gained widespread popularity [1]. Recommendation systems in e-commerce leverage users' information and data to suggest products or services that align with their interests. These recommendations are typically based on factors such as customer profiles, product features, and individual preferences. By offering personalized

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suggestions, recommendation systems can discern customer preferences and understand their requirements.

In the education area, the competence of students in universities is assessed based on their specialized knowledge acquired through their subjects' grade [2]. Presently, universities organize each major by offering a set of associated subjects within the credit registration system. These courses consist of various subjects, and their selection is mandatory for students. Recently, because of the COVID-19 epidemic, the change to online learning was unavoidable, and new learning paradigms were established as a result. The log data generated are becoming increasingly accessible while students use these models. Based on the students' knowledge and learning behavior analysis, if they have low outcomes, they can change their approaches to enhance their academic performance. Therefore, a recommendation system can help all stakeholders to develop better plans in increasing educational performance in the education system. Universities should now enhance their ability to use these data to forecast academic achievement and assure student advancement. Therefore, educational data mining can give new useful information to educators by exploring latent patterns in educational data.

Opting for suitable subjects allows students to develop and utilize their skills and aptitudes in diverse domains that match their interests and capabilities [2]. This approach not only helps students find subjects based on their preferences and needs but also helps them save time, thereby enabling them to take ownership of their schedule management [3].

2. Literature Review

2.1. Subject selection

Subject selection is the process by which students choose specific subjects to enroll in during their academic program. It is an important decision for students as it directly impacts their learning process, knowledge development, and specialization. Choosing the right subjects helps students access the necessary knowledge and skills in their field of study, and provides favorable conditions for their professional and academic growth in the future.

For instructors, Educational Recommender Systems can contribute to their pedagogical practices through recommendations that improve their planning and assist in educational resources filtering. As for the students, through preferences and educational constraints recognition, recommenders can contribute for their academic performance and motivation by indicating personalized learning content [1]. Despite the benefits, there are known issues upon the usage of the recommender system in the educational domain. One of the main challenges is to find an appropriate correspondence between the students' expectations and the recommended subjects [2]. Difficulties arise from differences in the student's educational interests and needs [3].

In the credit-based education system, students are required to take both mandatory and elective subjects. The duration of studying can take a long time, ranging from 3 to 7 years. Therefore, students have the option to choose an accelerated study path in order to shorten the training period and gain a competitive advantage upon graduation. However, there are several factors, both objective and subjective factors that may lead students to choose the subjects which they want to enroll in. These factors include: future career goal, simplicity, personal interest, social status, university's examination protocol, timetable schedule, lecturers' conduct, etc [4].This enables students to make informed decisions that can enhance their learning outcomes, save time, and reduce costs. By carefully selecting appropriate subjects, students can maximize their academic performance and acquire the necessary knowledge and skills in a more efficient manner.

However, many aspects of receiving a college education have been changed. The volume of subject-related information available to students is rapidly increasing. This abundance of information has created the need to help students find, organize, and use resources that match their individual goals, interests, and current knowledge. The concern is more serious for graduate students who have more freedom to choose subjects while they care more about taking subjects that contribute to their progress towards career goals. To make these decisions, they use information from subject catalogs and schedules, consult with their advisors, and seek guidance from their classmates, especially those with similar interests [5].

Incorporating information about subjects and degrees would be highly beneficial as it allows for a more personalized and tailored subject recommendation. While students may have similarities, their chosen degrees and subjects can significantly impact the effectiveness of the recommendations provided to each individual. By considering the specific combination of subjects, it becomes possible to create an efficient sequence of study [6]. In today's evolving job market and the growing importance of the social economy, it has become crucial for graduates to possess the necessary skills and potential to succeed in their careers. However, to attain these excellent skills is not a one day simple task; it is a long process gained from the student’s study life. It is, therefore, essential which subject the student chooses to major in. Many machine learning algorithms have been applied to predict students’ performance in previous studies, like support vector machine [7], decision tree [8], linear regression [9], and random forest [10]. CF is applied in choosing similarity students by similarity, and then the grades of the student are predicted using weight sum, therefore, subjects are recommended based on scores [11].

2.2. Collaborative filtering

Collaborative filtering (CF) has important applications in ecommerce, direct recommendations and search engines. Based on the CF approach, users could get recommendations about many of their everyday activities, including restaurants, bars, movies, and interesting sights to see and things to do in a neighborhood or city [12].

CF has become one of the most influential recommendation algorithms. Unlike the content-based approaches, CF only relies on the item ratings from each user. It is based on the assumption that users who have rated the same items with similar ratings are likely to have similar preferences. CF is specifically designed to provide recommendations when detailed information about the users and items is inaccessible [13]. The main purpose of this approach is to help users having the appropriate recommendations via individuals or groups with the same preferences or behaviors [7].

CF involves building a database stored in the form of a user-item matrix, where each row represents a vector. It focuses on the relationships between items and users, and the similarity between items is determined by how users rate those items. By finding correlations, appropriate recommendations can be generated. The following is a model of the CF process. CF techniques can be divided into two types: memory-based and model-based [13].

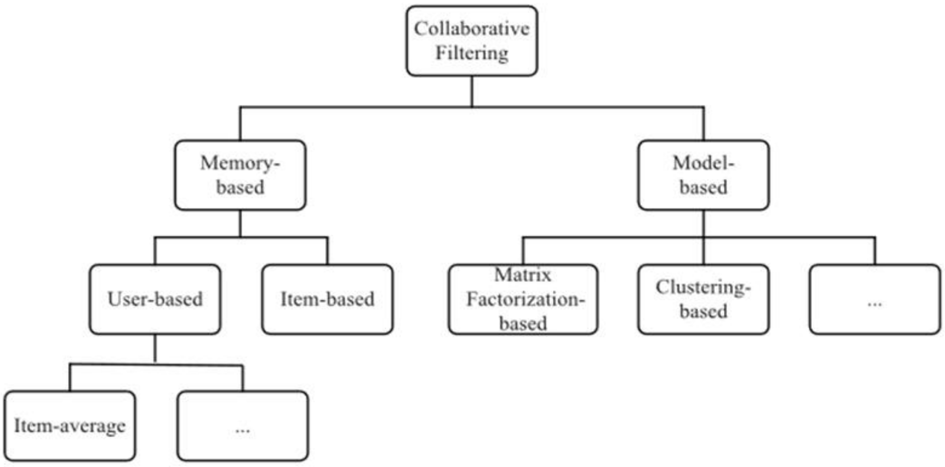

Fig 1: Classification of collaborative filtering algorithms [13].

Memory-Based CF approaches have user-based and item-based methods. Both methods rely on past user data to find similarities.

Model-based approach involves some common methods such as matrix factorization-based, clustering-based, association rules, clustering, Bayesian networks, and neural networks, etc. These predictive models focus on constructing models based on collected historical data. These techniques analyze the user-item matrix to identify relationships between items, which are then used to compare and generate recommendation lists.

The recommendation algorithm based on CF is based on the similarity measure of individual behavioral characteristics. By calculating the similarity between the specified new sample and the original sample in the database, the new sample is clustered, and the individuals with similar behavioral characteristics to the new sample are identified as the nearest neighbor samples [14]. The main task of the CF algorithm is to predict the unknown interactions based on the existing interactions and, based on the prediction results, make recommendations for users [15]. The main idea of CF is to find the similarities between users or items and the relations between users and items, based on the interaction history between users and items. These similarities and relations mainly describe the user’s interests and the item’s properties.

CF has been very successful in both research and practice. However, there remain important research questions in overcoming two fundamental challenges for CF recommender systems. The first challenge is to improve the scalability of the CF algorithms. The second challenge is to improve the quality of the recommendations for the consumers [16].

3. Methodology

3.1. Data

In order to build a model for improving the efficiency of students' subject selection in the digital era, this study applied CF approach to evaluate the suitable choice for student in the subject selection based on main information such as preferences, achieved grades, and interests in specific fields. These information have a significant influence on the choice of subjects for students due to the following reasons:

Students' preferences reflect their personal interests and passions. They are more likely to choose subjects that align with their interests because they find them enjoyable and engaging. When students are interested in a subject, they tend to be more motivated, actively participate in class, and have a higher level of satisfaction with their academic experience.

Achieved grades: can provide an indication of a student's academic preparedness and performance in specific subjects. Students often consider their previous grades as an assessment of their abilities and mastery of certain topics. Higher grades in related subjects can instill confidence and a sense of competence, making students more likely to choose advanced or specialized subjects within the same field.

Interests in specific fields: When students choose subjects aligned with their interests, they are more likely to be motivated, engaged, and enthusiastic about the subject matter. This intrinsic motivation fosters a positive learning experience and can lead to better academic performance. Interests in specific fields often align with students' future goals and career aspirations. By pursuing subjects in their areas of interest, students can develop a strong foundation in their chosen fields and prepare themselves for future career opportunities.

In the study, we used the data surveyed from second and third-year students at the university, including 104 students and 24 subjects. The students’ information gathered on students' preferences, achieved grades, and interests in specific fields. Each information can be scaled by 5 likert measurements from 1 to 5 (from low to high expertise). The data collection process includes the following 4 steps:

Step 1: Determine the data to be collected: In this research, we focus on second-year and third-year university students to obtain optimal and maximized results.

Step 2: Design data collection methods: we conducted a survey by constructing a questionnaire with a system of similar subject components then sent to the target subjects.

Step 3: Data cleaning and preprocessing: The collected data was reviewed to identify and correct any errors, inconsistencies, or outliers. Then, the data was processed by transforming, aggregating, or filtering it to prepare it for analysis.

Step 4: Finally, we proceeded to summarize and analyze the data of the students based on the list of mandatory subjects and elective subjects.

3.2. Framework and Process

3.2.1. Framework

In order to evaluate the suitable choice for student in the subject selection, we proposed a framework as following:

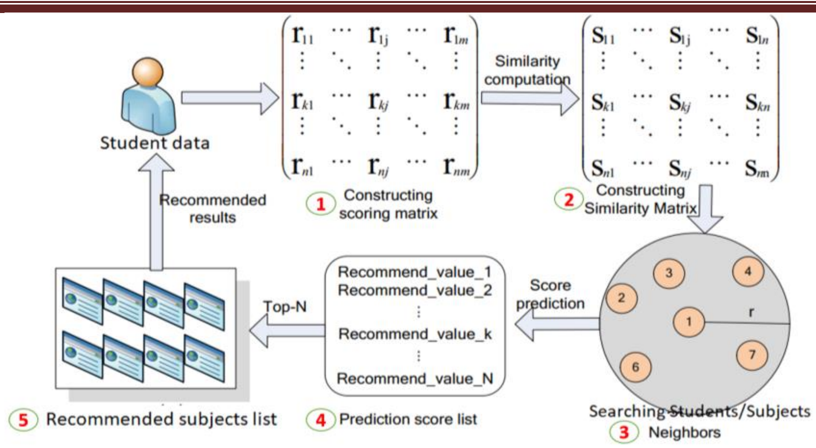

Fig 2: Framework of model.

This process includes 5 stages (seen in Fig 2).

Step 1: Construct a scoring matrix after preprocessing the collected data

Step 2: Compute the similarity between students after normalizing the utility matrix. We use the cosine similarity function as the below formula:

$$cosine\_similarity\ (u_1, u_2) = cos\ cos\ (u_1, u_2) = \frac{u_1^T u_2}{||u_1||_2\ .\ ||u_2||_2} \quad (1)$$

Step 3: Compute the rating of a student for each subject based on the k nearest neighbors as the formula as following:

$$\hat{y}_{i,u} = \frac{\sum_{u_j \in N(u,i)} \quad \underline{y}_{i,u_j} sim(u, u_j)}{\sum_{u_j \in N(u,i)} \quad \underline{y}_{i,u_j} |sim(u, u_j)|} \quad (2)$$

Where:

$\hat{y}_{i,u}$ is the predicted rating of student u for subject i,

N(u,i) represents the set of nearest neighbors of student u,

$sim(u, u_j)$ denotes the similarity between student u and student v,

$\underline{y}_{i,u_j}$ is the rating of student v for item i.

Step 4: Predict score list for each student and subject.

Step 5: Generate a top-N recommended subject list for each student. This list consists of the N subjects with the highest predicted ratings for a particular student.

3.2.2. The collaborative filtering process.

a) **Processing Data**

For this experimental section, we utilize the training data.

The set of students: S = {S_1, S_2, ..., S_n}

The set of subjects: T = {T_1 , T_2 ..., T_m}

The Rating matrix R =(r_{ij}) where i = 1, ⋯, N; j = 1, ⋯, M represents the interaction information between the student set S and the subject set T. Here, r_{ij} represents the rating given by student ui for subject ij, with the following possible values:

$$rij = \begin{cases} [1{,}5]\ The\ values\ from\ 1\ to\ 5\ represent\ the\ ratings\ given\ by\ student\ u_i\ for\ course\ T_j \\ \emptyset\ if\ student\ u_i has\ not\ rated\ course\ T_j \end{cases}$$

The rating scale from 1 to 5 corresponds to five levels, including: Strongly dislike, Dislike, Neutral, Like, Strongly like, respectively.

The task of CF is to predict, for the current student, the ratings for the subjects that they have not yet rated, based on the rating matrix Rij.

The dataset of second-year students consists of 63 students from the Department of Information Systems in Economics and E-commerce at the university.

The compulsory subjects include:

- Term 1: Database Fundamentals
- Term 2: Programming Fundamentals
- Term 3: Microeconomics
- Term 4: Calculus
- Term 5: Computer Networks and Communications
- Term 6: Fundamentals of E-commerce

The elective subjects include:

- Term 7: Macroeconomics
- Term 8: Econometrics
- Term 9: Probability and Statistics Theory
- Term 10: Object-Oriented Programming
- Term 11: Data Mining on the Internet
- Term 12: Electronic Advertising Practice
- Term 13: Mathematical Foundations for Computer Science.

index	Unnamed: 0	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Term 7	Term 8	Term 9	Term 10	Term 11	Term 12	Term 13
0	Student 1	4	4	4	4	4	4	3.0	3.0	3.0	3.0	3.0	3.0	3.0
1	Student 2	4	4	5	5	4	5	2.0	1.0	2.0	1.0	2.0	2.0	2.0
2	Student 3	4	2	3	3	5	5	NaN	NaN	3.0	NaN	4.0	NaN	NaN
3	Student 4	3	1	2	4	3	4	4.0	3.0	3.0	3.0	3.0	3.0	2.0
4	Student 5	4	4	3	4	4	4	3.0	2.0	2.0	4.0	4.0	4.0	4.0

Fig 6: Illustration of the top 5 rows of the dataset for the subjects of second-year students.

(Source: Analysis and synthesis by the author group.)

The dataset of third-year students consists of 40 students from the university.

The compulsory subjects include:

- Term 1: Database Management
- Term 2: Management Information Systems
- Term 3: Website Design and Development
- Term 4: Information Security and Privacy
- Term 5: Information System Analysis and Design
- Term 6: Software Testing

The elective subjects include:

- Term 7: Data Mining in Business
- Term 8: SQL Server Techniques

- Term 9: Electronic Payments
- Term 10: Mathematical Foundations for Computer Science
- Term 11: Data Structures and Algorithms

	Unnamed: 0	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Term 7	Term 8	Term 9	Term 10	Term 11
0	Student 1	4	3	4	5	5	5	NaN	NaN	NaN	NaN	3.0
1	Student 2	5	5	5	5	5	5	2.0	5.0	5.0	1.0	4.0
2	Student 3	5	5	4	4	5	5	5.0	NaN	5.0	5.0	NaN
3	Student 4	5	3	4	4	4	5	NaN	NaN	5.0	4.0	4.0
4	Student 5	5	4	5	5	4	5	NaN	NaN	5.0	5.0	4.0

Fig 3: Illustration of the top 5 rows of the dataset for the subjects of third-year students.

3.2.3. Experimental Results

In order to evaluate the proposed framework, we used the Root Mean Squared Error (RMSE) as the below formula:

$$RMSE = \sqrt{\frac{1}{|D^{test}|} \sum_{u,i,r \in D^{test}} (r_{ui} - \hat{r}_{ui})^2} \quad (3)$$

Where:

D^{test} is the total number of rating predictions.

r_{ui} is the actual rating.

$\hat{r}_{ui}$ is the predicted rating.

After applying the steps of CF technique to the dataset, we obtained the following results:

The results of calculating the similarity for the dataset of second-year students:

	Student 1	Student 2	Student 3	Student 4	Student 5	Student 6	Student 7	Student 8	Student 9	Student 10	Student 11	Student 12	Student 13	Student 14	Student 15	Student 16	Student 17
Student 1	1.00	0.95	0.81	0.95	0.98	0.97	0.94	0.87	0.93	0.99	0.96	0.85	0.98	0.98	0.78	0.99	0.77
Student 2	0.95	1.00	0.88	0.86	0.91	0.93	0.86	0.90	0.86	0.92	0.90	0.76	0.95	0.88	0.90	0.97	0.56
Student 3	0.81	0.88	1.00	0.76	0.77	0.86	0.75	0.84	0.79	0.80	0.77	0.68	0.82	0.76	0.92	0.85	0.45
Student 4	0.95	0.86	0.76	1.00	0.94	0.93	0.95	0.76	0.88	0.95	0.90	0.78	0.91	0.95	0.70	0.93	0.83
Student 5	0.98	0.91	0.77	0.94	1.00	0.96	0.97	0.83	0.95	0.98	0.95	0.92	0.98	0.98	0.71	0.97	0.80
...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Student 59	0.81	0.88	0.82	0.74	0.78	0.84	0.76	0.92	0.74	0.77	0.73	0.71	0.86	0.75	0.90	0.82	0.40
Student 60	0.87	0.93	0.82	0.76	0.83	0.87	0.79	0.90	0.72	0.82	0.81	0.72	0.88	0.82	0.88	0.90	0.51
Student 61	0.75	0.79	0.59	0.76	0.66	0.64	0.64	0.58	0.62	0.74	0.73	0.37	0.69	0.65	0.68	0.76	0.43
Student 62	0.99	0.90	0.76	0.96	0.98	0.96	0.96	0.81	0.92	0.99	0.94	0.85	0.96	0.99	0.70	0.97	0.85
Student 63	0.93	0.87	0.74	0.91	0.93	0.92	0.94	0.75	0.84	0.93	0.92	0.84	0.90	0.90	0.73	0.92	0.78

63 rows × 63 columns

Fig 4: The results of calculating the similarity for the dataset of second-year students.

The complete matrix of students and subjects for second-year students:

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Term 7	Term 8	Term 9	Term 10	Term 11	Term 12	Term 13
Student 1	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Student 2	4.0	4.0	5.0	5.0	4.0	5.0	2.0	1.0	2.0	1.0	2.0	2.0	2.0
Student 3	4.0	2.0	3.0	3.0	5.0	5.0	2.0	1.0	3.0	1.0	4.0	3.0	3.0
Student 4	3.0	1.0	2.0	4.0	3.0	4.0	4.0	3.0	3.0	3.0	3.0	3.0	2.0
Student 5	4.0	4.0	3.0	4.0	4.0	4.0	3.0	2.0	2.0	4.0	4.0	4.0	4.0
...	...	...	...	...	...	...	...	...	...	...	...	...	...
Student 59	3.0	3.0	2.0	3.0	4.0	5.0	2.0	1.0	2.0	3.0	3.0	4.0	3.0
Student 60	4.0	4.0	5.0	5.0	5.0	4.0	3.0	1.0	4.0	2.0	3.0	3.0	4.0
Student 61	2.0	2.0	5.0	5.0	1.0	5.0	5.0	5.0	2.0	2.0	2.0	2.0	2.0
Student 62	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Student 63	2.0	2.0	2.0	2.0	2.0	5.0	2.0	2.0	2.0	2.0	2.0	2.0	4.0

63 rows × 14 columns

Fig 5: The complete matrix of students and subjects for second-year students.

Assuming student 3 from the second-year student dataset has taken 6 compulsory subjects and two elective subjects, namely "Probability and Statistics Theory" and "Data Mining on the Internet." Based on the evaluations of the subjects taken by student 3, the system will recommend subjects by searching for similar students to student 3. The first step is to calculate the similarity between student 3 and the 64 second-year students. The results show that student 3 has a similarity score of over 90% with students 15, 36, 37, 38, 45, and 49. In the second step, the system will provide neighbor selection for student 3. The resulting recommendations are as follows:

Student 3	4.0	2.0	3.0	3.0	5.0	5.0	2.0	1.0	3.0	1.0	4.0	3.0	3.0

Fig 6: The resulting recommendations for student 3.

The elective subjects T_7, T_8, T_{10}, T_{12} and T_{13} have been predicted with corresponding ratings on a scale from 1 to 5. The higher the ratings, the more suitable subjects the system will recommend to the student. In this case, among the student's third-year elective subjects, two subjects have been rated with a rating of 3, which is higher than the other subjects, namely "Digital Advertising Practicum" and "Mathematics Fundamentals for Computer Science." Therefore, the system will suggest these two subjects to the student, making it easier for them to choose suitable subjects.

The full matrix of student-subject relationships for third-year students (first 10 rows of the matrix):

index	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6	Term 7	Term 8	Term 9	Term 10	Term 11
Student 1	4.0	3.0	4.0	5.0	5.0	5.0	2.0	5.0	5.0	2.0	3.0
Student 2	5.0	5.0	5.0	5.0	5.0	5.0	2.0	5.0	5.0	1.0	4.0
Student 3	5.0	5.0	4.0	4.0	5.0	5.0	5.0	2.0	5.0	5.0	1.0
Student 4	5.0	3.0	4.0	4.0	4.0	5.0	2.0	4.0	5.0	4.0	4.0
Student 5	5.0	4.0	5.0	5.0	4.0	5.0	2.0	4.0	5.0	5.0	4.0
Student 6	4.0	5.0	5.0	4.0	5.0	5.0	4.0	2.0	5.0	5.0	1.0
Student 7	5.0	5.0	4.0	3.0	3.0	5.0	2.0	4.0	2.0	5.0	2.0
Student 8	3.0	4.0	3.0	5.0	5.0	4.0	2.0	4.0	5.0	5.0	3.0
Student 9	2.0	3.0	3.0	4.0	2.0	5.0	2.0	2.0	5.0	1.0	3.0
Student 10	2.0	4.0	3.0	2.0	4.0	5.0	3.0	4.0	2.0	5.0	4.0

Fig 7: The full matrix of student-subject relationships for third-year students

Based on the collected data and applying the proposed framework, students can choose the suitable subject based on their ability, interests,… The matrix includes rankings ranging from 1 to 5, where 1 represents the lowest score and 5 represents the highest score. By utilizing the recommendations from the complete student-subject matrix, students can make suitable choices for elective subjects that align with their own preferences and needs.

When implemented with the mentioned parameters using the CF algorithm, we obtained an average RMSE error of 0.9186 for the dataset.

Table 1: The information about the test datasets and RMSE

The parameter K (%)	RMSE	Time (minutes)
10	0.9117	14.05
15	0.9185	14.12
20	0.9186	14.27
25	0.9104	14.42
30	0.9218	15.03

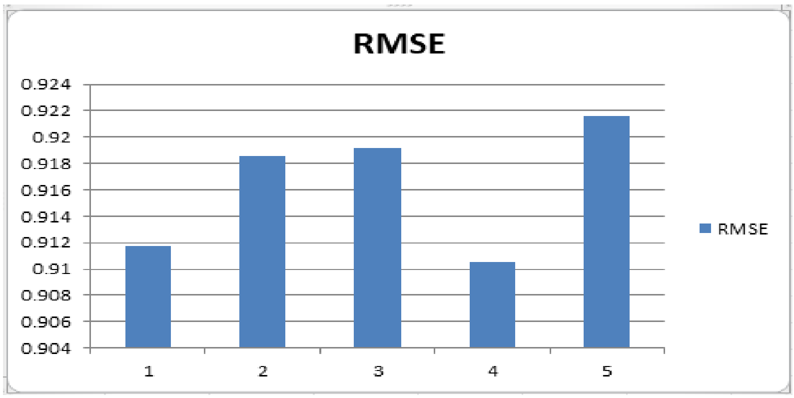

Fig 8: Comparison chart between test sets.

Based on the obtained results, the RMSE error is relatively accurate. The recommendation system is an optimal solution for assessing and evaluating the individual capabilities of each student, based on subjective factors, to help students successfully complete subjects and achieve appropriate outcomes. It is a valuable tool for enhancing the quality of knowledge and skills training, as well as delivering effective results for students.

CF technique aims to minimize subjectivity in subject selection for students and provides an effective recommendation tool that brings balance to subject choices. Evaluating the suitability of an elective subject in the list of available choices for students facilitates the process of suggesting suitable subjects, making it more convenient for students during the subject filtering process.

4. Conclusion and Discussion

Collaborative filtering is one of the useful methods for administrators and users to make decisions in a scientific, objective manner and minimize subjective factors. Furthermore, this method is also strongly applied in other fields such as investment project selection, information reliability assessment, etc., delivering results that meet user needs. Therefore, the research team has utilized

CF techniques in suggesting elective subjects for students at the university. The strength of the study lies in using CF to reduce subjectivity in subject selection for students, providing an effective recommendation tool that brings balance to subject choices. The paper provides a comprehensive overview of the recommendation system for subject selection based on CF techniques (user-based and item-based), enabling readers to understand the process and operations involved in building such a recommendation system. This can serve as a valuable reference for students when registering for credit subjects. However, this technique is based on similarity-based recommendations, thus its wide-ranging and widespread application is limited. The data collected is based on objective evaluations of preferences and abilities, resulting in individual-specific outcomes.

Education is a solid and essential foundation for training suitable talents in specific disciplines and fields. Truly appropriate choices will bring great value to students' learning outcomes and knowledge accumulation in relation to their chosen professions. The subject system will include combinations of subjects with shared knowledge, and within each specialization, there will be similar competencies expected from students. Therefore, we hope that this recommendation system can be maximized using the available data from universities to provide accurate suggestions for students in completing their undergraduate programs and investing deeply in new potentials.

In order to achieve high efficiency in suggesting subject selection, after applying the CF algorithm, stakeholders should take the following measures:

- For students: Developing personal capabilities and gaining a deep understanding of the chosen field is a fundamental need for all students in universities. A recommendation system is an optimal solution for recognizing and accurately assessing the capabilities of each student. It helps students easily make choices regarding subjects that align with their interests and build an optimized study schedule, thereby achieving the best learning outcomes. Therefore, students should actively engage with the subject recommendation system, providing feedback on their preferences, interests, and goals. This feedback helps the system understand their individual needs better.

- For instructors: To achieve maximum effectiveness in teaching, instructors should collaborate with the subject recommendation system by providing accurate and comprehensive information about their subjects, including subject content, objectives, prerequisites, and learning outcomes. Besides, instructors can use the feedback and data collected by the recommendation system to tailor their subject content and delivery methods to better meet students' needs and preferences.

- For universities: The orientation for completing the university's education program for students contributes to enhancing the quality of education in the university environment, thereby achieving comprehensive and thorough results, and training new generations of talented individuals with profound knowledge. The recommendations serve as a basis for addressing the fundamental requirements of each subject, ensuring students' preparation and mastery of knowledge. Currently, CF techniques are widely used and popular in the education sector. Therefore, they are a valuable tool that greatly assists in improving the quality of education in terms of both knowledge and skills.

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A Conceptual Framework of Critical Factors for E-Marketplace Adoption by Vietnamese Small and Medium-Sized Enterprises

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ABSTRACT

Small and medium-sized enterprises (SMEs) play a vital role in driving Vietnam's economic growth. However, in the era of digital transformation, it is crucial for Vietnamese SMEs to actively participate in e-marketplaces, considering the increasing consumer preference for online purchases and transactions due to their convenience. Therefore, the objective of this study is to develop a comprehensive conceptual framework that examines the critical factors influencing e-marketplace adoption by Vietnamese SMEs. To achieve this objective, an extensive literature review was conducted, leading to the development of a conceptual framework that integrates the Technology-Organization-Environment framework and institutional theory. This integrated framework enables a holistic analysis of the critical factors affecting e-marketplace adoption. By utilizing this conceptual framework, future studies can be conducted to identify emerging patterns of e-marketplace adoption and analyze the key factors influencing adoption among Vietnamese SMEs. This research significantly contributes to the field of e-marketplace studies by providing a comprehensive review of potential critical factors specifically in the context of Vietnamese SMEs. Moreover, it offers valuable guidelines for promoting e-marketplace adoption among SMEs. By understanding and addressing these critical factors, SMEs can effectively harness the benefits of e-marketplaces and enhance their competitiveness in the digital business landscape.

Keywords: Critical factors; e-marketplace adoption; Vietnamese SMEs; innovation adoption; technology-organisation-environment framework.

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1. Introduction

The recognition of the significance of e-marketplace adoption in improving the competitiveness of small and medium-sized enterprises (SMEs) is growing [1,2]. However, the adoption of e-marketplaces in SMEs in developing countries, including Vietnam, has been much slower than anticipated [3,4]. Consequently, thoroughly comprehending the crucial factors influencing e-marketplace adoption becomes essential. Therefore, this study aims to address the main research question: What is the conceptual framework of critical factors for e-marketplace adoption by Vietnamese SMEs?

According to Stockdale and Standing [5], an e-marketplace refers to an inter-organisational information system platform that facilitates communication and transactions among multiple buyers, sellers, and other stakeholders within a dynamically managed market space. This platform also offers services such as payment and financial services, logistics and shipping support, customer support and dispute resolution, marketing and promotion, and data analytics and reporting [6,7]. The utilization of e-marketplaces brings numerous advantages to businesses, particularly SMEs. For instance, it enables businesses to reach customers anytime and anywhere, ensuring prompt and efficient services [8]. Moreover, adopting e-marketplaces allows businesses to sell directly to consumers, leading to significant reductions in operational costs [9]. Consequently, the popularity of e-marketplaces has been steadily increasing, primarily due to these benefits, which have consequently driven widespread adoption [6,10].

Small and medium-sized enterprises (SMEs) significantly drive economic growth and fostering innovation in many countries, including Vietnam [3]. In the current digital transformation era, the adoption of e-marketplaces has emerged as a crucial strategy for SMEs to expand their market reach, improve operational efficiency, and enhance competitiveness [11,2]. E-marketplaces provide a platform for businesses to connect with customers, suppliers, and partners, enabling seamless online transactions and fostering business collaborations [5,4].

The emergence of the COVID-19 pandemic has sparked a new consumer behavior trend, propelling the growth of e-marketplaces in Vietnam. As per the reports by VECOM [12] and Reputa [13], the market size of Vietnam's e-commerce reached USD 16.4 billion in 2022 and is projected to experience rapid expansion, reaching USD 39 billion by 2025. Notably, there has been a significant surge in e-marketplace shoppers, leading to a proliferation of new sellers on popular domestic platforms in Vietnam, such as Shopee, Lazada, Tiki, and TikTok Shop [14]. Cross-border e-marketplaces like Alibaba, Amazon, and eBay have also facilitated direct access to foreign markets for many SMEs [15]. Consequently, e-marketplace adoption is gaining momentum in Vietnam, with SMEs increasingly viewing it as a potential business model in the digital transformation era [16,4].

Although e-marketplace adoption holds promising prospects for Vietnamese SMEs, it also brings forth various challenges that demand effective resolution [4]. Typically, SMEs in Vietnam encounter obstacles such as a deficiency in technical expertise and limited access to robust technical infrastructure [3]. Moreover, they often face constraints related to inadequate capital and insufficient organizational planning [17]. Additionally, SMEs tend to rely heavily on their business partners to pursue competitive advantages while simultaneously confronting substantial external uncertainties

[18]. These distinct characteristics contribute to varying patterns of behavior among SMEs when it comes to embracing e-marketplace adoption.

The increasing popularity of e-marketplaces among SMEs has resulted in numerous studies to better understand organisational e-marketplace adoption by SMEs under various circumstances. Research has identified a wide range of critical factors for e-marketplace adoption [6,3,9,19]. Nevertheless, a holistic view of how these critical factors affect SSP adoption in developing countries has not been explored. Specifically, there are diverse and fragmented views on the interrelationships between technological, organizational, and environmental readiness. These inadequacies demand a comprehensive study on SSP adoption in developing countries.

This paper aims to bridge this gap by presenting a comprehensive conceptual framework of critical factors for e-marketplace adoption by Vietnamese SMEs. By developing this framework, we seek to provide valuable insights into the factors that influence SMEs' decision-making processes and actions when adopting e-marketplaces in Vietnam. The framework is designed to offer a holistic perspective, taking into account technological, organizational, and environmental readiness, and is supported by the integration of the widely used Technology-Organization-Environment (TOE) framework and institutional theory. To develop this conceptual framework, an extensive review of relevant literature on e-marketplace adoption and SMEs in Vietnam is conducted. The findings from this literature review inform the identification and categorization of the critical factors that play a crucial role in influencing the successful adoption of e-marketplaces by Vietnamese SMEs.

This research contributes to both academic and practical domains. From an academic standpoint, it enriches the existing body of knowledge by offering a comprehensive conceptual framework tailored specifically to the context of Vietnamese SMEs. It provides a foundation for future empirical studies and facilitates a deeper understanding of the factors that shape e-marketplace adoption in this specific setting. Moreover, from a practical perspective, the findings of this study will provide valuable insights and guidance for SMEs, policymakers, and practitioners seeking to promote and facilitate e-marketplace adoption among Vietnamese SMEs.

The remainder of this paper is structured as follows: Section 2 presents an overview of e-marketplace adoption by Vietnamese SMEs. Section 3 provides a review of relevant literature, highlighting the existing research gaps. Section 4 presents the proposed conceptual framework, detailing the critical factors and their interrelationships. Finally, Section 5 concludes the paper, summarizing the key findings, discussing the framework’s implications for SMEs, policymakers, and practitioners, and outlining limitations and potential avenues for future research.

2. E-marketplace adoption by Vietnamese SMEs

According to Decree 85/2021/ND-CP, an e-marketplace is an e-commerce website that allows individuals, organizations, and non-website owners to engage in all or part of the process of buying and selling goods and services [20]. E-marketplaces enable businesses to establish their presence in the market and bring consumers closer to the e-marketplace than traditional commerce, thus opening up effective ways to promote, access, and introduce products [3,4]. As a result, businesses can easily and quickly reach potential customers [16].

Joining e-marketplaces has become a prominent trend by Vietnamese SMEs due to the rapid change in consumer behavior towards online shopping habits after the Covid pandemic. At the same time, e-commerce continues to advance steadily and maintain rapid and sustainable growth [12]. According to the Ministry of Industry and Trade assessment, in 2022, the scale of Vietnam's retail e-commerce market is estimated to reach 16.4 billion USD, accounting for 7.5% of the country's total revenue from goods and consumer services [13]. The proportion of businesses participating in e-marketplaces has increased from 12% in 2018 to 23% in 2022 [12]. On the four largest e-marketplaces, approximately 566,000 successful sellers received over 1.3 billion successful product deliveries in 2022. The e-marketplaces' overall revenue growth rate in 2022 compared to 2021 was 18.4% [14].

Vietnam has nearly 1,000 registered e-marketplaces [21]. Leading the E-commerce Ranking in 2022 is none other than Shopee. It can be seen that Shopee is increasingly surpassing Lazada in terms of digital platform recognition, with a Total Score three times higher than Lazada [13]. According to the Metric report on the E-commerce Industry in 2022, Shopee is currently the most popular e-commerce platform in Vietnam, accounting for nearly 73% of the total revenue of the top four platforms, equivalent to about VND 91 trillion. Lazada ranks second, occupying 20% with a revenue of VND 26.5 trillion [14]. Notably in this Ranking is TiktokShop. Although it was just launched in late April 2022, Tiktok Shop has surpassed the giant Tiki and reached the Top 3 in the Ranking in 2022 with a Total Score of 13.56. However, there is not a significant difference in the Total Score between TikTok Shop and Tiki, only about 2.5%. According to the recent Metric report, the monthly revenue of TikTok Shop currently equals 80% of Lazada's revenue in the same period and is four times higher than Tiki's revenue [14,13].

Vietnamese SMEs have experienced notable transformations in both internal and external e-marketplaces, leading to substantial challenges and pressures [22]. Firstly, government agencies have started to tighten regulations on e-marketplaces, including policies on goods and business taxes. Secondly, the market has been heavily affected by Covid-19, with a significant decline in the economy and consumer spending. People are limiting their purchases of products. Furthermore, a significant increase in the number of sellers from prominent brands, including global/international brands and major domestic or South-east Asian brands, has been observed. Previously, these major brands were not actively involved in the online channel. However, with the challenges faced by offline channels in the market, they have shifted their focus to investing in e-marketplaces for better distribution and have significantly increased their advertising investments in these e-marketplaces [14,13]. Lastly, e-marketplace service providers also face pressure from investment funds. Investment funds have invested heavily in building the platforms during the initial stages and have reached a stage where profitability is expected. As a result, e-marketplace service providers need to make quick adjustments to achieve the goal of being profitable by 2025 by increasing various fees imposed on sellers [22].

Given the aforementioned challenges and pressures, e-marketplace adoption by Vietnamese SMEs falls short of expectations. A comprehensive comprehension of the critical factors for e-marketplace adoption among Vietnamese SMEs is lacking. This necessitates a prompt and comprehensive examination of e-marketplace adoption in order to tackle limited involvement and foster more extensive adoption within Vietnamese SMEs.

3. Literature review

E-marketplace adoption offers numerous advantages to businesses, including cost reduction, market expansion, and enhanced customer satisfaction, leading to increased competitive advantage [23,24]. Consequently, extensive research has been conducted on e-marketplace adoption, encompassing developed countries [25,26], developing countries [27,28,3], large enterprises [29], and SMEs [28,9,24]. These studies aim to comprehend the intricacies of e-marketplace adoption [30], identify its determinants [3,24], and explore ways to facilitate its adoption [6,31].

E-marketplace adoption in enterprises from developing countries often presents more complexities [32] and lags behind that of developed countries [33] due to various challenges, such as regulatory environments, inadequate management, and weak infrastructure. Therefore, further research is needed to examine these countries in greater detail. Additionally, SMEs frequently remain hesitant to engage in e-marketplaces compared to larger enterprises [28,34]. As a result, a considerable number of studies have examined the crucial factors encountered by SMEs in diverse contexts to promote e-marketplace adoption among them more effectively.

A significant body of research has been dedicated to examining e-marketplace adoption among SMEs in developing countries. These studies, with diverse focal points, have identified a wide range of critical factors influencing e-marketplace adoption across three primary streams: technological readiness-based research, organizational readiness-based research, and environmental readiness-based research.

Technological readiness-based research investigates how organizations perceive the characteristics of e-marketplaces that may motivate SMEs to adopt them. This includes factors such as perceived relative advantage [3,9], compatibility [35,36], and security [37,30].

Organizational readiness-based research focuses on uncovering the enterprise characteristics that drive SMEs towards e-marketplace adoption. These characteristics encompass three key aspects: financial readiness [37,3], knowledge readiness [38,35], and innovativeness readiness [3,38,9].

Environmental readiness-based research delves into factors associated with the most influential stakeholders such as competitor pressures [3,35], customer pressures [9], government support [3,35,9], and e-marketplace service provider support [9,39]. These stakeholders can positively impact e-marketplace adoption by SMEs.

A few studies have investigated the adoption of e-marketplaces in Vietnamese SMEs from different perspectives. Le et al. [19], for example, use the TOE theory to examine internal and external factors affecting e-marketplace adoption by SMEs in Vietnam, revealing that dominant factors include perceived compatibility, financial readiness, knowledge readiness, competitor pressures, government support, and stakeholder support. Chau et al. [3] suggest that perceived benefits, compatibility, security, financial readiness, knowledge readiness, innovativeness readiness, customer pressures, and government support are among the most critical factors for mobile e-marketplace adoption.

In conclusion, by examining these critical factors within the context of e-marketplace adoption, researchers aim to enhance our understanding and provide valuable insights for promoting e-marketplace adoption among SMEs in developing countries. Table 1 presents a comprehensive overview of key research studies focusing on e-marketplace adoption in developing countries, organized into three distinct research streams.

The preceding analysis reveals that prior research has identified numerous crucial factors influencing e-marketplace adoption among SMEs in developing nations. Nevertheless, these studies have yet to adopt a comprehensive perspective on e-marketplace adoption that encompasses the amalgamation of technological, organizational, and environmental readiness. Such integration is valuable for comprehending the interconnected significance of these factors in effectively addressing e-marketplace adoption by SMEs.

Exploring the interconnected significance of technological, organizational, and environmental readiness in e-marketplace adoption has become increasingly imperative. Previous studies have yielded varied and inconclusive outcomes regarding the relative importance of these factors in adoption. Several studies have underscored the direct impact and greater influence of environmental readiness compared to technological and organizational readiness. For instance, Molla and Licker [40] conducted a study on the adoption of e-marketplaces by companies in South Africa and found that environmental readiness appeared to be the primary motivator for companies. Similarly, Chen et al. [41] examined e-marketplace adoption in South-east Asia using the extended TOE framework and identified environmental readiness as the most influential factor.

Conversely, several other studies have been conducted to support the indirect influence of environmental readiness on e-marketplace adoption, thereby highlighting the significance of technological readiness and organizational readiness [42,43]. For instance, Molla et al. [43] examined e-marketplace adoption in Australia from the perspective of the perceived e-readiness model and the TOE framework and emphasized that without appropriate technological and organizational readiness, the impact of stakeholder pressures alone may not suffice to internalize e-marketplace strategies and policies. El-Gohary [42] investigate the adoption of e-marketplaces in Egypt organizations and argued that technological readiness is necessary to mediate the influence of stakeholder pressures on SSP adoption. Consequently, it becomes crucial to comprehensively examine the direct and indirect effects of technological, organizational, and environmental readiness on e-marketplace adoption, particularly within the context of SMEs in developing countries.

Table 1. Summary of e-marketplace-related studies in developing countries

Study	**Stream**										**Theory**	**Research approach**
	Technological readiness			**Organizational readiness**			**Environmental readiness**					
	RAD	**COM**	**SEC**	**FIN**	**KNO**	**INN**	**COMP**	**CUS**	**GOV**	**PRO**		
Amorim & Pratas [37]		X	X	X	X		X	X	X		Technology -organisation environment framework (TOE)	Survey
Hossain et al. [9]	X	X	X			X		X	X	X	TOE	Interview
Chau et al. [3]	X	X	X	X	X	X	X	X	X		Diffusion of innovation theory (DOI), TOE	Survey
Dewi & Ayuni [38]	X		X		X	X					Technology Acceptance Model – Technology Readiness Index (TAM-TRI)	Case study, survey
Le et al. [19]	X	X	X	X	X	X	X	X	X		TOE	Survey
Muchtar & Qamariah [39]	X				X						Unified Theory of Acceptance and Use of Technology (UTAUT)	Case study, survey
Al-Bakri & Katsioloudes [44]	X			X	X		X	X			TAM, DOI	Interview, survey
Rahayu & Day [45]	X	X			X	X	X	X	X	X	TOE	Survey
Ahmad et al. [46]	X	X			X		X	X			TOE	Survey
Chien et al. [30]	X									X	Technology acceptance model (TAM), trust theory and relational embeddedness	Survey
Wang et al. [36]	X	X					X	X			UTAUT	Case study
Ho et al. [35]		X	X		X		X		X		None	Interview

Note: RAD – Perceived relative advantage; COM – Perceived compatibility; SEC – Perceived security; FIN – Financial readiness; KNO – Knowledge readiness; INN – Innovation readiness; COMP – Competititor pressures; CUS – Customer pressures; GOV – Government support; PRO – E-marketplace service provider support.

(Source: Authos' compilation)

4. A conceptual framework

4.1. Theoretical background

In order to illustrate the interrelationships among technological, organizational, and environmental readiness in the context of e-marketplace adoption, this study presents a conceptual framework, as depicted in Figure 1. The framework utilizes the TOE framework, supported by the institutional theory. The TOE framework of Depietro et al. [47] mentions a generic set of factors to predict the likelihood of e-marketplace adoption [48]. It suggests that e-marketplace adoption is influenced by technological, organizational and environmental contexts. The three contexts in the TOE framework correspond closely to the three sets of factors influencing e-marketplace adoption explored earlier. To tailor the TOE framework to the present study, the technological, organizational, and environmental contexts are redefined as technological readiness, organizational readiness, and environmental readiness, following the suggested modification by Molla [40].

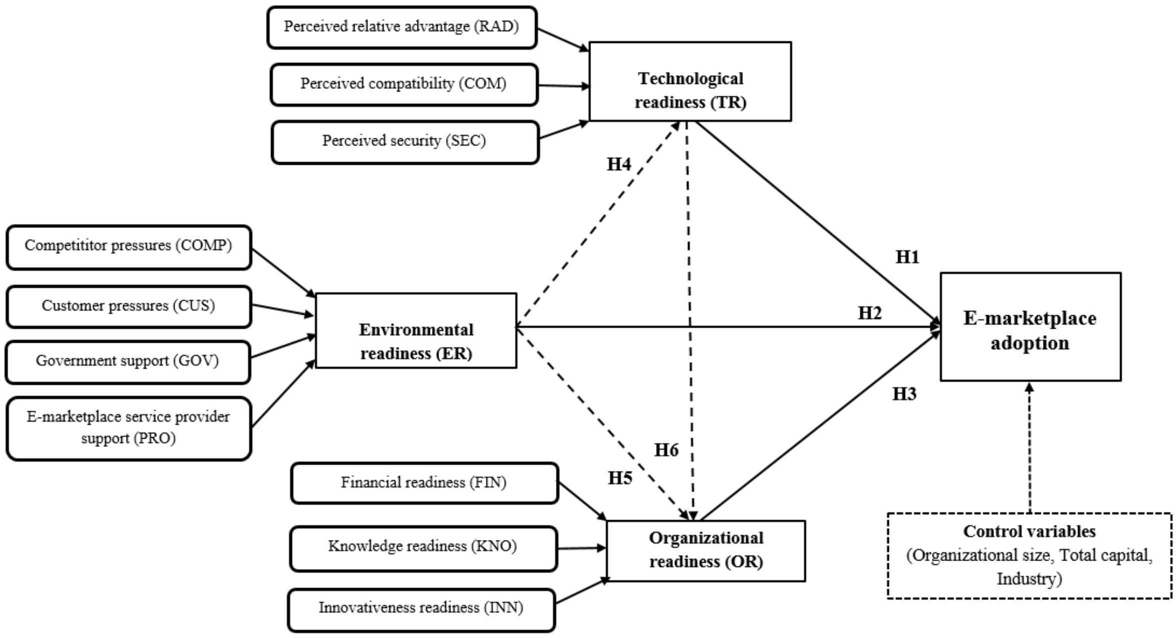

Fig 1. A conceptual framework for e-marketplace adoption

(Source: Authors' development)

Technological readiness represents the pool of technologies available for adopting e-marketplaces inside and outside of the organization [48,3]. Some studies state that technological context affects e-marketplace adoption in an Asian country [49,9,19]. Technological factors for investigating the adoption of technologies in organisations can be divided into perceived benefits and costs [50,51]. Perceived benefits (relative advantage and compatibility) and perceived costs (perceived security) determine users' perceived value, hence driving technology adoption. Particularly, perceived relative advantage and perceived compatibility are the most critical factors for e-marketplace adoption in organisations [52,3,9]. A review of the technology adoption studies also reveals that security affects the willingness of SMEs to adopt technologies [3].

Organizational readiness is about the availability of the needed organizational resources for adoption [53]. It is the ability of an organization to identify and respond to changes in its environment and to mobilize resources. In a study related to electronic market adoption, Deng et al. [25] stated that organization readiness is related to the extent to which the available resources are perceived to be equivalent to the resources required for adopting a specific technology. Organizational readiness can facilitate e-marketplace adoption, which is determined by financial readiness [25,54], knowledge readiness and innovativeness readiness [9].

Environmental readiness relates to facilitating and inhibiting factors of the firms' operation area [9], with respect to competitors, government, suppliers and customers [48,3]. It includes the size and structure of the industry, competitors, macroeconomic context, and regulatory environment [47]. This study focuses on the commercial transactions on e-marketplaces between organisations and customers. Thus, four environmental determinants proposed are competitive pressures, customer pressures, government support, and e-marketplace service provider support. The pressures and support of these stakeholders are well aligned with the principle of the institutional theory, which examines how different stakeholders can exert fundamental pressures on e-marketplace adoption. These pressures and support, categorized into coercive, mimetic, and normative aspects, create institutional rules and norms to which organizations should respond to achieve legitimacy and survival [4]. Coercive pressures are induced by the agency of influential organizations or actors, especially when they can enforce certain rules, such as laws, regulations and governmental policies [55, 56]. Normative pressure is enforced by informal punishment, such as those imposed by employees, the public, customers, and suppliers, for deviations from what society views as norms [57]. Mimetic pressures are manifested by competition experienced by firms [55].

Following the methodological guidelines of Wetzels et al. [58], Becker et al. [59], and Sarstedt et al. [60], we have conceptualized technological readiness, organizational readiness, and environmental readiness as second-order constructs, which are formatively constituted by their respective first-order constructs. This conceptualization is motivated by three main reasons. Firstly, it allows for model parsimony by reducing the number of relationships in the model [59,61]. Secondly, it helps address the bandwidth-fidelity dilemma, which involves striking the right balance between information complexity and accuracy [60]. Lastly, such conceptualization aids in mitigating collinearity issues among formative constructs within the model, achieved by grouping constructs into subdimensions at a more abstract level [60].

4.2. Hypothesis development

Technological readiness (TR) represents a pool of technologies available for the adoption of e-marketplaces [3], formed by perceived relative advantage (RAD), perceived compatibility (COM) and perceived security (SEC). Perceived relative advantage is the degree to which an innovation is perceived to be superior than the idea it replaces [9]. The degree of relative advantage may be measured in economic terms, social prestige, convenience, and satisfaction. The greater a technology's perceived relative advantage, the faster it will be adopted. The adoption of e-marketplaces brings a number of benefits to businesses, especially to small- and medium-sized enterprises (SMEs), including including strengthened customer relationships, ease of market expansion, improved efficiency, cost saving and greater competitive advantages [25]. Perceived compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters [3,9]. An innovation is more likely to be adopted when it is compatible with the desire, work practices, values, and beliefs of the adopting organisation. Compatibility is the most critical determinant for technology adoption in SMEs, especially in developing countries which are more vulnerable to e-marketplace adoption barriers such as resource constraints and lack of IT or e-marketplace knowledge [62]. Perceived security is the awareness of organisations about the security concern of e-marketplace technologies, which is measured by transaction security, facility security, and antivirus capability [3]. Security is a critical concern for the adoption of technologies in SMEs in developing countries, such as the fear of losing data and confusion over technical issues [62]. To increase the adoption of e-marketplaces, e-marketplace service providers should consider enhancing the online transaction security control to promote the trust of organizations in e-marketplaces, such as including escrow services to control the payment process and credit card guarantee services to safeguard the transaction [25]. This shows that a higher level of perceived security increases the intention of SMEs to adopt e-marketplaces. This discussion leads to the following hypothesis:

H1. Technological readiness, as formed by perceived relative advantage, compatibility and security, positively impacts organizations' e-marketplace adoption.

The environmental context is related to the surrounding of organisations with respect to competitors, government, suppliers and customers [3]. Competitive pressure is related to the degree to which an organisation is affected by competitors within the industry [52]. Competitive pressure (COMP) is found to influence decisions for e-marketplace adoption in SMEs as a company may feel the pressure when there are more competitors in the industry who have adopted such innovation, and therefore, would be more inclined to adopt it to maintain their competitive position [46,44,49]. Customer pressures (CUS) are about the pressures from customers for the adoption of technologies in organisations [3]. When the primary customer of an organisation has adopted certain technologies, the organisation may have to adopt these technologies to demonstrate its suitability as a business partner. It has been pointed out that customer pressures are a facilitator for technology adoption by SMEs [45]. Government support (GOV) is about the availability of government policies and initiatives for promoting e-marketplace adoption [49,3]. Appropriate governmental policies and incentives in the form of economic, financial and technological support lower the barrier of technology adoption, particularly in lower-middle income countries. Examples include secure online transaction processes, transparent financial incentives, and training and education programs for the citizens. The perceived level of available support from the government has been found to be an important determinant that affects SMEs' decisions to adopt technologies such as e-marketplaces [3,63]. Furthermore, support from an e-marketplace service provider (PRO), who link sellers and buyers, are believed to drive business, especially SMEs, to adopt e-marketplaces. An e-marketplace service provider typically offers various types of support to its users, including technical support, customer service, marketing support, payment and financial support and seller training and education [64]. These types of support offered by an e-marketplace service provider can help its users to utilize the platform more effectively and efficiently. This discussion leads to the following hypothesis:

H2. Environmental readiness, including competitive pressures, customer pressures, government support and e-marketplace service provider support, positively impacts organizations' e-marketplace adoption.

Organizational readiness is one of the most important factors in the decision to enter and participate in the e-marketplace [9]. Organizational readiness (OR) refers to how well-prepared organizations are in terms of adequate financial, knowledge, and innovativeness resources. Financial readiness is about the availability of financial resources for technology adoption [25] to pay for e-commerce system adoption costs, use of subsequent enhancement and ongoing expenses such as communications charges and usage fees [44]. Thus, financial readiness for e-marketplace adoption involves ensuring that organizations have the necessary funds to invest in e-marketplace infrastructure, as well as understanding the financial implications of using such platforms to do business. Knowledge readiness reflects both the general and specific knowledge required by decision makers for the adoption and implementation of technology [65]. It ensures that orgainzations have sufficient human resources capabilities, experience and expertise available for the adoption. Innovativeness readiness refers to the degree to which the firm and others involved are individually and collectively able and willing to innovate, which consists of specific structural and psychological factors [66]. Structural factors represent the basic building blocks that are necessary for innovativeness readiness. Meanwhile, psychological factors involve individual and collective attitudes, beliefs, and intentions, which represent the firm's willingness to innovate. Benson [67] also stated that innovativeness readiness is related to user perceptions of how much they are open to and up-to-date with new ideas, and whether their organisations are receptive to and capable of innovation. This discussion leads to the following hypothesis:

H3. Organizational readiness in finance, knowledge, and innovativeness positively impacts organizations' e-marketplace adoption.

Although a direct relationship between environmental readiness and organizations' e-marketplace adoption is anticipated, this study contends that there is an indirect impact of environmental readiness on e-marketplace adoption via technological readiness and organizational readiness. Not all technological readiness could be translated into organizations' specific actions and procedures to adopt e-marketplaces. The pressures and support from competitors, customers, the government and e-marketplace service providers may motivate organizations to learn more about the costs and benefits of e-marketplaces to make appropriate decisions, which in turn drives e-marketplace adoption. Therefore, the impact of environmental readiness on e-marketplace adoption is realized through perceived relative advantage, compatibility and security. Similarly, the pressures and support from stakeholders may drive organizations to prepare adequate finance, knowledge, and innovativeness for e-marketplace adoption, which facilitates e-marketplace adoption. A prior study found that organizational readiness in finance and knowledge significantly mediates between stakeholder pressures and an organization's adoption decision [68]. This discussion leads to the following hypotheses:

H4. Technological readiness, as formed by perceived relative advantage, compatibility and security, significantly mediates between environmental context and organizations' e-marketplace adoption.

H5. Organizational readiness in finance, knowledge, and innovativeness significantly mediates between environmental context and organizations' e-marketplace adoption.

This study further argues that technological readiness indirectly influences e-marketplace adoption via organizational readiness. Being aware of relative advantage, compatibility and security of e-marketplaces may drive organizations to develop sufficient financial, knowledge and innovationess readiness to facilitate e-marketplace adoption. Hence, the current study expects that the impact of technological readiness, pertaining to perceived relative advantage, compatibility and security of e-marketplace adoption, is strengthened in the presence of organizational readiness across three fronts, including financial, knowledge, and innovativeness readiness.

H6. Organizational readiness in finance, knowledge, and innovativeness significantly mediates between technological context and organizations' e-marketplace adoption.

Control variables

The control variables used for this study are organisational size and industry. As this study is conducted in the Vietnamese context, the definition of SMEs in Vietnam is adopted. This means that SMEs are independent businesses with their registered capital not exceeding 100 billion VND or the annual number of permanent workers not exceeding 300. As a result, both the total capital and the annual number of permanent employees are used for measuring the size of SMEs from two different perspectives.

Organisational size has been used to positively predict the adoption of technologies [3]. This is because large organisations have the necessary resources to facilitate the adoption of technologies. Thus, the study includes organisation size to better understand the adoption of e-marketplace in Vietnamese SMEs.

The industry is the sector in which an organisation operates. It can influence the adoption of technologies in organisations. Jeon et al. [69], for example, find that service businesses are more predisposed towards adopting the Internet for business than other sectors. Chau et al. [3] reveal that manufacturing organisations are more predisposed towards adopting e-business than organisations in the finance sector. Thus, the study includes industry to better understand the adoption of e-marketplace in Vietnamese SMEs.

5. Conclusion and future research

Understanding the critical factors influencing the adoption of e-marketplaces by Vietnamese SMEs is of utmost importance in promoting and harnessing their potential for digital transformation. This paper aims to provide a comprehensive literature review on the essential factors that drive e-marketplace adoption among Vietnamese SMEs. Based on this review, a conceptual framework is developed using the widely employed Technology-Organization-Environment (TOE) framework, which is commonly used to investigate innovation adoption in business organizations. To enhance the understanding of e-marketplace adoption within the institutional settings prevalent in developing economies, the proposed framework is further supported by the institutional theory. Within this framework, technological readiness, organizational readiness, and environmental readiness are conceptualized as second-order constructs, comprising their respective first-order constructs. By adopting this theoretical model, we can identify emerging patterns of e-marketplace adoption among Vietnamese SMEs and examine the interrelationships among technological readiness, organizational readiness, and environmental readiness.

The proposed conceptual framework offers valuable insights into enhancing the adoption of e-marketplaces among Vietnamese SMEs, contributing to both theoretical understanding and practical applications in this field. The study aims to make significant contributions to e-marketplace theory and practice through several potential avenues. From a theoretical perspective, this research provides a comprehensive understanding of the crucial factors that positively influence the adoption of e-marketplaces. Furthermore, it highlights the effectiveness of integrating the TOE framework with institutional theory in comprehensively assessing the critical factors for e-marketplace adoption.

In terms of practical implications, the developed conceptual framework offers practical guidelines for managers, practitioners, and policymakers involved in promoting e-marketplace adoption among SMEs. These guidelines are based on a solid theoretical foundation and can assist stakeholders in making informed decisions and implementing effective strategies. By leveraging the insights gained from this study, managers can better understand the key determinants of e-marketplace adoption and tailor their approaches accordingly. Likewise, practitioners and policymakers can leverage the findings to develop targeted initiatives and support policies that facilitate the widespread adoption of e-marketplaces among Vietnamese SMEs. Overall, this research aims to bridge the gap between theory and practice, providing actionable recommendations to foster e-marketplace adoption in the Vietnamese SME context.

However, this study acknowledges several limitations that warrant further attention. Firstly, it primarily focuses on the initial stage of conducting a literature review and developing a conceptual framework. To enhance the reliability and scientific validity of the proposed theoretical model, it is necessary to complement this research with qualitative methods such as expert interviews, in-depth interviews, or focus group discussions. These methods can help identify the specific characteristics of the research model within the Vietnamese context. Moreover, an empirical study is imperative to test and validate the proposed theoretical model, either within the Vietnamese SME context or across different industries and countries. By conducting empirical research, the applicability and effectiveness of the theoretical model can be examined and refined. Additionally, it is important to note that the proposed theoretical model is tailored specifically for Vietnamese SMEs. However, there is a growing need for future studies to explore potential variations across different demographic groups and countries. Assessing these differences can provide valuable insights into the contextual factors that influence e-marketplace adoption and facilitate a more comprehensive understanding of the phenomenon. In conclusion, while this study lays the groundwork by developing a conceptual framework, addressing the aforementioned limitations through qualitative research, empirical validation, and cross-cultural analysis will strengthen the overall findings and contribute to the advancement of knowledge in this field.

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PART 11.
ECONOMICS
& INNOVATION

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Digital Transformation: How Small and Medium-Sized Businesses in Da Nang City Are Adapting to Overcome Barriers

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ABSTRACT

The emergence of digital technology has presented businesses with tremendous opportunities for growth in the current economy. The widespread adoption of digital technologies has become increasingly prevalent in recent years, creating a pressing need for businesses to embrace these technologies or risk falling behind. However, many businesses have yet to prioritize the implementation of digital transformation, leaving them in the early stages of the transformation process, as observed in Vietnamese businesses. Therefore, this qualitative study aims to investigate the ongoing digital transformation process in Vietnamese SMEs and identify any barriers that may impede progress. The study's findings seek to provide businesses with valuable insights into the digital transformation process, enabling them to implement appropriate strategies and solutions to mitigate the impact of these barriers on their digital transformation journey.

Keywords: digital technology, digitization, digital transformation, barriers, SMEs, Da Nang.

1. Introduction

The fourth industrial revolution, also known as Industry 4.0, originated within the manufacturing sector by integrating physical and digital production technologies such as big data, artificial intelligence (AI), and cloud computing (Fatorachian & Leeds, 2018; Thoben et al., 2017). However, Industry 4.0 has now transcended the boundaries of manufacturing, encompassing the digital transformation of all industrial value chains (Culot et al., 2020) In today's era, digital transformation has become an unavoidable trend and presents an opportunity for businesses to lead

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the way in the Industrial Revolution 4.0 (Dung et al., 2021). The concept of digital transformation emerged to describe significant organizational changes that are constructed or facilitated by digital technology, revolutionizing the way businesses operate (Bilgeri et al., 2017). In the context of the fourth industrial revolution, digital transformation is a strategic business overhaul achieved through the integration of modern information and digital technologies, such as artificial intelligence, data analytics, industrial robots, and blockchain. This process also entails embracing flexibility, customer orientation, and product personalization as essential capabilities (Albach et al., 2015; Fatorachian & Leeds, 2018). Digital transformation bestows valuable advantages upon businesses, crucial for their competitiveness and long-term survival, including enhanced production productivity, reduced operating costs, improved product quality, and innovative product offerings (Chen, 2019; Moeuf et al., 2018). Moreover, digital transformation provides companies with opportunities to enhance their existing value propositions and bridge the gap in delivering superior customer experiences (Berman, 2012).

Businesses exhibit varying levels of digital transformation, particularly when comparing the transformation efforts of large businesses and smaller ones. Digital transformation has become imperative for maintaining competitiveness, and larger companies appear to be embracing it, whereas small and medium businesses (SMEs) are encountering difficulties (Kääriäinen et al., 2020). The sluggish pace of digital adoption among SMEs can be attributed to the intricate and unpredictable nature of Industry 4.0, as well as the distinct characteristics of small businesses, such as risk aversion and limited resources, including technical expertise and financial capacity (Horváth & Szabó, 2019; Masood & Sonntag, 2020). Consequently, while digital transformation presents an opportunity for businesses to make significant advancements, it also poses challenges for those with limited investment capital and restricted access to new technologies. These barriers partially hinder operational efficiency and impede the progress of digital transformation for such businesses. It is crucial to understand that digital transformation is not a momentary change but a multi-step evolution encompassing both technological and organizational shifts (Rajnai & Kocsis, 2018). Consequently, businesses must adapt and make necessary changes to mitigate the impact and continue progressing towards a stronger digital transformation.

In Vietnam, digital transformation has garnered increasing interest from the government as it is expected to significantly contribute to national economic efficiency. A survey of The World Bank conducted by (Cirera et al., 2021) reveals that the adoption of new technologies in Industry 4.0 is still at a nascent stage in the country. Only 6.9% of businesses utilize cloud computing for their work-related activities, while a mere 1.5% employ data and artificial intelligence for marketing purposes. Furthermore, just 5.9% of businesses have embraced modern production technologies. These figures highlight that the application of advanced technologies in Vietnam is still at an early phase.

Despite the immense importance and benefits of digital transformation, its implementation within Vietnamese businesses has not gained substantial momentum. Additionally, research on digital transformation in small and medium businesses (SMEs) in Vietnam remains limited. Consequently, this study aims to investigate the digital transformation process within businesses in Da Nang City, Vietnam. Its primary objective is to gain insights from businesses and businesses regarding their digital transformation initiatives and to identify the barriers they encounter in this process. To achieve this, a total of 24 interviews were conducted with business leaders and employees in Da Nang. These interviews encompassed a diverse range of industries, including education, banking, FMCG, website services, and accounting, in order to provide a comprehensive overview of the digital transformation landscape within businesses in Da Nang.

The study is structured as follows: Section 2 presents the theoretical basis of digital transformation, providing a foundation for understanding the subject as well as theoretical basis of barriers, exploring the various obstacles that businesses may face during their digital transformation journey. The research methods and data collection procedures are detailed in Sections 3. In Section 4, the findings obtained from the interviews are discussed. The analysis and results of the study will be presented in Section 5, followed by Section 6, which will conclude the article by highlighting the contributions of the study, its limitations, and providing directions for future research.

2. Literature review

During the 4.0 technology era, there are three terms frequently used - digitization, digitalization, and digital transformation. While all of these terms pertain to the use of digital technology in the operations of businesses and organizations, they represent distinct concepts, (Brenen & Kreiss, 2015). To differentiate these three concepts, it can be understood that digitization involves converting analog information into a digital form that computers can process and transmit (Legner et al., 2017). Which, this term is the integration of people, processes, data, and objects to generate intelligence and insights that drive business outcomes (Schallmo & Williams, 2018). Meanwhile, digitalization refers to the rapid rate of change in society resulting from digital technological advancements and the emergence of new technologies from the convergence of different technologies at varying levels of maturity (McAfee, 2009). Tilson et al., 2010 also argue that digitalization is a sociotechnical process that involves applying digitizing techniques to broader social and institutional contexts to establish digital technologies as infrastructure. Digitization and digitalization are regarded as two crucial phases in the process of achieving digital transformation (Loebbecke & Picot, 2015; Matt et al., 2015; Parviainen et al., 2017). So, the concept of digital transformation has its origins in the ideas of digitization and digitalization.

2.1. The concept of digital transformation

Digital transformation is integrating various advanced digital technologies with pervasive connectivity to achieve better performance and long-term competitive advantages (Ismail et al., 2017). This process involves transforming various aspects of the business, such as the business model, customer experience (including digitally-enabled products and services), and operations (including decision-making and processes) (Ismail et al., 2017). It also impacts people, including talent, skills, and culture, as well as networks, including the entire value system (Ismail et al., 2017).

Digital transformation involves more than just digitizing processes; it involves a complete overhaul of a company's business strategy to adapt to the digital age (Warner & Wäger, 2019). This process requires an organization-wide approach, as it is not limited to a single department but requires the coordination of the entire organization, from top leadership to employees (Bloomberg, 2018; Morze & Strutynska, 2016). Digital transformation involves the strategic adoption of digital technologies to reshape business models, improve existing practices, explore new revenue streams, and ensure sustainable value creation. Prior research has examined various facets of the digital transformation process, typically focusing on four essential areas that have a significant impact on an organization's digital transformation journey. These include digital technology adoption within the organization, process reengineering, innovation of business models, and data-driven decision-making (Drechsler et al., 2020; Young & Rogers, 2019).

2.2. Elements of digital transformation

The process of digital transformation is not simply about incorporating technology into the production process but involves modifying all aspects of the business, from processes to culture, starting with the pervasive mindsets held by individuals and the organization as a whole (Jones et al., 2021). Therefore, new strategic initiatives are necessary to achieve these transformations. Despite various perspectives, scholars generally agree that digital transformation is a multifaceted concept consisting of several components (Kraus et al., 2019). Among these components, four are frequently mentioned: the use of digital technologies, process digitization, business model transformation, and decision-making (Al-Debei & Avison, 2010; Eller et al., 2020; Gölzer & Fritzsche, 2017; Gordijn & Akkermans, 2001; Li, 2018; Lindgardt et al., 2009; Matt, 2015; Newell & Marabelli, 2015; Young & Rogers, 2019)

2.2.1. Digital technologies usage

The use of digital technologies is recently one of the focus of the digital transformation process. Indeed, digital technologies have become an essential tool that has transformed various aspects of industries, including business processes and models. Given their disruptive nature within the organization, they are viewed as a crucial asset for accelerating organizational transformation (Besson & Rowe, 2012). The introduction of digital technologies into an organization affects its premises, management, and strategy, leading to digital transformation (Hanelt et al., 2021). While digital technologies can create new business strategies and expand a company's value proposition, it does not guarantee value on their own (Ainin et al., 2015). Value is only possible when digital technologies are used in specific contexts that enable the organization to identify new ways of creating value (Vial, 2019). Therefore, the adoption of digital technologies should be viewed as an emerging phenomenon that requires a well-coordinated strategy to transcend traditional corporate boundaries and achieve defined goals (Eller et al., 2020; Matt et al., 2015).

2.2.2. Process digitization

The use of digital technologies can cause significant changes to a company's existing business processes, habits, and capabilities, leading to transformative effects (Barley, 2015). These changes primarily affect the work design of the organization and how employees work within it (Parker et al., 2001). The adoption of cloud services and mobile devices has created a phenomenon that constantly connects employees to their workplace and has had profound effects on their work and personal lives (Mazmanian, 2013). Moreover, teamwork has shifted to virtual teams, and communication has moved to instant messaging, social networking, and teleconferencing (Gilson et al., 2015). The emergence of digital technologies has also dramatically changed the way leadership is exercised in organizations, enabling employees to access information and communicate directly with leaders across all levels (Oldham & Silva, 2015; Pfeffer, 2013). Digital transformation not only impacts internal processes but also changes the company's business logic and value creation process (Gölzer & Fritzsche, 2017; Li, 2018). Digital technologies can optimize business processes and enhance customer experience, resulting in process improvements that can drive business growth (Pagani & Emlyon, 2017).

2.2.3. Business model transformation

A business model is a framework that outlines how a company conducts business and delivers value to its stakeholders, such as customers, lead companies, and partners (Zott & Amit, 2008). When digital technologies are used to enable new ways of conducting business and replacing traditional methods, it is called digital transformation (Li, 2020). This results in changes in the way services are delivered and new forms of direct customer interaction through social media to adapt to their changing needs (Mergel et al., 2019). Digital technology is a key driver of business model innovation, enabling new ways to create and capture value, new exchange mechanisms, transaction structures, and organizational forms (Al-Debei & Avison, 2010; Gordijn & Akkermans, 2001; Lindgardt et al., 2009). Existing business models must evolve or new ones must be developed to achieve digital transformation (Endres et al., 2020). It can create entirely new business models that challenge traditional methods of providing services, like how Uber transformed traditional taxi services through its mobile application (Mergel et al., 2019). Therefore, digital transformation allows companies to leverage their existing core competencies and new capabilities to create a competitive advantage in the future.

2.2.4. Decision making

The final component of digital transformation is often considered to be the decision-making process, which involves both people and assistive technology. This process, also known as data-driven decision-making or decision support, is analytical in nature (Newell & Marabelli, 2015; Young & Rogers, 2019). While experience and talent have traditionally been important factors in decision-making in many businesses, digital technologies have made it possible for leaders to rely more on intelligent analysis of big data instead of intuition or personal experience (Knippenberg et al., 2015; McAfee & Brynjolfsson, 2012). By leveraging digital technology to collect and analyze customer data across touchpoints, organizations can make data-driven decisions that can lead to improved organizational performance and customer experiences (Erik Brynjolfsson et al., 2013; Dremel et al., 2017; Michael & James, 2015). The ability to integrate and analyze data in real-time can enable organizations to identify patterns of customer behavior, optimize manufacturing facilities, and make evidence-based decisions that reduce latency and improve overall performance (Erik Brynjolfsson et al., 2013; Dremel et al., 2017; Michael & James, 2015).

2.3. Major barriers to digital transformation

Previous studies indicate that there are various barriers that impede the process of digital transformation in businesses, such as financial constraints, shortages in technical resources, and difficulties in adopting and upgrading digital technology (Mittal et al., 2018; Raj et al., 2019). These barriers can be categorized into two groups: *internal* and *external*.

2.3.1. Internal barriers

The internal barriers within an enterprise can be categorized into 5 primary groups, namely, barriers associated with strategy and leadership; barriers related to organizational structure; barriers related to technology; barriers related to human resources; and barriers related to resource scarcity. The following paragraphs will provide a detailed description of these internal barriers:

The barriers associated with strategy and leadership may include:

- E*stablishing a clear strategy and direction for digital transformation*: the strategic orientation of a company plays an essential role in converting new concepts into a structure for digital transformation undertakings (Agrawal et al., 2019). To ensure the success of a digital transformation project, an organization should identify different strategic orientations such as customer, technological, competitor, supplier, and innovation orientations (Wang et al., 2015).
- *Leaders fail to recognize the importance of digital transformation strategy*: the absence of a pressing need for digitization is a major obstacle to implementing a digital transformation (Fitzgerald et al., 2014). If companies already feel that their existing methods meet their needs, they may not see the need for change (Agrawal et al., 2019). Therefore, to initiate a digital transformation program, it is necessary to establish and sustain a sense of urgency (Agrawal et al., 2019).
- *The resistance of top executives*: Effective management support is crucial for digital transformation, as it involves a comprehensive change across various business and operational processes (Gökalp & Sener, 2017; Savtschenko et al., 2017; Shamim et al., 2017). To enhance their capabilities in staff training and development and knowledge management programs, organizations require strong support and contributions from their management (Gökalp & Sener, 2017; Savtschenko et al., 2017; Shamim et al., 2017).

The barriers related to an organizational structure may include:

- *Inappropriate organizational structure:* The organizational structure represents the managerial framework designed to distribute and coordinate various activities within an organization. A well-designed structure ensures effective communication channels among employees, establishes reporting relationships, and defines a hierarchical structure (Agrawal et al., 2019). However, the current organizational structure lacks in facilitating knowledge creation and sharing, fails to allocate resources optimally, and results in a lack of job satisfaction among lower-level personnel due to limited decision-making authority (Agrawal et al., 2019). Therefore, for companies involved in digital transformation, it is important to adopt a customer-driven, agile, integrated, innovative, and adaptive organizational structure. This type of structure facilitates transparent information flow, enhances knowledge sharing, encourages collaboration, fosters integration, and supports effective decision-making (Rajaguru & Matanda, 2019).
- *Inflexible business processes:* The existing business processes are unable to cope with the challenges posed by an expanding product portfolio and shortened product life cycles (Westerman & McAfee, 2012). To address these challenges, business processes need to be agile and capable of meeting diverse customer expectations. The key attributes of digital transformation are flexibility and a customer-centric approach, yet the current processes lack the required flexibility and responsiveness to meet customer demands

(Agrawal et al., 2019). Businesses should possess the ability to collect and analyze data and transform it into valuable information for decision-making.

The barriers related to technology may include:

- *Difficulties encountered in acquiring the required digital technologies* encompass challenges related to selecting the appropriate technology for the organization, identifying a highly specialized supplier, and ensuring a suitable price that aligns with the financial capabilities of the business. Unlike physical products, technology is intangible, which introduces complexities for businesses when it comes to making the right investment choices (Wang et al., 2022).
- *Challenges in data integration:* Efficient communication and productivity enhancement rely on the integration of technology. Industries face challenges in designing adaptable interfaces to integrate diverse components. It is crucial to integrate and support the physical network and its various components to facilitate seamless data exchange and analysis (Zhou et al., 2015).

The barriers related to employment disruptions which refers to the disturbances caused in job opportunities as a result of the emergence of new technologies and automation. The existing positions in the manufacturing industry are at risk of being automated, leading to human job redundancies. The remaining manufacturing jobs will involve a greater focus on knowledge-based tasks, as well as an increase in short-term and unpredictable assignments (Kamblea et al., 2018).

2.3.2. External barriers

Within an enterprise, external barriers can be classified into 7 primary groups. These include government policies and regulations; legal and contractual ambiguity; insufficient standards and reference architecture; difficulty in accessing external capital; reluctance to cooperate with partners; concerns regarding cybersecurity, privacy, and data resiliency; ineffective IT application; as well as lack of technology infrastructure and network environment. The following paragraphs will provide a detailed description of these external barriers:

Government policies and regulations encompass a set of principles, regulations, and laws established by the government that govern the operations of businesses (Kamblea et al., 2018).

Legal and contractual ambiguity is a significant barrier in the context of digital transformation. As competition intensifies, it poses challenges to existing laws and regulations (Kamblea et al., 2018). Implementing a digital strategy requires careful consideration of data protection laws, liability issues related to artificial intelligence, and the need for standardization (Kamblea et al., 2018). It is essential for organizations to prioritize the security of online data, ensuring compliance with privacy regulations (Kamblea et al., 2018). Additionally, they must ensure that signed contracts are legally valid and enforceable (Kamblea et al., 2018).

Insufficient standards and reference architecture present a significant challenge when designing and selecting an Industry 4.0 framework, especially in the case of wireless sensory networks (Haddud et al., 2017). The novelty of the industry 4.0 concept contributes to the lack of established standards and reference architecture in this field (Gilchrist, 2016; Li et al., 2016; Mueller et al., 2017).

Difficulty in accessing external capital pertains to the challenges that businesses encounter when seeking loans and mobilizing funds from external sources to invest in new technologies (Wang et al., 2022). This barrier hinders their ability to secure necessary financial resources for technological advancements (Wang et al., 2022).

Reluctance to cooperate with partners refers to the partners' hesitancy or unwillingness to engage in the digital transformation process of the company (Chauhan et al., 2020). This reluctance stems from their lack of trust or belief in digital contracts and digital signatures, which poses challenges in establishing effective communication and collaboration (Chauhan et al., 2020). Some partners have not yet embraced digital conversion, hindering seamless integration and cooperation (Chauhan et al., 2020).

Concerns regarding cybersecurity, privacy, and data resiliency encompass the apprehensions and challenges related to safeguarding against cybersecurity threats and ensuring data privacy (Alaba et al., 2017; Babiceanua & Seker, 2016; Yu et al., 2017). Organizations face risks associated with verification, authorization, privacy, and secure access to systems, applications, networks, and data (Alaba et al., 2017; Babiceanua & Seker, 2016). These concerns highlight the importance of implementing robust cybersecurity measures and privacy protocols to protect sensitive information and ensure the resilience of data systems.

Inefficient IT application refers to the fact that enterprises have not fully exploited the benefits of IT in business activities, leading to no significant and outstanding efficiency compared to the old one (Luthra & Mangla, 2018).

Lack of technology infrastructure and network environment pertains to the insufficiency of IT infrastructure required to facilitate the implementation of digital transformation (Wang et al., 2022). The absence of efficient communication solutions and inadequate signal coverage can pose substantial obstacles for various products and services (Wang et al., 2022). Weak signal coverage within certain business settings leads to signal degradation and hampers effective operations (Wang et al., 2022). Addressing this barrier entails investing in robust technology infrastructure and improving network capabilities to ensure seamless connectivity and reliable performance.

3. Research methods and data collection

3.1. Research methods and Survey sample

The study applies qualitative research method, targeting leaders and employees of businesses located in Da Nang. These individuals are the key participants actively engaged in the process of digital transformation. The efficacy of a study that relies on the interview research method hinges on the quantity and caliber of the experts involved. Barney and Anselm (1967) suggest that a minimum of ten interviews is necessary to comprehensively analyze patterns and distinctions among participants. Accordingly, this study will conduct interviews with a research sample comprising 24 interviewees from diverse sectors such as banking, fast moving consumer goods (FMCG), website services, logistics, and more. **Table 1** presents a comprehensive profile of the respondents.

Table 1: Respondents' profile

Respondent	Business field	Position
1	Food	Manager
2	Website service	Staff
3	Tourism	Operational manager
4	Retail	Sales Manager
5	Travel agency	Tour operators
6	Hotels	Room manager
7	Textile	Production manager
8	Bank	Vice president
9	Consumption	Staff
10	Logistics	Staff
11	E-commerce	Acount Mangager
12	Retail	Staff
13	Service	Staff
14	Seafood factory	Purchasing manager
15	Service	Staff
16	Logistics	Staff
17	Logistics	Staff
18	Bank	Staff
19	Service	Staff
20	Logistics	Staff
21	Education	Staff
22	Postal	Staff
23	Service	Staff
24	Service	Staff

3.2. Qualitative data collection process

Qualitative data, which often takes the form of narratives, pertains to qualities or attributes and is gathered through questionnaires interviews. In this study, interviews were conducted using a combination of face-to-face and online methods. Prior to the interviews, participants were given the option to record the sessions to ensure information accuracy. To protect confidentiality, interviewees were assured that their personal data would not be shared with third parties or made public. The interview guide incorporated questions derived from existing literature, while additional inquiries were included to extract more pertinent information and provide further clarification on the two research objectives. The interview questions employed an open-ended format, allowing participants to provide subjective responses without the pressure of a "right" or "wrong" answer. In total, the survey comprised 18 questions, covering three main topics:

- *Part 1*: The initial segment of the interview consisted of general background questions aimed at gaining insight into the professional profiles of the interviewees.
- *Part 2*: The second part encompassed inquiries regarding the digital transformation process within the businesses. This involved assessing the participants' understanding of digital transformation, the level of technology adoption within their organizations, the extent of changes in both business and internal processes, the degree to which the business model had transformed, as well as changes in data analysis and decision-making processes.
- *Part 3*: The final part focused on identifying the barriers encountered during the digital transformation process within the businesses.

4. Results

4.1. Elements of digital transformation in Da Nang SMEs

4.1.1. Digital technologies usage

The digital transformation process encompasses the strategies adopted by businesses to address the aforementioned aspects of change. According to the interviews conducted (**Table 2**), the initial aspect targeted for transformation by these businesses was the integration of digital technologies. The most prominent digital transformation observed within these businesses was the utilization of technology in various aspects of their operations. All respondents confirmed the implementation of digital technologies in their business practices, with cloud computing and business software being the primary digital tools employed across all companies.

Table 2: Responses related to digital technologies usage

Respond	Respondent
"Businesses use digital products like OneDrive and Google Drive for secure online data storage. In educational institutions, staff members utilize a shared drive for personal document and textbook storage. The school embraces decentralization, empowering individuals to manage their own files. Additionally, an eLearning system is employed to store and distribute lecture materials to customers during teaching activities."	3
"Customer data, contact information, and transactions will be securely stored in the cloud. Chatbot technology addresses common customer queries regarding card opening, money transfers, and more. An application streamlines customer transactions, providing convenient services anytime, anywhere."	8

"With IoT, OneDrive, and Outlook, the sales management system combines a mobile app and website. It stores extensive goods information, including import and export quantities. Big data analysis aggregates data from multiple branches for central head office consolidation."	9
"The company employs a unified ERP (Enterprise Resource Planning) software for job management, task allocation, and reporting purposes. This software also incorporates cloud computing capabilities to securely store customer data."	10

4.1.2. Process digitization

As a result of applying digital technologies, significant changes have been observed in *internal working processes* (**Table 3**), ranging from improved communication and information exchange between departments to streamlined reporting of employees' work to their superiors. Additionally, the management of human resources has undergone notable advancements.

Table 3: Responses related to internal working processes

Respond	Respondent
"Activities have transformed significantly, reducing face-to-face meetings. Managers assign tasks through software, and reporting work involves sending files for direct comments. Leave applications are now approved instantly via email. Software templates streamline tasks like composing contracts and quotes."	2
"Manual attendance is eliminated as customers check in through the app. The system automatically records employee working hours and identifies workload distribution. Integrated systems allow app control of doors, air conditioners, and printers."	7
"Reporting primarily occurs through intranet groups, Facebook, and Zalo, with a notable shift away from face-to-face meetings to online meetings. Customer records are organized in a threaded manner, and simply uploading files enables the system to automatically approve the records."	8
"Rather than relying on paper records for goods statistics, the company has transitioned to entering information directly into the app. Previously, the manager faced challenges in verifying whether employees actually visited the points of sale. However, with the app, location settings are available, allowing the manager to easily track employee movements and ensure their presence at the designated sales points."	9
"The system facilitates employee evaluations, granting each employee access to review their own work results. All work activities are conducted interactively within the software, including task assignments, which are also managed through the system."	9

In addition to transformations in internal working processes, the respondents revealed significant changes in *external working processes* (**Table 4**). Customer interaction channels within the enterprise have been reshaped, leading to increased diversity compared to the pre-digital transformation era.

Table 4: Responses related to external working processes

Respond	Respondent
"The company utilizes diverse customer relationship channels like Zalo, Facebook, Email, and hotlines. Real-time customer feedback is collected and aggregated in the software, facilitating prompt monitoring and responses from staff. The company also employs activities like follow-up calls and surveys to gather valuable customer information after consultations or service delivery."	2
"Customers can easily contact the training or customer service departments through the school website, and their queries will be promptly directed to the relevant departments for immediate response. Additionally, paperless approval applications can be submitted through the app, ensuring efficient processing of requests."	6
"Previously, customers made loans at bank branches using paper forms, but now they can perform various transactions online. Marketing has shifted from flyers to e-commerce activities."	8

4.1.3. Business model transformation

Among the four elements of digital transformation mentioned, businesses have not given much attention to the aspect of changing the business model (**Table 5**).

Table 5: Responses related to business model transformation

Respond	Respondent
"The company has recently adopted a new approach to offering products and services. In addition to traditional direct channels, they have expanded their reach by venturing into online platforms."	2
"At present, there are no entirely new products and services, so the opportunity for changing the business model is not yet available."	6
"The bank aspires to transition to providing banking services solely through the app. However, numerous challenges persist, requiring customers to visit the counter and rely on bank tellers for assistance. As a result, a complete transformation of the business model is not yet feasible."	8

4.1.4. Decision-making

Personnel information is typically stored in businesses for performance evaluations, while customer transaction information is stored as a regular part of their operations. These pieces of information play a crucial role in the decision-making processes (**Table 6**).

Table 6: Responses related to decision-making

Respond	**Respondent**
"The company stored customer and service information on the software after transactions. This helps track service expiration and enables proactive service renewal notifications. The software also collects customer ratings from various channels, simplifying access for employees."	2
"The school collects and stores information from customers and staff on the website. Data analysis helps identify attendance rates, average scores, and failure rates for teaching adjustments and effective learning reminders."	6
"The company collects customer information from multiple channels, including direct marketing, transaction history, and social networks. Data is processed and shared with business units for customized products, services, and strategies. However, the system does not automatically update when customers switch identification cards."	8
"The company utilizes CRM software to collect sales information and measure KPIs. Management can access and export data to evaluate employee performance and provide motivation for improvement. However, the software only assesses numerical metrics, while evaluating attitude and achievements is determined by managers."	18

The preceding section highlights that businesses in Danang are indeed adopting and practicing digital transformation across all four elements. Although these businesses may not possess comprehensive knowledge of all the major elements of digital transformation, they are still implementing it in accordance with their understanding. In the following sections, the authors will delve into the challenges that businesses in Danang encounter during the implementation of digital transformation.

4.2. Barriers affecting the process of digital transformation in Da Nang SMEs

When inquiring about the obstacles to digital transformation, six barriers were identified that SMEs may encounter. These barriers are categorized into two main thematic groups: internal and external barriers.

4.2.1. Internal barriers

Internal barriers include financial constraints associated with digital transformation process, challenge of approaching new technology, challenge associated with companies' vision and strategy, and challenge in data integration (**Table 7**).

Table 7: Responses related to internal barriers

Internal barriers	**Response**	**Respondent**
Financial constraints associated	*"Financial constraints pose a significant barrier to digital transformation, as it involves substantial costs for technology acquisition, updates, and company-wide implementation. Small*	9

with digital transformation process	*companies often lack the financial resources necessary to make such investments."*	
	"Cost barrier is significant as it involves building data warehouse, infrastructure deployment, and requires substantial investments exceeding the initial capital. Extensive references and resources are needed to overcome this."	8
	"The cost of software and effective utilization pose challenges. Companies often need to run multiple systems simultaneously, which can be expensive."	13
	"Clear cost planning is crucial for optimal investment in digital transformation. This strategic process can take 2-3 years to implement and refine. Changing technologies after gaining experience becomes costlier in the long run."	14
Challenge of approaching new technology	*"Choosing the right technology for digital transformation is crucial. It can be costly and time-consuming, but using the wrong technology can be ineffective and wasteful."*	2
	"Investing in new technologies is complex, involving supplier selection, technology assessment, and cost management. Unlike physical products, AI investments require customization and are not readily available for immediate purchase with money alone."	4
Challenge associated with companies' vision and strategy	*"A key barrier is the absence of a clear long-term vision and strategy for digital transformation. This may stem from a lack of awareness regarding the significant opportunities it presents, leading businesses to overlook its importance."*	3
	"Currently, businesses lack a concrete strategy for digital transformation, highlighting the need for expertise to develop a specific roadmap. Without a clear direction, businesses struggle to determine where to begin and may only focus on investing in digital transformation tools without achieving significant results or progress in their operations."	5
Challenge in data integration	*"There is a possibility that the transition to digital data may not occur seamlessly, requiring time to transfer and integrate the extensive amount of existing paper-based data into the digital system. The processing of such voluminous paper data can be time-consuming."*	2
	When data is stored in Excel files and needs to be transferred to other systems, such as SQL, challenges arise due to the varying row and	9

	column formats of the new system. As a result, significant time and effort are required to adjust the data accordingly for seamless integration.	
	"Working with different parties makes data transfer between systems challenging. Mismatched data structures between systems and differing approaches to data organization create difficulties in seamlessly integrating and connecting the data."	13

4.2.2. External barriers

In addition to internal barriers, the respondents acknowledged the impact of external barriers on the digital transformation in Da Nang SMEs. These external barriers encompass concerns regarding cybersecurity, partners' reluctance to cooperate, restrictive government regulations, and challenges in accessing capital (**Table 8**).

Table 8: Responses related to external barriers

External barriers	**Response**	**Respondent**
Cybersecurity	*"Customer data holds immense importance, making it vulnerable to theft if there are any security loopholes. Although numerous security and antivirus software options are available, implementing them can come at a significant cost."*	2
	"Currently, there is a lack of customer protection and transparency in the legal framework. Online transaction fraud is common, leading to risks in data security, financial loss, and a loss of customer confidence in digital products and services."	8
	"When conducting business transactions via email, employees frequently encounter fraudulent emails aimed at stealing customer information. This creates anxiety among employees as the security software available may not provide a high level of reliability or assurance in protecting against such threats."	10
Partners' reluctance to cooperate	*"Reluctance to cooperate from customers, particularly in the 80s age group and above, is a significant barrier. They prefer traditional banking methods due to familiarity and perceived security, unlike the 90s age group and beyond who embrace technology more readily."*	8
	"Partners' reliance on manual methods and Excel files for importing and exporting goods instead of adopting the company's ERP software increases data transfer time and effort."	10
	"Partners often lack synchronization, such as in the use of digital signatures, leading to a lack of common ground."	11

Restrictive government regulations	*"In public entities, investment decisions need approval from higher management levels, adding complexity and difficulties to businesses aiming to accelerate their digital transformation."*	3
	"Certain documents have not been digitally converted by the government, compelling businesses to handle them in their original form and limiting their ability to convert them at will into digital formats."	10
Challenges in accessing capital	*"Schools often find it easier to access loans for infrastructure upgrades rather than securing loans specifically for technological advancements like AI and Big Data."*	3

The previous section acknowledges eight barriers that businesses in Danang have identified as impacting their digital transformation endeavors. These barriers encompass challenges related to finding appropriate digital technologies, dealing with implementation costs, navigating data integration complexities, facing a lack of clear vision and strategy, encountering government policies and regulations, experiencing reluctance to cooperate from partners, addressing cybersecurity concerns, managing privacy and data resilience, and encountering difficulties in accessing external funding. Early identification of these barriers is crucial as it enables businesses in Danang to channel their efforts towards effectively mitigating them.

5. Discussion

This study aims to identify the ongoing digital transformation process in SMEs in Da Nang and the primary barriers encountered by businesses during its implementation. Among the four key elements of digital transformation mentioned earlier, SMEs in Da Nang have made notable progress in various areas. They have successfully adopted technology in their operations, implemented process changes, and embraced data-driven decision-making. Technology solutions are widely used to facilitate daily tasks, enable remote product and service delivery, and empower leaders to supervise remote employees. However, despite these advancements, the overall pace of digital transformation in businesses has not significantly accelerated.

When it comes to technology adoption, businesses in Da Nang have shown varying degrees of access to different technologies. The most commonly used technologies are cloud computing (24 out of 24 businesses) and business software components (15 out of 24 businesses). A smaller number of businesses have utilized Big Data (5 out of 24 businesses), although mainly for data collection, while fully automated data updates for customers and employees are not yet in place. Commonly employed software includes corporate websites (24 out of 24 businesses), CRM software (8 out of 24 businesses), and ERP software (5 out of 24 businesses) for human resource and company management.

In terms of process changes, businesses have primarily transitioned from face-to-face meetings to digital platforms for information exchange. Software is utilized for task allocation, work progress updates, reporting to superiors, and conducting online meetings. Regarding business processes, companies have expanded their customer interaction channels, with 6 out of 24 businesses using apps for customer transactions and Zalo and Facebook being the main channels for customer engagement.

In terms of data-driven decision-making, while software is capable of collecting, storing, and reporting information, the analysis of data for decision-making purposes remains challenging and has not been widely implemented. Leaders still rely on manual data reports, resulting in delays in decision-making processes.

Regarding business model changes, businesses have not completely transformed their traditional business models, but have made selective changes to certain processes. The focus seems to be on leveraging digital technologies rather than exploring digital innovations and developing new digital products and business models that can generate new revenue streams in the digital landscape.

To ensure successful digital transformation, it is crucial to identify and overcome barriers that may impede the process. This study aimed to investigate barriers to digital transformation in businesses in Da Nang, both internal and external. The findings align with existing research, as eight out of the 16 identified barriers were acknowledged by businesses as affecting digital transformation. These barriers include challenges in finding necessary digital technologies, implementation costs, data integration complexities, lack of clear vision and strategy, government policies and regulations, reluctance to cooperate from partners, cybersecurity concerns, privacy and data resilience, and difficulty accessing external funding. The study emphasizes the importance of early identification of these barriers to allow businesses to focus their efforts on mitigating them effectively.

The study findings indicate that internal barriers have a greater impact on firms compared to external barriers. Among the identified barriers, the cost of digital transformation emerges as the most prominent challenge faced by businesses. Limited capital poses difficulties for businesses in allocating sufficient budget for technology investments. Additionally, transitioning to new technologies entails maintaining the existing systems simultaneously, further increasing costs. Consequently, the cost barrier significantly affects the digital transformation process of businesses. Another influential barrier is the challenge of finding suitable technologies. Businesses often struggle to identify the most appropriate technology solutions, leading to hesitation and concerns about inefficient investments. Moreover, the lack of a strategic vision hinders progress, as many businesses lack clear and specific digital transformation plans and roadmaps, resulting in uncertainty about the next steps. The integration of data across different software systems is also highlighted as a significant barrier, as each system may have different data presentation and arrangement methods. Businesses require effective technological solutions that facilitate seamless integration of data from various sources.

Regarding external barriers, the subjects expressed concerns about privacy breaches and data theft in the online environment. Since enterprise data holds great importance, the lack of security measures and accountability for safeguarding crucial information diminishes trust in technology usage. These apprehensions about information security further result in barriers to cooperation from partners. Customers, who worry about their personal information, tend to avoid online transactions and prefer traditional methods. Moreover, partners accustomed to manual processes may face challenges when adapting to digital technologies, impeding collaboration during the transition.

Public institutions encounter a government-related barrier where investment decisions are tightly controlled. The bureaucratic approval process hampers the agility of public organizations in their digital transformation endeavors. Although not extensively mentioned, limited access to external funding also hinders the adoption of technology and software due to the absence of flexible loan policies. Addressing this barrier is crucial to facilitate the progress of the digital transformation process.

6. Conclusion

The study aimed to examine the implementation of digital transformation by incumbents in traditional industries. The findings shed light on the current state of digital transformation within businesses, identifying key aspects and barriers impacting the process. These insights serve to raise awareness among organizations that are currently undergoing or planning digital transformation initiatives. However, it is important to acknowledge the limitations of this study. Firstly, due to the specific scope and selection of businesses in Vietnam, the generalizability of the findings is limited. Replicating the study in different regions worldwide would enhance the reliability and validity of the measurement models, allowing for broader generalization. Secondly, this study employed qualitative methods to explore digital transformation processes rather than quantitative approaches to measure the impact of variables. Therefore, future quantitative studies should be conducted to ensure the applicability of the research to a larger number of companies and region

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Determinants of The Family Economic Farm income in Vietnam – The Case of Kontum Province

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ABSTRACT

Vietnamese agriculture reforms were embedded into general economic reforms in 1986, enabling the country's transition toward a market economy. To promoting individualized rights, recognized family economic farm, successive reforms have contributed to accelerating the agricultural transformation process by encouraging perennial crop and forestry systems, and allowing rural land rentals and land sales markets to re-emerge. Vietnam's family economic farm develops in smallholder rice productivity and intensication are a source of learning experiences for many developing countries. e lessons learnt from government support policy for a success story of small farm development in Vietnam. Family farms in Vietnam are operated units that derive most labor and enterprise from the farm family. The main objectives of this study are to identify what the determinants of family economic farm income are through a micro approach. the preceding discussion was concerned with the specific research methods such as the econometric design, the conceptual design, the sampling design, data collection, and the data limitations. The study has investigated the relationship between the input factors and income of family farm so that helps policy makers consider, support and building regulation, policy to develop family economic farm in KonTum province in the future.

Keywords: Family economic farm, Kontum province, input factors, family economic farrm income, family labors.

1. The prologue of research

Vietnam is still an agricultural-based economy with about 45% of the labor force engaged in agriculture (VHLSS, 2020). As about 65% of the country's population is living in rural areas, agricultural and rural activities will continue to play an important role in terms of rural income

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generation and poverty reduction in the coming decades. The roles of agriculture in economic development are highlighted by Johnson and Mellor (1961), and shared by Kuznets 1961. Since the introduction of *Doi Moi* in the late 1980s, Vietnam's agricultural sector has undergone remarkable reforms and structural transformation. The return from the cooperative to household economy and agricultural market liberalization has created incentives for production and investment and led to a dramatic increase in agricultural outputs and their diversification. Food security was achieved at the national level in the early 1990s and Vietnam quickly turned from a chronically food-deficient country in 1980s to the world’s second largest rice exporter in late 1990s. During the period of 1990-2020, the extended agricultural sector (including forestry and fishery) grew steadily at a rate of 4.1% per year – a remarkable achievement among developing countries.

By fully applying the renovation process in the whole country, many new factors are emerging from all social economic issues, in which farm economy is a new concern in agricultural production and rural development in recent years. Although family farm economy is primary, it has affirmed its importance and development prospects. Family farms in Vietnam are operated units that derive most labor and enterprise from the farm family. They have proved resilient, even in the rich world, and small family farms dominate agriculture in East and South Asia and Sub-Saharan Africa.

According to statistical data, Vietnam now has approximately 19.667 farms, attracting large number of laborers annual (about 75.000 labors per year). They are planting over 600.000 ha of bare hills. Farm owners have invested a great amount of capital (about VND 70 trillion in these farms). They employed workforce for thousand of laborers and provide food and agricultural products worth approximately VND 50 trillion per year, accounting for 12 percent of the total agricultural output of the country (source Ministry of Agriculture and Rural Development). In accordance with agricultural cooperatives, and state-owned agricultural enterprises, the family farms have played a certain role in the agricultural production and rural development.

Vietnam’s Development Goals (VDGs) for the coming decades are in line with the global millennium development goals (MDGs), which the Comprehensive Poverty Reduction and Growth Strategy (CPRGS) plays a vital role in achieving through rapid and sustainable growth of the rural economy. In responding to global integration and trade liberalization, the Government of Vietnam, through the Ministry of Agriculture and Rural Development (MARD), has set a clear goal of restructuring the agricultural sector to be more competitive and demand-driven. This was recorded in the Country’s Strategy for Agriculture and Rural Development in the period of 2021-2030. To this end, diversification of agricultural activities in production, processing, transport, storage and export was identified as the key target for successful growth and transformation of the agricultural sector.

In Central Highlands of Vietnam, with favorable natural conditions, more agricultural land available and good basic infrastructure, the Central Highlands regions have a comparative advantage in developing competitively commercial agriculture including perennial and annually plant, livestock production. The recommended strategy for these regions is to further broaden their products and maintain a balance between agricultural development and environmental protection (i.e. preventing deforestation and soil erosion). In addition, enhancing participation and inclusion of ethnic minorities in the development process is critical to effectively address rural poverty which is prevalent in these areas. This study tries to identify theories of family farm economy, related issues to farm, advantages and requirement to develop family economic farm. It also tries to define what factors and how they affect family economic farm income in KonTum province, 2022.

From the regression results, we can make some suggestions to further farm development and celebrate family economic farm income in individual KonTum province and general Central Highlands. "Determinants of family economic farm income in Viet Nam – the case of KonTum province".

Scope and focuses: Vietnam's Development Goals (VDGs) for the coming decades are in line with the global millennium development goals (MDGs), which the Comprehensive Poverty Reduction and Growth Strategy (CPRGS) plays a vital role in achieving through rapid and sustainable growth of the rural economy. In responding to global integration and trade liberalization, the Government of Vietnam, through the Ministry of Agriculture and Rural Development (MARD), has set a clear goal of restructuring the agricultural sector to be more competitive and demand-driven. This was recorded in the Country's Strategy for Agriculture and Rural Development in the period of 2021-2030. To this end, diversification of agricultural activities in production, processing, transport, storage and export was identified as the key target for successful growth and transformation of the agricultural sector. This study tries to identify theories of family farm economy, related issues to farm, advantages and requirement to develop family economic farm. It also tries to define what factors and how they affect family economic farm income in KonTum province, 2022. From the regression results, we can make some suggestions to further farm development and celebrate family economic farm income in individual KonTum province and general Central Highlands.

Research questions: (1) What are the shares of the family economic farm to agricultural-rural development in KonTum province?; (2)How situation have family farms performed in recent years?; (3)What are the advantages and requirement to develop family economic farm in KonTum province?; (4)What are the determinants and how do they affect family economic farm income?; (5)What are the conclusions & recommendations for increasing family economic farm income and accelerating family farm development in KonTum province?

Hypothesis: Hypothesis 1 – Relationship between family economic farm certificate and family farm income was predicted positive (+); Hypothesis 2 – The trained of family farm head and family farm income are positive relationship (+); Hypothesis 3 – The family farm size and income of family farm are ambiguous relationship (?); Hypothesis 4 – The family labors of family farm and income of family farm are positive relationship (+); Hypothesis 5 – The farm activities and income of family farm are ambiguous relationship (?).

2. Theoretical framework: The model for the determinants of family economic farm income

2.1. Basic concepts

According to the Resolution N0 03/NQ-CP of the Government (dated February 2, 2000) – The family economic farm is a basis organizational unit for agriculture, forestry, fisheries production. Input is possessed by an independent ownership; the production activities are performed on large area of land and all necessary factors of production are managed with modern knowledge and advanced technology. The owners are self-reliant and must base their production on the market.

The action of the family farm economy based on assets, contributions or cooperation of family members and it is managed by ownership. (Ministry of Agriculture America, number 35, page 1). The family farms are operated units that derive most labor and enterprise from the farm family (Michael Lipton, June 2005).

Definition: As mentioned in the thesis, from different approaches and point of view of the authors, there is a certain definition of family farm economy. A quoted concepts of family economic farm is a farmstead in which the family or household supplies labors, ownership capital, and self-management. No distinction is made between managerial labor and the labor used to plant crops, feed animal, livestock, and so on. Farm operations are followed by market signals and close to markets. It is a type of agricultural production in which family labor captures more than 50 percent of the total labor working on the farm; and hired workers also contribute to farm activities. The family farm still plays a multiple role, he is an owner, worker, manager and marketers, and markets are open to him. Family farmstead is an autonomous decision making unit, which decides how to use of the resources of production efficiently.

The family economic farm income in this sense is commonly defined as that derived from family farm operations. It is that the gross output minus expenditure in production, wage of hired labor and other costs (capital variable). The annual income of a family farm is the total of money received by the family from all its members working on the farm within one year. Thus, family economic farm income includes income of the farm owner (wages of management laborers, family and direct laborers), income of all family members directly working on the farm, and net profit of the farm. In this context, the income of farm owners and family laborers can not be clearly separated.

The roles of family farm economy in rural development and alliance poverty

In accordance with family farm economy and household economy, the central role in agricultural production and rural development are located in rural areas where are most of population and land. The family economic farms have existed for hundreds of years. In integrated stage, family farms are dominant in the economy development in rural. The roles of family farm are introduced as following: (1) Family economic farm investment helps reduce migration to big city. More investment by governments in agriculture and the right farm policies would help keep rural population on the land and reduction migration, according to Ministry of Agriculture and Rural Development. In Vietnam in recent year, there are many people who have moved from the countryside to the cities. Large numbers have also migrated from north, coach middle and central highlands, Mekong delta provinces to Ho Chi Minh city and Binh Duong, Dong Nai provinces. The developing the family farms and small business in rural reduced the large numbers the migration to big cities; (2)Poverty Reduction: Funded by the Government of Japan, the Roles of Agriculture (RoA) program was launched in 2000 and targeted on 11 countries representing a broad range of economic and environmental conditions in three continents. RoA's researchers found that agricultural growth often helped reduce poverty more than any other economic sector. It had dramatic effects on poverty and hunger that were felt not only in rural areas but in urban ones too. In Indonesia, for example, agricultural growth was found to be responsible for a 50 percent reduction in rural poverty and a 36 percent drop in urban poverty. But farm production had to move from the subsistence level to some scale of commercialization before any impact was felt on food insecurity and poverty. In addition, which farming sectors produced the growth was of fundamental importance. In Vietnam, however there are not the data for the family farm contribution in Gross Domestic Product (GDP), but the family farm developed according toward market economy that has advantage impacts in alliance poverty (source from annual reports of the provinces in Vietnam); (3)Developing sustainable rural. It can play a crucial role as a social buffer in times of economic crisis, and may be creative sustainable development in rural (such as sustainable for environment, economy and political). In many cases, the family farm sector has proved more resilient than others in economic downturns, providing an economic and social safety net for urban workers, who migrate back to the countryside and for the poor in general. The family farm is also an essential element in preserving the environment, impacting at global level on biodiversity, climate change and wildlife habitats and at regional and national level on such areas as soil conservation and the rural landscape. As incomes grow, people are in a better position to pay for quality environment and are prepared to spend more to obtain it. But environmental damage, once done, is difficult and expensive to repair, RoA noted. The issue should thus be addressed as early as possible in the development process – possibly through direct incentives to small farmers to invest in the protection of natural resources; (4)Thus, the family farms are corollary encouraged developing. The family farm economy has the ability to apply all different level of management in agricultural production with different size, specialization, technology and a combination of others like small households, cooperatives, and state farms. The family farms mobile the family resource in capital, labor force for large production, land reclamation, crop multiplication of intensive techniques with better quality variety of crops and animals, rational fertilization, improved farming tools and implementation toward market direction. They also have waked up the potentials of land, labor, capital and other inputs to contribute to rural development. In Agricultural, the family farms can contribute to agricultural-rural development in terms of GDP, surpluses to society, encourage of local business and trade job creation, food security and poverty alleviation, and environment protection.

2.2. Basic Theory: The model for the determinants of family economic farm income

Farm household models (with and without markets for labour and food-Kees Burger, FEWEC, Free University-October 1998). The Farm Household Model consists of both parts, and if all assumptions on perfect competition markets are covered, the only extension now is that the household can also enjoy profits. These are based on its asset, land.

The pure producer model: $Q = \alpha A^{\phi} L^{1-\phi}$

The pure consumer model: $L = U(F,G) - \lambda\ (p_f * F + G - I)$

The extended consumer model: $wT = w(T-L) + p_f F + G$

The profit function of farm household: $\Pi = p*Q - w*L$.

Where Q indicates the produced quantity, A the area and L the quantity of labour used, α is intercept. U indicates utility function, F the consumed quantity of food with price pf, G the consumed quantity of non-food, the price of which is set at unity (by appropriate choice of units of measurement), and I is consumer budget. T is the available time, and L the time worked. Note that the utility of consuming F and G is incorporated into this utility function with distribution parameter β and elasticity μ. And namely leisure is price w, good F (price pf) and good G (price in measurement unit).

The pure producer model was only focus two variables area and labor (ceteris paribus), this model may be absent some variables lead to bias problem in model (the model may be not BLUE).

Nakajima's model (1965), The equation for the family farm income will be:

$M = P * F(L, L_A) + W * (L_F - L)$ (1)

Where L: labor input of the farm, whether it comes from the family itself

LF: the total amount of family labor utilized whether family labor work for the farm or not. W is a given wage rate, LA is farm size (the area size of farm), F(L,LA): production function of the farm with two factors: labor and land (farm size), P: price of output, and M: money income from the family.

Production function introduced two input factors labor and land, the assumption was other factors that were constant. The policies markers expect to consider other factors such as farm activities, support policies effect to how family economic farm income. The family income included both the family members work in farm and outside work. The author wants to distinguish between the family economic farm income and the family income.

Production function of Cobb-Douglas. A example for production function of Cobb-Douglas

$Q = f(K, L) = AK^{\alpha}L^{\beta}$ (2)

Where: A is technology level (constant). α : Parameter for capital expenditure K.

β : Parameter for labor input L. K is the factors of capital and L is labors of family farm

The marginal product of capital expenditure is derivative $\frac{\partial f}{\partial K}$ .The marginal product of labor expenditure is derivative $\frac{\partial f}{\partial L}$.

Or The Cobb-Douglas function form can be moved to linear function: $LnQ = \ln A + \alpha \ln K + \beta \ln L$ (3)

Where: A is technology level, K is vector of capital, L is vector of labor. α is an elasticity effect of capital to quantity (Q), β is an elasticity effect of labor to quantity.

Based on above mentioned theories, we may be defining as following:

Let Y is income of family economic farm and Y is defined by amount of output multiple to prevailing output price (at study time) minus cost of production. Assumption, the output and input price are a constant (this defined at study time).

Y depends on input factors as following:

- Vector of capital consists of land, capital expenditure (fertilize, machine and other costs…)
- Vector of labor includes amount of labor and the demographic of labor.

Y = f(Land, capital expenditure, amount of labor, demographic of labor…) (4)

And productivity of land can be measured by income of family farm over size of land.

2.3. Empirical studies: The model for the determinants of family economic farm income

According to Le Quang Canh (2000), income of family farm in Binh Duong province is strongly associated with the asset position of a farm. Capital and labor have positive impacts on income of family farm. Female farm heads earn on the average income much less than male-owners. Education of farm heads is positively associated with income of farm as expected. Farm income is found to be positively associated with quality and quantity or access to agricultural-rural infrastructures (telephone). Beside, the size of farms has ambiguous relationship with income of farm; the farms of 3 to 5 ha are most efficient. Other variables such as certificate of land use rights, time of operation have positive impacts on family farm income. And farm size from 3 to 5 ha was the best efficiency and the farm size above 10 ha is less efficiency. The small and medium size farms had advantages in investment for technology, farm activity and management. The farms above 10 ha had disadvantages such as policies, management, and instability output market, capital shortage to invest.

The studies found a positive relationship between farm size and productivity {Study of West Godavari 1969 – 1970 by Deolalikar (1981); a study by Feder (1985); and Carter and Michael R. (1984)}, but other studies found an inverse relationship between farm size and productivity and remain studies are ambiguous. Such as Johan van Zyl (World Bank), Bill R. Miller (University of Georgia), Andrew N. Parker (World Bank, 1996), analysis relationship between farm size and productivity.

Based on Indian farm management data from the late 1950s, Sen (1962) observed an inverse relationship between farm size and yields per unit area. Since then, many articles have been written that have examined this relationship. Berry and Cline (1979) carried out a detailed empirical investigation into the relationship between farm size and productivity covering data from Brazil, Colombia, the Philippines, (West) Pakistan, India, and Malaysia. They conclude that "the evidence presented…points to systematically higher land productivity on small farms than on large ones, and total factor productivities that are at least comparable" (Berry and Cline, 1979:4). Prosterman and Riedinger (1987) using data from 117 countries, show that 11 of the top 14 countries in terms of grain yields per hectare are countries in which small-scale.

According to Cornia (1985) finds a negative elasticity for resource inputs with respect to land, and higher land use intensity on smaller farms. According to Johan van Zyl (World Bank), Bill R. Miller (University of Georgia), and Andrew N. Parker (World Bank, 1996): (1)For land, larger farms face an implicit cost for land that is lower than its opportunity cost; (2) Capital, lager farms also face an implicit cost for capital that is often lower than its opportunity cost. The part of Feder's (1985) model relates to capital market imperfections, where obtaining working capital depends on the farm size, i.e., on the collateral offered; (3) Labor, small farms commit more labor to production than large farms. This is due to the existence of a dual labor market. The literature demonstrates that family farms are generally more efficient and superior to other types of farming because of the way in which labor relations are organized (Berry and Cline, 1979; Binswanger et al, 1995; Deininger, 1993; Johnson and Ruttan, 1994; Lipton, 1993).

Based on above empirical studies given to us reference model to define family economic farm income as following: Y = f(capital, labor, gender, age, time, telephone, land use right, farm activity, education level, farm size) (source Le Quang Canh, 2000) (5)

However, we only reference some variables of model and exclude unsuitable variables with the study condition in KonTum province. Relation between farm size and productivity of land (output per hectare) was ambiguous. This depends on each area, other factors and needs to test in next chapter by econometric model. Let PR is income of family farm per hectare, we may be obtain function: PR = f(capital, labor, gender, age, time, telephone, land use right, farm activity, education level, farm size) (6)

2.4. Identife: The model for the determinants of family economic farm income

This section introduces the econometric model for testing the hypotheses of the research. What are the determinants of the farm economic income in KonTum province?

The production function describes the relationship between output (Q – family farm income) and its determinants of family farm income. The relationship between inputs and output in fishponds can be described mathematically through a production function of the following generalized form:

$Y = f(X_1, \ldots\ldots, X_n)$ Where Y=output ; X_j =inputs

Various specifications of the functional form could be used, including linear, polynomial, or power functions. In the farm production, output (or income) of farm can be expressed in the familiar Cobb-Douglas form, which is translated into an equation linear in logarithms. This form has the drawback that is multiplicative, and additive in all variables. The original equation is:

$Q = A K^{\alpha} L^{\beta}$ (7)

According to literature review and empirical study of Le Quang Canh (2000), Johan van Zyl (World Bank), Bill R. Miller (University of Georgia), Andrew N. Parker (World Bank) (1996) and Study of West Godavari 1969 – 1970 by Deolalikar (1981); a study by Feder (1985), the model in this thesis as following function

Model specification: Y = f(Cap, Lab, Tim, Cer,Tra, Sex, Siz, Act) (8). Where

Table 1. The model for the determinants of family economic farm income

Variable	**Definition**	**Expected Sign**
Income (Y)	Value of family farm income (in million of VND)	Dependent variable
Total labors of farm (Lab)	Number of all family labors (in person)	+
Capital (Cap)	Value of physical capital (million of VND)	-
Time of operation (Tim)	Time from establishment to surveyed time	+
Farm Certificate (Cer)	Dummy variable, =1 if farm was given farm certificate	+
Sex of farm head (Sex)	Dummy variable, =1 if farm head is male	+
Training of farm head		+
-Training (Tra)	Dummy variable, =1 if head of farm has trained	+
- Farm Size (Siz)	Quantity variable, measured by hectare	**?**
Farm activity		**?**
- Perennial Plant(Act1)	Dummy variable, =1 if farm activity is permanent plant	
-Annually Plant(Act2)	Dummy variable, =1 if farm activity is annually plant	
- Livestock (Act3)	Dummy variable, =1 if farm activity is livestock	
- Mixed Activities	Dummy variable, Act1=Act2=Act3=0 if farm is mixed activities	

("?" The variables of (Farm Size (Siz)) and Farm activity affect to Value of family farm income (in million of VND) that are uncertain.)

Assume that income function is linear in deterministic components then we have

$$Y = \beta_0 + \beta_1 SEX + \beta_2 ACT1 + \beta_3 ACT2 + \beta_4 ACT3 + \beta_5 TIM + \beta_6 CER + \beta_7 SIZ + \beta_8 TRA + \beta_9 LAB + \beta_{10} CAP + \varepsilon \quad (9)$$

The function is introduced by logarithm function: $LnQ = LnA + \sum \alpha iLi + \sum \beta jKj + \sum \gamma_i LnCi$ (10)

Where: A is a parameter of total factor productivity; L_i is a set of dummy representing characteristics of farm head; K_j is a set of dummy representing characteristics of farm; and C_i is vector of farm assets. The equation is a form of log-linear, which allows us to estimate coefficients for family economic farm income of all variables in logarithm forms:

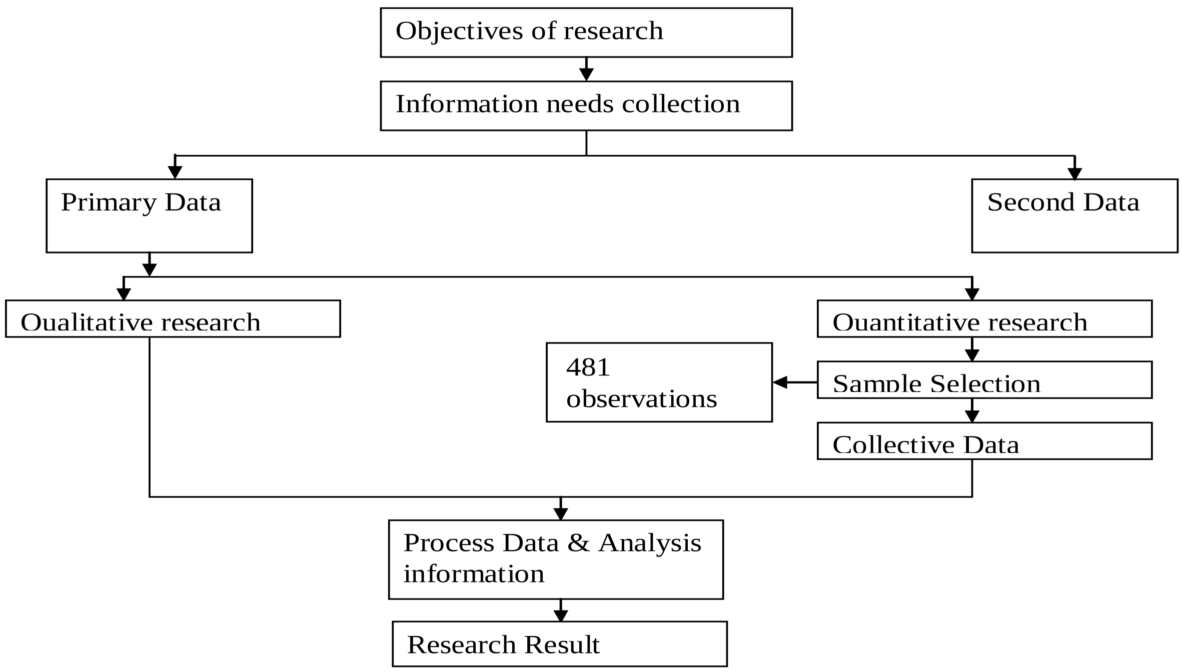
$$Ln(Y) = LnA + \beta_1 SEX + \beta_2 ACT1 + \beta_3 ACT2 + \beta_4 ACT3 + \beta_5 \ln(TIM) + \beta_6 CER + \beta_7 \ln(SIZ) + \beta_8 TRA + \beta_9 \ln(LAB) + \beta_{10} \ln(CAP) + \varepsilon \quad (11)$$

3. Research method

3.1. Research Method

Research Question and Hypothesis: The objective of this study is to answer the question for the determinants of family farmstead economic income. We utilized the following fundamental approaches to create the above-mentioned suggested model: Synthetic material method, expert interview method. The first method, we synthesized scientific articles from many prestigious journals related to the determinants of family farmstead economic income. Through this method, we can introduce potential factors that have been used in previous studies, thereby forming an evaluation model. The second method, we use expert interview method. The analysis will require data from the following sources: (1)**Primary data:** Survey of family farm economy in KonTum province in 2022 (A survey of 481 family economic farms is taken); (2)**Secondary data:** General Statistical Office (GSO),World Bank (Worldbank.org),FAO, Ministry of Agriculture and Rural Development, Magazine, newspaper, KonTum province Committee. A report of Agriculture and Rural development department indicate situation of family farm in KonTum province in 2022.

Figure 1. The research design



This section explains the sources of data and the data gathering methods used in the research as well as their problems. There are two of data namely, secondary and primary data. First, some main sources of secondary data resulted mainly from GSO, the reports for survey of the Agriculture and Rural development department in KonTum province in the period of 2020-2021. Second, the survey as the main primary data in 2022 has been implemented combination between author and Department of Agriculture & Rural Development. There are some adjustments for the data process between Agriculture and Rural development department and author; these depend on questionnaire code and result analysis purpose.

Questions in the questionnaire regarding income in family farm, included the sources of different income mainly resulting from family farm activities, such as income from crops, cultivation and income from livestock or mixed activities …Net income from family farm activities was derived by multiplying income in kind by market unit price, and minus the cost of family farm activities at research time. The questions on family farm income were asked in more detail, namely the labor factors variables group such as age, gender, training, farm certificate, time of operation, total of family labors and training of farm head; the capital factors variables group such as capital, farm size and farm activities. Beside, undisclosed problems were possibly discovered and the information gaps were filled to some extent for the disadvantages of family farm in KonTum province.

3.2. Natural and social conditions in KonTum province

KonTum is a province located in the North of Central Highland. KonTum lays longitudes $107^{0}20'15''$ to $108^{0}32'30$E, and between $13^{0}55'10''$ and $15^{0}27'15''$S. The province has the east border Quang Ngai province with horizontal about 74 kilometers. The West's 275 kilometers borders Laos and Cambodia. The South borders Gia Lai province approximately 203 kilometers, and the north borders Quang Nam province. KonTum province includes one KonTum town and eight districts such as DakHa, DakTo, DakGlei, Sa Thay, Ngoc Hoi, Konplong, Kon Ray, and Tumorong. The square is 9661.7 km^2, approximately 3.1% of the country. KonTum terrain is slope (above sea average level 700-800 meters), complicate, and the height gradually decreases from North to South and from East to West. The average height in North is from 800 to 1200 meters and the South from 500-550 meters. KonTum has an area of 10558 square kilometers. The land is nutrition, thick degree which advantage to cultivate permanent tree.

Agriculture land has 116000 ha and used 52000 ha; the extended capacity is very large. However, the local government needs the consistency and sustainable development policies. Forest land is 614000 ha of which natural land cover 611300 ha. Based on forest land square, this is advantages to develop big size livestock. Main groups of soil of KonTum province are Red soil. This is a suitable to develop cultivation of long-term industrial crops like rubber, pepper tree, and coffee plant.

The region has a tropical monsoonal climate with two distinct dry and rainy seasons. The total rainfall is 2000-2500 mm per year with more than 80% concentrating in the period of May to November. In the dry season, long droughts are common. The yearly average temperate is from 22^{0}C to 23^{0}C, the temperate decreases 0.6^{0}C when the slope increases 100 meters. The fluctuation temperate is from 8 to 9^{0}C in day. The wet degree is highest level 90% (in August and September months) and lowest level 13% (in March month). Average wet level is 78%-87% in year.

Population of KonTum province is 540438 people in 2019. It consists of many minority sectors such as Se Dang (84313 people), Bana (40358 people), Gie-Trieng (36907 people), remain part is Giarai, Brau, Romam, Kinh and different small size minority.

Population density is 40 persons per square kilometer. The population is distributed unevenly. The population is concentrated in Town and district central.

The labor source of KonTum province is almost not trained (trained labor approximately 20.74% in 2020 - *source KonTum province committee*). Labor total worked in economic industrial about 160.389 people (42.82% of population) among forest labor is 131256 people (81.8% of labor total). Yearly increasing is from 4000 to 6000 labors. Beside, there increases in labor total every year, because of the migration policy of government. The labor force has experience in agriculture production and traditional handicraft products. The KonTum province committee encourages to attractive labor force that has trained to satisfy economic transition. In long-run, KonTum province has geographic location favorable for family economic farm development. The special is big livestock farm, permanent and annually tree. .

The face water source includes stream, river system and lakes. They consist of two river system: (1) The Ba river original system begins from Konplong mountain area according to KonTum, GiaLai, PhuYen after streamline to east sea. Ba River has Ayunpa dam which tuoi tieu about 1300 km^2; (2) The Sesan river system includes three river branches: DakBla River; DakPsi River; DakPolo River. The underground water of KonTum province has potential and industrial keep C2 level about 100000 m^3 per day. The situation explores forest and original forest fire to produce lead to reduce underground water.

Similar to other provinces in Central Highlands, KonTum has good conditions in developing industrial trees. There are some main trees as follows: (1) Rubber: 14,700 hectares in 2001, producing 1,235 tons of dry latex per year; (2) Coffee: 3,563 hectares in 2001, producing 13,683 tons.; (3 Sugar-cane: 3,563 hectares in 2001, producing 150,255 tons. KonTum has good conditions to grow industrial trees such as: cinnamon-tree, tea, peppers, etc. but until now this areas of these kinds are not large.

4. Results and discussion

4.1. Family economic farm income by linear model

By using the Ordinary Last Square (OLS) technique on estimating coefficients of the below equation (12) by Eview software, we implemented on 466 observations, from 9 function; the empirical results are the estimated parameters in the table indicate that almost all coefficients are statistically significant at 5 % exclude operation time & sex variables. The operation time variables were dropped out model because the operation time of farm does not strongly affect to income of farm. This is explained with the reasons such as farm development policies, the fluctuation of output market, the change in farm activities and the operation experience of farm not only operation time but also training for knowledge. And based on surveyed result the sex variable has high male ratio (91%) and the female is only 9%, in survey process define head of farm between wife or husband is not clear, consistence and important; and this variable has statistic significant at level 20.5%. So the model can exclude the operation time & sex variables. The regression result is presented as follows:

Table 2. Regression results on determinants of family economic farm income in KonTum province with linear model

Dependent Variable: Y

Method: Least Squares

Included observations: 466

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-16.12627	7.747124	-2.081581	0.0379
ACT1	14.36227	6.036037	2.379421	0.0177
ACT2	29.27470	7.777318	3.764113	0.0002
ACT3	-26.22535	7.346592	-3.569730	0.0004
CER	42.70311	12.59583	3.390259	0.0008
SIZ	2.186787	0.494039	4.426347	0.0000
TRA	29.05876	4.560659	6.371613	0.0000
LAB	18.17243	3.049603	5.958950	0.0000
CAP	0.0096211	0.007786	12.35730	0.0000

R-squared	0.493493	Mean dependent var	70.59185
Adjusted R-squared	0.484626	S.D. dependent var	65.44797
S.E. of regression	46.98481	Akaike info criterion	10.55665
Sum squared resid	1008860.	Schwarz criterion	10.63669
Log likelihood	-2450.699	F-statistic	55.65715
Durbin-Watson stat	1.875593	Prob(F-statistic)	0.000000

Source: Computed from the farm survey in KonTum province, 2022

In order to estimate the reliability of the regression results, the thesis mentioned some tests the problems of individual partial regression (1) coefficients test (T-test), (2) overall significant of the sample regression (F-test), (3) goodness of fit, R square; (4) multicollinear test and (5) heteroscedasticity test as following:

Firstly, the estimated parameters in the table indicate that almost all coefficients are statistically significant at 5 %. The coefficients of capital, labor, training, farm size, certificate, perennial tree farm, and annually plant have positive effects on family economic farm income. The livestock farm and mixed farm variables are negative signal.

The second, we test the overall significant of the regression or the F test is done by the hypothesis that (Gujarati, 1995) as follows: (1) Hypothesis H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = ... = \beta_n = 0$ All slopes of coefficients are simultaneously zero; (2) Hypothesis H_1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq ..... \neq \beta_n \neq 0$ Not all slopes of coefficients are simultaneously zero. From the results on above table, we use Wald test, hence the H_o is rejected. This leaded to not all slope of coefficients are simultaneously zero.

The third, the goodness of fit, R square is equal to 0.493493. It means that all the independent variables together explain about 49.3493 percent with income of family economic farm. This proportion is lower than expectation, however this can be explained by the model has many dummy variables.

The fourth, the data of model is cross-section data, so we need test for multicollinearity and heteroscedasticity. We used the methods to detect of multicollinearity. There is no multicollinearity in the model.

The fifth, to test the heteroscedasticity, we used Lagrange multiplier test according to Breusch-Pagan test (Breusch-Pagan, 1979), Glesjer test (Glesjer, 1969), Harway-Godfrey test (Harway-Godfrey, 1978). Or we used White test (White, 1980). The most of which are heteroscedasticity in the model. The econometric model is still LUE and not best, but we access for economic significant. So the author accepts heteroscedasticity and continue test logarithm model in next part by logarithm-linear model.

Explain the regression results

$$Y = -16.126 + 14.362*ACT1 + 29.274*ACT2 - 26.225*ACT3 + 42.703*CER + 2.187*SIZ + 29.059*TRA + 18.172*LAB + 0.0096*CAP \quad (12)$$

Some findings can be drawn from the coefficients of the regression results as followings:

The main independent variable, the size of family economic farms, the coefficient of farm size is significant at 1 percent, shows the strongest effects of this variable on income of family economic farm, one unit (hectare) increase one unit in the farm size leads to an increase 2.187 millions VND to income of family economic farm (ceteris paribus). This means that average one hectare of farm size increasing leads to increase family economic farm income to 2.187 millions VND per year. Analysis result is in line with the empirical studies of West Godavari 1969 – 1970 by Deolalikar (1981); a study by Feder (1985); and Carter and Michael R. (1984). The policy maker cases how size for family economic farm is efficiency. Reply on cede data about relation between farm size and farm income indicates efficiency farm size from 10 to 20 hectares (see code data). This problem should consider carefully when the policy makers decide fit farm size.

The farm activity variables consist of:

Act1 variable is perennial plant farm. The coefficient of perennial tree farm is statistic significant at 5 percent level and has positive sign (positive relationship with income of family economic farm), shows the strong effect of this variable on income of family farm. Interpretation (holding things constant), perennial plant farms have 14.362 millions VND per year higher income of family economic farm.

Act2 variable is annually tree family farm. The coefficient of annually tree farm is statistic significant at 1 percent level and has positive sign (positive relationship with income of family economic farm), shows the strongest effects of this variable on income of family farm. Interpretation (holding things constant), annually plant farms have 29.274 millions VND per year higher income of family economic farm.

Act3 variable is livestock farm. The coefficient of livestock farm is statistic significant at 1 percent level and has negative sign (negative relationship with income of family economic farm), shows the strong effect of this variable on income of family farm. Interpretation (ceteris paribus), livestock farms have 26.225 millions VND per year lower income of family economic farm.

The mixed farms (the other equal 0) have 16.126 millions VND per year lower income of family farm.

These are a fit with family economic farm in KonTum province since the most of family farm is perennial and annually plant; in the recent year the output products of perennial & annually plant farm have stable market (coffee, rubber to export). The livestock and mixed farm have difficult for output market, avian influenza and animal disease.

The family labors of farm, the coefficient of labor is significant at 1 percent. This coefficient has had positive relationship with income and this coefficient has expected sign, one more unit of family labor increase leads to an increase 18.172 millions VND to income of family farm. That mean, average one more unit of family labor of farm increasing lead to increasing average income of farm to 18.72 millions per year. This result explains when family farms need the family members who are manager and direct supervisor to activities of farm. This reduces loss in production and harvest lead to increasing productivity. The KonTum province is shorting labor force (population density 40 people/km^2); the local government encourages to attractive the resident such as skill labor, common labor. In addition, industrial plants need many labors (special family labors). This result is in line with the empirical study of Le Quang Canh, 2000.

The training of farm head, the coefficient of training is statistically significant at 1 percent level and this coefficient has expected sign (positive relationship with income of family farm), head of family farm is trained that have 29.059 millions VND higher per year income of family farm (holding other constant). Trained farm head lead to increasing average income of family farm to 29.059 millions VND per year (ceteris paribus). This result explains most of farm head were trained knowledge for technology and market, production skill; hence the productivity of family farm has increased. This is important significant with maker policy, we define requires for training to help family farm expand production and entry out market. The short-run training should be organized every year so that popular knowledge, production skill and consultant for technology, output market and input factors. The certificate of family farm, the coefficient of certificate is statistically significant at 1 percent level and this coefficient is expected sign (positive relationship with family economic farm income in KonTum province). If the family farms have certificate for farm that have 42.703 millions VND per year higher income of family farm (ceteris paribus). That mean, the certificated farm lead to increasing average income of family farm to 42.703 millions VND per year. This result explained when the family farms have certificate then receives the supports from location government such as credit, technology, input factors, and output market… However, there are only 16 certificated family farms. This number is too little as population. Income of family farms depends on many supports of policy makers. The finally, according to the results in the table, an increase in capital will associate with 0.0096 increase in income respectively with statistically significant level at 1 percent (ceteris paribus). This means when increasing 1 unit in investment capital lead to increasing income of family farm 0.0096 units.

4.2. Family economic farm income by log-linear model – Elasticity Analysis

According to above analysis, we exclude variables such as sex of farm head and operation time with the above reasons By using the Ordinary Last Square (OLS) technique on estimating coefficients of the equation (13) by Eview software, we implemented on 463 observations excludes 3 observations with negative income, **from 11 function.** A supplement for model specified in terms of income is one focusing on output of farm production. This model aims at examining and elasticity analysis which farm size and farm activities are the highest net income, and quantifying how factors of production affect income. By using regression equation of Cobb-Douglas form of production function, the regression results are presented in **table 3**. And we calculated income of family farm, the investment capital was excluded in net income (net income equal total factor income minus investment capital). So, the coefficient for investment capital of farm owners is positive and statistically significant even at $\alpha = 0.1$, but small and repeat effect, indicating that may be excludes investment capital of farm owner go out model. Beside the investment capital has lag time that focus perennial plant farm and livestock (cow, buffaloes, ...)

Table 3. Regression results on determinants of family economic farm income in KonTum province with log-linear model

Dependent Variable: LG_Y

Method: Least Squares

Included observations: 463

Excluded observations: 3

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.140179	0.074945	41.89982	0.0000
ACT1	0.231506	0.057664	4.014721	0.0001
ACT2	0.422239	0.074303	5.682626	0.0000
ACT3	-0.317989	0.068195	-4.662959	0.0000
CER	0.259079	0.119955	2.159809	0.0313
LG_LAB	0.594750	0.059351	10.02094	0.0000
LG_SIZ	0.047053	0.031398	1.498618	0.1347
TRA	0.496086	0.043643	11.36679	0.0000

R-squared	0.471360	Mean dependent var	4.054194
Adjusted R-squared	0.463227	S.D. dependent var	0.610863
S.E. of regression	0.447547	Akaike info criterion	1.247059
Sum squared resid	91.13588	Schwarz criterion	1.318553
Log likelihood	-280.6941	F-statistic	57.95697
Durbin-Watson stat	1.398615	Prob(F-statistic)	0.000000

Source: Computed from the farm survey in KonTum province, 2022.

In order to estimate the reliability of the regression results, the thesis mentioned some tests the problems of individual partial regression (1) coefficients test (T-test), (2) overall significant of the sample regression (F-test), (3) goodness of fit, R square; (4) multicollinear test and (5) heteroscedasticity test *(see appendix 3)*.

Explain the regression results

$$LG\_Y = 3.140 + 0.231*ACT1 + 0.422*ACT2 - 0.318*ACT3 + 0.259*CER + 0.595*LG\_LAB + 0.047*LG\_SIZ + 0.496*TRA \quad \textbf{(13)}$$

These above testing have proved the reliability of the results from the regression of the model. Some findings can be drawn from the coefficients of the regression results as followings:

The main independent variable, the partial coefficient for natural logarithm of farm size is positive and statistically significant at α=15%, one percent increase in the farm size lead to an increase 0.047 percent in income of family economic farm (ceteris paribus). The coefficient of 0.047 measures the partial elasticity of the output with respect to the farm size respectively. These numbers state that, given other variables, if the farm size input increase by one percent on the average, the income goes up by 0.047 percent. This is inelastic – less than 1 in absolute value. This coefficient is in line with the above regression result.

The farm activity variables consist of:

Act1 variable is perennial plant farm. The coefficient of perennial tree farm is statistic significant at 1 percent level and has positive sign (positive relationship with income of family economic farm), shows the strong effect of this variable on nature logarithm of family economic farm income. Interpretation (holding things constant), income of family farm grew 23.1% per perennial plant farm. This coefficient is in line with the regression result of linearity model.

Act2 variable is annually tree family farm. The coefficient of annually tree farm is statistic significant at 1 percent level and has positive sign (positive relationship with income of family economic farm), shows the strongest effects of this variable on income of family farm. Interpretation (holding things constant), annually plant farms have 42.2% per year higher income of family economic farm. This coefficient is in line with the regression result of linearity model.

Act3 variable is livestock farm. The coefficient of livestock farm is statistic significant at 1 percent level and has negative sign (negative relationship with income of family economic farm), shows the strong effect of this variable on income of family farm. Interpretation (ceteris paribus), livestock farms have 31.8% per year lower income of family economic farm. This coefficient is in line with the regression result of linearity model.

Take the antilog of 3.140 to show that the estimated family economic farm income was 23.10387 millions VND per year higher income of family economic farm (at different variables equal 0). This sign is not as above linear model regression result. Because we dropout observations of negative income (Negative income observations are mixed farms). If we consider logarithm model, the mixed farm has positive relation with income. So, we can adjustment relationship between the mixed farm and income lead to focus the mixed farm make in short-run income, beside supports to develop long-run investment.

The partial coefficient for natural logarithm of family labor is positive and statistically significant at α=1%, one percent increase in the family labor lead to an increase 0.59 percent in income of family economic farm (ceteris paribus). That mean, family labor of farm increases 1 percent on the average, the income goes up 0.59 percent. This is inelastic – less than 1 in absolute value. This result is in line with the empirical study of Le Quang Canh, 2000.

The training of farm head, the partial coefficient for natural logarithm of farm head training is statistically significant at 1 percent level and this coefficient has expected sign (positive relationship with income of family farm), head of family farm is trained that have 49.6% higher per year income of family farm (holding other constant). Trained farm head lead to increasing average income of family farm to 49.6% per year (ceteris paribus). This result explains most of farm head were trained knowledge for technology and market, production skill; hence the net income of family farm has increased. This is important significant with maker policy, we define requires for training to help family farm expand production and entry output market. The short-run training should be organized every year so that popular knowledge, production skill and consultant for technology, input factors.

The certificate of family farm, the partial coefficient of certificate is statistically significant at 5 percent level and this coefficient is expected sign (positive relationship with family economic farm income in KonTum province). If the family farms have certificate for farm that have 25.9% per year higher income of family farm (ceteris paribus). That mean, the certificated farm lead to increasing average income of family farm to 25.9% per year. This result explained when the family farms have certificate then receives the supports from location government such as credit, technology, input factors, and output market… However, there are only 16 certificated family farms. This number is too little as population. The family farm depends on many supports of policy makers.

4.3. Discussion

From the results of econometric model, we found that most of coefficients are statistically significant. The most of coefficients in linear model are significant at 1 percent while one coefficient is significant at 5 percent such as perennial plant farm activity variable. However, the coefficients of sex of farm head and operation time are not statistically significant.

Most of coefficients have expected sign with research hypothesis and the empirical studies. The partial coefficient of farm size is 2.186 positive relationship with income of family farm, the partial coefficient of perennial plant farm is 14.362 positive relationships with income of farm, the partial coefficient of annually tree farm is 29.274 positive relationship with income of farm, the partial coefficient of livestock farm is -26.225 negative relationship with family economic farm income, the partial coefficient of certificate (family economic farm certificate) is 42.703 positive relationship with income of farm. The partial coefficient of training (training of farm head) is 29.058 positive relationship with income of farm, the partial coefficient of family labor of farm is 18.172 positive relationship with income of farm. Finally, the partial coefficient is 0.0096 that positive relationship with family economic farm income, this variable can be excluded out model since has high correlation between family farm income and investment capital (income of family farm = Total revenue of farm – investment capital per year).

Beside, author has been elasticity analysis between independent variables and dependent variable (income of family economic farm). The sign of coefficients is the same above linear model. This shows strong empirical evidence for relationship between the input factors and family economic farm income. The policy makers have empirical evidence to support development family economic farm as possible as so that solves some problems for social – economic in KonTum province.

In conclusion, the chapter has investigated the relationship between the input factors and income of family farm so that helps policy makers consider, support and building regulation, policy to develop family economic farm in KonTum province. Next chapter will present conclusion for empirical research and some policy recommendations as well as suggestions for further study.

5. Conclusion

The research based on general conditions of social-economy in rural KonTum provinces. The family economic farm income models have introduced by Study of West Godavari 1969 – 1970 by Deolalikar (1981); a study by Feder (1985); and Carter and Michael R. (1984); Johan van Zyl (World Bank), Bill R. Miller (University of Georgia), Andrew N. Parker (World Bank) 1996; Prosterman and Riedinger (1987) and Le Quang Canh (Thesis of MDE program, Viet Nam- Netherlands, 2000) based on Cobb-Douglas function that have provided background of information for choosing variables and building model for this thesis. The secondary and primary data used in this thesis were cross-sectional data that were collected by combination between author and DARD through interviews using a questionnaire and the reports in 2021- 2022.

There are 481 family economic farms in KonTum province, they consist of perennial & annually farms, livestock and mixed farms. In recent year, there are some encourage policies to develop family economic farm. This solves the problems of local government such as migration, reduce poverty, and protect environment…

Income of family farm in KonTum province is strongly associated with the input factors of production. The family labors have strong positive impacts on income; increasing in family labors is associated with an increase in income. The result exerts that family labors largely contribute to income of family farms in KonTum province. This result has also acclaimed importance of family labor in farm production.

The main variables of model are size of farm and farm activities (perennial tree, annual tree, livestock and mixed farms). The coefficient of farm-size category has positive relationship, statistically significant at 5% (linear model) and at 15% (logarithm model) highest magnitude on income of farm. Analysis result is in line with the empirical studies of West Godavari 1969 – 1970 by Deolalikar (1981); a study by Feder (1985); and Carter and Michael R. (1984). However, the policy maker cases how size for family economic farm is efficiency. Reply on code data about relation between farm size and farm income indicates efficiency farm size from 10 to 20 hectares. This problem should consider carefully when the policy makers decide fit farm size. The perennial, annually plant and mixed farm have statistic significant at 5% (logarithm model) and positive relationship with income of family farm. These plant farm activities sustainable nature condition, social-economy and demand of in the world (industrial tree). And the livestock farm has negative relationship farm income and statistic significant at 5% (both linear model and logarithm model). Although there are many advantage nature conditions to develop big held livestock but the market has the fluctuations such as market price, bird flu and animal disease in recent year. This leads to reduce income of livestock farm and loss believe of farm head in investment.

The set of farm heads' characteristics impressively affects farm income. The variables such as certificate of family farm, trained of farm head have positive impacts on family farm income (Both linear and logarithm model). This result explains most of farm head were trained knowledge for technology and market, production skill; hence the productivity of family farm has increased. The short-run training should be organized every year so that popular knowledge, production skill and consultant for technology, output market and input factors. When the family farms have certificate then receives the supports from location government such as credit, technology, input factors, and output market… However, there are only 16 certificated family farms. This number is too little as population. Income of family farms depends on many supports of local government.

The finally, according to the regression results, an increase in capital will associate with increase in income respectively with statistically significant level at 1 percent (ceteris paribus). This means when increasing 1 unit in investment capital lead to increasing income of family farm 0.096 units. This partial coefficient is small and repeat effect, indicating, beside the investment capital has lag time that focus perennial plant farm and livestock (cow, buffaloes, and goat). These may be excludes investment capital of farm owner go out logarithm model.

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Employer Brand: Bridging the Recruiters-Job Seekers Gap? Investigating the Relationship between Employer Brand and Job Application Intention of Genz with the Moderating Effect of eWOM

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ABSTRACT

Attracting talent is crucial for a company's success. Previous studies have shown that employer branding influences the ability to attract talent, but the specific impact on job application intentions has not been clarified. To address this issue, this study focuses on Generation Z candidates in Da Nang, who are expected to contribute significantly to future GDP. Drawing on the theory of employer value propositions, by examining brand attractiveness facets, namely, interest, social value, economic value, application value, and development value, the study found a positive influence on employer branding, consequently, job application intentions. The study also showed the significant moderating effect of electronic word-of-mouth (eWOM) in this relationship. The research thus provides practical and theoretical insights for improving talent attraction through enhanced employer branding.

Keywords: Employer brand, Job application intention, Employer value propositions (EVPs) framework (RBV), Electronic Word of Mouth (eWOM).

1. Introduction

With society's continuous dynamics and the ever-changing economic landscape, organizations' success is directly tied to the quality of their human resources. Backhaus & Tikoo (2004) argued that without a suitable workforce, organizations cannot develop comprehensive capabilities to compete in an unstable economy. Consequently, attracting and recruiting talent is a core aspect of business development. Employer branding, a strategic activity, helps companies attract talent and strengthen their human resources. While the importance of building a positive brand in human resources has been emphasized in previous articles, it has gained more attention in

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recent years due to increasing job market competition. As the demand for highly skilled labor rises while the supply remains limited, and many companies offer similar job positions, a war for talent has ensued (Baum & Kabst, 2014). Therefore, building and promoting a brand contributes to enhancing employee loyalty and attracting potential employees. By strategically investing in human capital, companies can enhance operational performance, including creating attraction through employer branding to access promising candidates. Minchington (2010) affirms that employer branding plays a crucial role in providing a competitive advantage in attracting, developing, and retaining talent.

A notable aspect in recent years is the emergence of a new generation called Gen Z. Globally, there are approximately 2.6 billion individuals belonging to Gen Z, accounting for about one-third of the world's population. In Vietnam, the number of Gen Z individuals in the working-age range (15 to 24 years old) was around 13 million in 2019, according to data from the General Statistics Office. By 2025, Gen Z is expected to make up one-third of the working-age population in Vietnam and will have a significant impact on the domestic labor market. Gen Z is born and raised in the era of technology (4.0), where technological devices have become an integral part of their identity (Dolot, A.; 2018). This new generation has different thoughts, perspectives, and attitudes compared to previous generations such as Gen Y and Gen X. Their characteristics, needs, attributes, and work styles are relatively ambiguous. Moreover, the job market in Da Nang has become increasingly competitive. According to a survey conducted by Talentnet Corporation among 120 businesses in Da Nang, talent shortage (50%) and talent retention (48%) were identified as the two biggest challenges they face. These issues have created significant pressures for recruiters. Recognizing the importance of building a brand in the recruitment field, most companies in Da Nang aim to understand and capture Gen Z's perception of employers as it greatly influences their job application intentions. With limited supply, recruiters must adjust their strategies, propose attractive factors for different groups, and convey clear and realistic internal and external brand messages to become the preferred choice of employers.

Wilden et al. (2010) indicate that a strong employer brand not only attracts new candidates but also enhances quality and reduces recruitment costs. According to representative surveys, a robust employer brand can lead to a 50% reduction in recruitment costs and a 50% increase in qualified candidates (LinkedIn, 2016). In conditions of skilled labor scarcity, the employer brand becomes a tool to differentiate the company in the labor market and gain competitive advantages in attracting talent (Sokro, 2012). Therefore, recruiters must focus on creating an appealing employer brand to attract and retain young workers in Da Nang. To achieve this, employers need to address questions such as how Gen Z perceives the employer brand of businesses in Da Nang, whether there are differences in the influence of the five hiring factors on employer branding, how electronic word-of-mouth affects employer brand and Gen Z's job application intentions in Da Nang, and how employer brand affects the job application intentions of Gen Z in Da Nang. Through research, employers can understand the crucial aspects of the branding process and proactively create a positive employer brand to attract and retain talent, as well as improve their brand image in the eyes of potential candidates. Based on the employer value propositions theory, this study investigates the influence of the employer brand on the job application intentions of Gen Z in Da Nang. The employer brand is considered in terms of employer brand attractiveness, which includes interest value, social value, economic value, development value, and application value. Additionally, with recent advances in technology, the form of electronic word-of-mouth (eWOM) has evolved through various online platforms. However, there has been limited study on the effect of eWOM on job application intentions. Therefore, this study aims to elucidate how the employer brand influences the job application intentions of potential candidates with the moderating effect of eWOM.

2. 2. Literature review

2.1. Employer brand

The concept of employer brand represents the fundamental values of an organization. Organizations that are perceived as desirable employers possess a strong identity and a positive reputation in the job market. The term "employer brand" emerged in the early 1990s to describe the reputation of an organization. Each company has its own unique culture, environment, and direction, which are reflected in its brand. This differentiation from competitors in the recruitment market is crucial. Employer brand is a purposefully crafted image associated with a specific target audience, highlighting the distinct and tangible benefits of employment conditions that set the organization apart in the labor market (Sofiia Mokina, 2014). It enables candidates to envision an exceptional work environment (Minchington, 2010).

In the initial stages of the recruitment process, the primary objective for employers is to attract candidates for available positions within a specific timeframe. The values and image of the organization must be consistently communicated to establish it as an attractive employer recognized in the labor market, thereby facilitating the recruitment process (Collins & Stevens, 2002). The employer brand refers to the perceptions and impressions related to the employer's qualities and attributes in the minds of current employees (internal customers) and potential employees (Barrow & Mosley, 2007; Priyadarshi, 2011). These associations create a stable set of expectations and emotions regarding the company and working conditions. Like a product brand, the employer brand also possesses its personality. Pogorzelsky et al. (2008) argue that the employer brand reflects the organization's identity, aspirations, and values. However, it is crucial to ensure consistency between the brand image and the reality of the company. Misalignment can lead to conflicts and unnecessary costs within the organization (Backhaus & Tikoo, 2004). Therefore, building and managing a brand pose significant challenges that organizations must effectively address.

2.2. Job application intention

Intention refers to hypothetical choices that reflect the motivational factors influencing behavior. It represents the level of enthusiasm, effort, and willingness to achieve desired outcomes. The stronger the intention to engage in a particular behavior, the higher the likelihood that individuals will decide to pursue it (Icek Ajzen, 1991). Barber and Roehling's study (1993) indicates that the intention to apply for a job position is a reliable predictor of actual behavior during the recruitment process. It helps employers understand and capture the motivations that drive candidates to apply for a job. Two significant factors that deeply influence candidates' perceptions and behaviors when deciding to apply for a job are their perception of job attributes and the attractiveness of the organization (Gomes, Daniel; Neves, José, 2011). Furthermore, Uggerslev and his colleagues have identified that the alignment of values between individuals and the organization is a crucial factor in candidates' intention to apply for a job. These aspects supplement the considerations candidates take into account before engaging in the application behavior.

2.3. Electronic word-of-mouth

Word-of-mouth (WOM) refers to informal communication between individuals that involves unofficial information about brands, products, or services (Arndt, 1967; Harrison & Walker, 2001). With advancements in technology, the landscape of word-of-mouth has gradually evolved into different online forms, giving rise to electronic word-of-mouth (eWOM). eWOM is essentially the virtual counterpart of traditional word-of-mouth (Yeap et al., 2014). Hennig-Thurau et al. (2004) define eWOM as "any positive or negative statement made by potential, current, or past customers about a product or company, which is accessible to a large number of people and institutions via the Internet." The emergence of the internet and social media has accelerated the spread of information, enabling individuals to easily share experiences and access brand-related information quickly and inexpensively (Burnasheva, Suh, & Villalobos-Moron, 2019). Gen Z, in particular, heavily relies on online platforms and social media for gathering information and making decisions, making eWOM a highly influential tool in shaping their perceptions.

2.4. Generation Z

Generation Z (Gen Z) is the most recent generation that has reached adulthood and started entering the workforce. The convergence of Gen Y and Gen Z has raised various concerns in the recruitment and talent attraction field, as it signifies a shift in perceptions and creates differences in characteristics, values, and culture. As the next generation, Gen Z shares some traits with Gen Y, such as valuing work-life balance, digital communication, ambition, and leadership qualities. However, each generation is deeply influenced by the societal context during its formative years. Gen Z, in particular, has been greatly impacted by technological advancements and social media, which play a significant role in their daily lives. Moreover, Gen Z is driven by a desire for stability, having grown up in a culture that prioritizes safety, leading to cautious parenting that inadvertently limited their opportunities to develop certain skills (Lukianoff & Haidt, 2019).

2.5. Employer value propositions framework

During the initial phase of the recruitment process, the primary objective for employers is to attract candidates for available positions within a specified timeframe. To become a recognized and appealing employer in the labor market, it is crucial for organizations to consistently communicate their proposed values and image. This facilitates the recruitment process (Collins & Stevens, 2002). Consequently, companies need to effectively convey the valuable benefits that candidates desire and expect in order to encourage them to submit job applications (Lievens & Slaughter, 2016). The theory of employer value propositions (EVP) can help explain the different aspects of becoming a desirable employer in the eyes of candidates. EVP represents the desired or ideal value that employers propose (Keppeler & Papenfuß, 2022). Key characteristics of EVP include uniqueness, relevance, and intensity. EVP is recognized as a crucial factor in talent attraction, engagement, and retention (Minchington, 2010). Furthermore, according to Manpower Inc. (2009), offering customized benefits packages aligned with individual preferences can create a distinctive appeal. This finding aligns with the research of Newman and Milkovich (2008), who revealed that individuals are attracted to companies that provide benefits that cater to their current preferences and needs. Consequently, implementing a robust EVP is emphasized as an important tool in talent competition (Watson, 2008).

Given that each individual prioritizes different values, employers need to identify common values that overlap among candidates. Lievens & Highhouse (2003) identified two categories of benefits that are of common concern to job seekers: instrumental benefits and symbolic benefits. Instrumental benefits encompass tangible and quantifiable benefits, while symbolic benefits relate to psychological benefits and intangible attributes (Lievens & Slaughter, 2016). Building upon this, Berthon et al. (2005) refined and extended these dimensions by creating a five-factor model called EmpAt (Employer Brand Attractiveness). EmpAt is based on five distinct values: Interest, Social, Economic, Application, and Development (Berthon et al., 2005). This study employed the EmpAt model to capture the different facets of employer brand attractiveness.

3. Hypotheses development

3.1. Relationship between dimensions of Employer Attractiveness and Employer Brand

The attractive value offered by employers could shape an idealized image in candidates' perceptions of the work environment and job characteristics (Judge & Cable, 1997; Turban et al., 1998; Cober et al., 2003; Ehrhart & Ziegert). When individuals have initial positive perceptions of a company, they are motivated to apply for job positions. According to Mireille's (2015) model of the relationship between employer brand-building dimensions, creating employer attractiveness is the initial step in the brand-building process. Subsequently, the company makes efforts to manage and communicate this attractiveness to candidates, leading to the establishment of a strong employer brand that attracts and retains employees. As mentioned earlier, Berthon et al. (2005) identified five factors related to employer attractiveness: interest value, social value, economic value, development value, and application value.

3.1.1. Interest value

Interest value evaluates the attractiveness of an employer that offers an exciting work environment and encourages creativity to develop innovative and high-quality products and services. Cable and Turban (2003) highlight that candidates tend to prefer and highly value employers that foster creativity and provide innovative work environments to generate breakthroughs. The employer brand is established based on the Interest value, capturing the attention of potential candidates and creating a positive impression of the employer in their perception. Thus, the hypothesis is suggested as follows:

H1a: The more the company satisfies the interest value of potential candidates, the higher will be its employer brand.

3.1.2. Social value

Social value measures the attractiveness of an employer that offers an exciting work environment and encourages creativity to develop innovative and high-quality products and services. Cable and Turban (2003) emphasize that candidates have a preference for employers who provide a work environment that fosters creativity and offers innovative approaches to generate groundbreaking products and services. The employer brand is established based on Social value, which captures the interest of potential candidates and creates a favorable impression of the employer in their perception. Thus, the hypothesis is suggested as follows:

H1b: The more the company satisfies the social value of potential candidates, the higher will be its employer brand.

3.1.3. Economic value

Economic value evaluates the attractiveness of an individual to employers that offer above-average salaries, benefits, job security, and advancement opportunities (Berthon et al., 2005). According to Saini et al. (2014), the salary and financial benefits provided by a company (referred to as Economic value) significantly and positively impact the job-related decisions of candidates. Almost everyone desires to receive a fair salary, making an attractive benefits package a distinguishing factor for an organization compared to its competitors in the eyes of potential candidates (Bretz, Ash, & Dreher, 1989). Thus, the hypothesis is suggested as follows:

H1c: The more the company satisfies the economic value of the potential candidate, the higher will be its employer brand.

3.1.4. Development value

Development value evaluates the attractiveness of an individual to an employer and encompasses elements such as recognition, self-worth, confidence, career-enhancing experiences, and future growth prospects. Training and learning opportunities have become significant factors influencing the job application decisions of potential candidates. Terjesen et al. (2007) found that developmental opportunities were among the top five organizational features that attracted UK university final-year students to apply for management trainee positions. Additionally, Lievens and Highhouse (2003) conducted a study involving 275 final-year students and 124 bank workers to assess the factors influencing their perception of employer attractiveness. The findings indicated that these individuals were highly attracted to employers who provided favorable career opportunities. Thus, the hypothesis is suggested as follows:

H1c: The more the company satisfies the development value of potential candidates, the higher will be its employer brand.

3.1.5. Application value

Application value assesses the attractiveness of an individual to an employer and involves providing opportunities for employees to apply their knowledge and teach others in a client-oriented and humane work environment. Studies conducted by Cable & Judge (1994) and Turban et al. (2002) support the relationship between Application value and Employer Brand. These studies indicate that candidates tend to prefer employers who offer opportunities to apply their knowledge, skills, and expertise in practical settings and contribute to the growth and development of the organization. Additionally, Turban et al. (2002) highlight the importance of a client-oriented and humane work environment in attracting candidates. Employers that prioritize customer satisfaction, exhibit a strong commitment to ethical practices, and foster a supportive and inclusive workplace culture are more likely to attract candidates. Such values contribute to a positive perception and reputation of the organization. Thus, the hypothesis is suggested as follows:

H1e: The more the company satisfies the application value of potential candidates, the higher will be its employer brand.

3.2. Relationship between Employer Brand and job application intention

Companies strive to establish a brand that resonates with potential candidates, aiming to become the preferred organization of choice (Ambler and Barrow, 1996). A well-executed employer brand can enhance the perception of an employer, contributing to the strengthening of the brand's reputation and influence. Consequently, this can lead to an increase in the number of candidates who are motivated to apply for job positions. A recent study by Khan (2017), based on comprehensive data analysis, revealed a positive correlation between employer brand and a candidate's intention to apply for a job. Khan also recommends that organizations prioritize the development of robust employer branding strategies to attract the right talent. Thus, the hypothesis is suggested as follows:

H2: Employer brand has a positive influence on Gen Z's job application intention.

3.3. The moderating effect of eWOM on the relationship between employer brand and job application intention

Electronic word-of-mouth (eWOM) could influence human behavior and decision-making (Osburg et al., 2020). In a study titled "The impact of electronic word-of-mouth on tourism destination choice," Mohammad demonstrated a direct impact of eWOM on the variable "behavior control." Similarly, other studies have utilized eWOM as a control variable in assessing human behavior (Palka et al., 2009; Cheng et al., 2006). "Behavior control" serves as a driving force behind both human intentions and behavior. In the context of job application intention, potential candidates often rely on social media to seek opinions about target firms and the aspects they consider when applying to those firms. Positive eWOM can enhance the employer brand, and vice versa. Consequently, this study proposes that eWOM acts as a moderating variable that influences the intention to apply for a job among employees. Thus, the hypothesis is suggested as follows:

H2: EWOM has a moderating effect on the relationship between the employer brand and Gen Z's job application intention.

The proposed research framework is shown in Fig.1

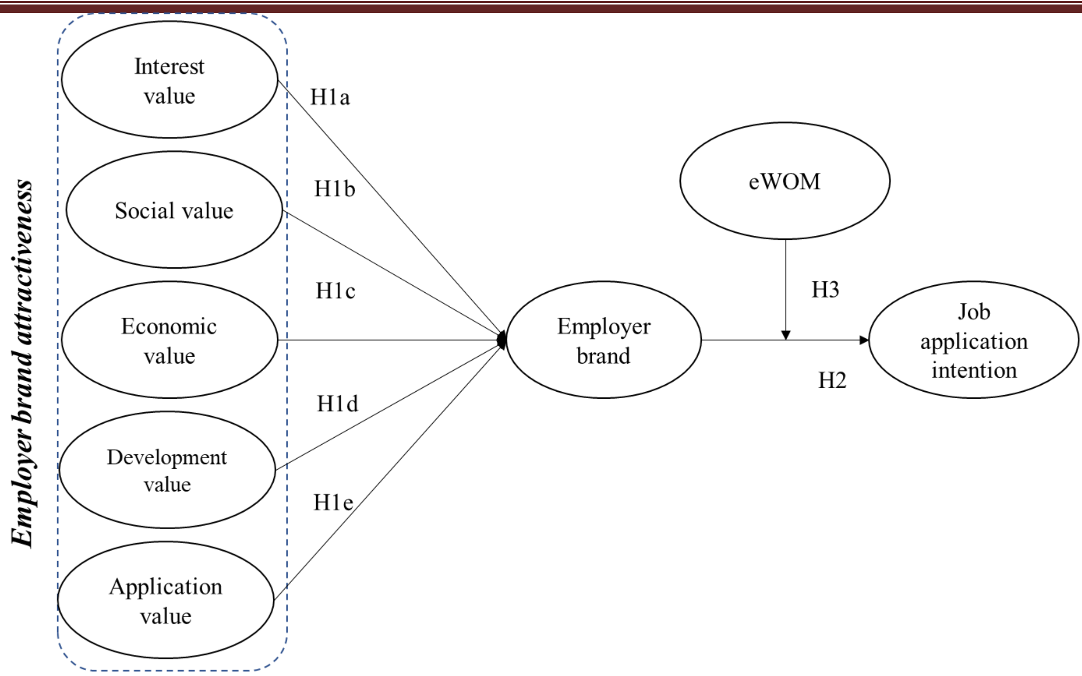

Fig. 1. The proposed research framework

4. Research method

4.1. Research method

There are two approaches commonly used in research including qualitative research and quantitative research. Qualitative research is an investigation method used to understand the meaning of concepts, definitions, and characteristics of research subjects. Popular qualitative methods today include open interviews, descriptive observations, and literature reviews.

In this study, qualitative research was carried out in order to build a high-precision questionnaire, ensuring that readers could fully understand the meaning of the variables and factors mentioned. If qualitative research is based on language as the primary means of expression, then quantitative research will use numbers and explain phenomena through statistical analysis of collected quantitative data. In this study, the author will use a quantitative research approach to test the hypotheses posed in the article.

4.2. Sample and data collection

In this study, the author uses a non-probability sampling method in which the researcher chooses the survey subjects at random. There are two techniques to be performed when selecting samples, namely (1) convenience sampling method, and (2) Fast cumulative sampling method. The questionnaire was distributed in the form of an online survey. Initially, the researcher published the study on Facebook. To expand the reach and expedite the data collection process, the author sent the questionnaire to various groups of friends, colleagues, and relatives. The respondents were also encouraged to share the survey with their acquaintances. The survey received 232 responses. An overall sample is a group of Gen Z individuals in Da Nang who have been and are of working age. These individuals will be the target audience for which the authors will select a representative sample to collect data and analyze the impact of employer brand on their job intentions.

Table 1. Demographic information of respondents

Characteristics	Frequency	%	Characteristics	Frequency	%
Gender			**Age**		
Male	126	54.3%	From 18 to 22	180	77.6%
Female	106	45.7%	From 23 to 27	52	22.4%
Other	4	0.8%			
Occupation			**Education**		
Office staff	54	23.3%	Apprenticeship student	1	0.4%
Student	178	76.7%	University student	229	98.7%
			Post-graduates	2	0.9%
			Other		

4.3. Measurement development of constructs

Research constructs were measured by using multiple-item scales which are pre-validated in prior studies, then reworded to relate specifically to the context of the employer brand. The questionnaire was modified following a pretest of the survey instrument with a certain amount of real-case respondent samples. Items were measured using a 7-point Likert scale. The scale items are presented in Table 2.

Table 2. Scale sources and adapted items used in this study

Constructs	Items code	Adapted items used in the study	Sources
Interest value (IV)	IV1	Innovative employer – novel work practices/forward-thinking	Berthon et al., 2005
	IV2	The organization both values and makes use of your creativity	
	IV3	The organization produces high-quality products and services	
	IV4	The organization produces innovative products and services	
Social value (SV)	SV1	Having a good relationship with your superiors	Berthon et al., 2005
	SV2	Happy work environment	
	SV3	Having a good relationship with your colleagues	
	SV4	Supportive and encouraging colleagues	

Economic value	EV1	An above average basic salary	Berthon et al., 2005
	EV2	An attractive overall compensation package	
	EV3	Good promotion opportunities within the organization	
Development value (DV)	DV1	Recognition/appreciation from management	Berthon et al., 2005
	DV2	A springboard for future employment	
	DV3	Gaining career-enhancing experience	
	DV4	Feeling more self-confident as a result of working for a particular organization	
	DV5	Feeling good about yourself as a result of working for a particular organization	
Application value (AV)	AV1	Acceptance and belonging	Berthon et al., 2005
	AV2	Opportunity to teach others what you have learned	
	AV3	Opportunity to apply what was learned at a tertiary institution	
	AV4	Humanitarian organization – gives back to society	
	AV5	The organization is customer-orientated	
Employer brand (EB)	EB1	conditions of employment	Mokina (2014)
	EB2	human resources	
	EB3	motivational mechanisms	
	EB4	corporate culture, values	
	EB5	loyalty and involvement of employees	
	EB6	competence of staff, skills, personal development	
	EB7	training and development programs	
	EB8	career development programs	
	EB9	compensation and benefits	
	EB10	company rating among employers	
	EB11	attractiveness on the labor market	
Job application intention (JAI)	JAI1	The likelihood that I would apply for the firm’s job is high	Wang (2013)

	IAI2	My willingness to apply for the firm's job is very high	
	JAI3	In the near future, I would consider applying for the firm's job	
	JAI4	I consider this firm as one of my best choices to apply for a job	
eWOM	eWOM 1	Comments or employer brand updates on the eWOM form have an influence on how I rate that company.	Kala, D., & Chaubey, D. S. (2018)
	eWOM2	eWOM forms are an important source of information for me.	
	eWOM3	Given a choice between two companies, one recommended on the eWOM forums and the other not, I would always choose the one referred to.	
	eWOM4	I am likely to change my opinion about the company after seeing a positive or negative comment about that	
	eWOM5	I understand the company better after receiving relevant information about that company on online reviews.	

5. Data analysis and results

The analysis steps were carried out using the SmartPLS statistical tool. SPSS was utilized for data entry, coding, analysis, reliability verification, and factor analysis. It facilitated the management of collected data, descriptive analysis to summarize the data, and verification of survey item reliability through factor analysis. On the other hand, SmartPLS was employed for model validation, specifically in structural equation modeling, to test the proposed theory and assess relationships between variables. These two tools offer a robust framework for data analysis and interpretation.

5.1. Reliability rating

One way to assess reliability is through the Total Correlation Coefficient, which is determined using the Cronbach Alpha method. This coefficient measures the degree of correlation between a single item and the average scores of the other items on the same scale. A higher correlation indicates a higher coefficient and greater reliability. Results showed that all the values of measures are higher than 0.7 which implies that all measures were accepted.

5.2. Exploratory analysis

Exploratory Factor Analysis (EFA) is a statistical method employed in data analysis to uncover the latent factors or dimensions that account for the patterns of correlations among a set of observed variables. In this study, the results indicated that all the scales of the independent variables, namely interest value, social value, economic value, development value, and application value, met the requirements of the Kaiser-Meyer-Olkin (KMO) measure, which ranged from 0.05 to 1 (0.857). Additionally, the significance value (Sig. value) was found to be less than 0.05, further confirming the appropriateness of conducting exploratory factor analysis (EFA) in this case.

5.3. Convergent validity and discriminant validity

Table 3. Internally consistent reliability assessment table

Items	Cronbach's Alpha	Composite reliability	Composite reliability	Average variance extracted (AVE)
IV	0.794	0.804	0.866	0.618
SV	0.759	0.829	0.836	0.563
EV	0.741	0.745	0.853	0.659
DV	0.836	0.881	0.873	0.582
AV	0.819	0.845	0.870	0.576
EB	0.883	0.885	0.906	0.518
JAI	0.786	0.787	0.861	0.609
eWOM	0.738	0.744	0.836	0.560

Considering the correlation between the two indexes CR and AVE, all factors are reliable and have good convergence values. That is, the above-observed variable does not affect the reliability of the factor much. The combined reliability coefficient (CR) and the coefficient of total variance extracted (AVE) of the factors are both greater than the minimum, CR > 0.7 and AVE > 0.5, respectively. Therefore, the above variables are kept in the model and reach a high internally consistent confidence level.

Table 4. Reliability and validity of the factors

Items	AV	DV	EB	EV	eWOM	IV	JAI	SV
AV	0.759							
DV	0.212	0.763						
EB	0.400	0.355	0.720					
EV	0.271	0.153	0.337	0.812				
eWOM	0.450	0.362	0.539	0.404	0.748			
IV	0.355	0.311	0.438	0.245	0.427	0.786		
JAI	0.506	0.269	0.621	0.397	0.634	0.347	0.780	
SV	0.181	0.202	0.304	- 0.017	0.309	0.219	0.286	0.750

Table 5. Heterotrait-Monotrait Ratio (HTMT) index of the factors

Items	AV	DV	EB	EV	eWOM	IV	JAI	SV
DV	0.231							
EB	0.431	0.344						
EV	0.318	0.184	0.415					
eWOM	0.551	0.463	0.659	0.543				
IV	0.409	0.319	0.517	0.309	0.557			
JAI	0.597	0.313	0.741	0.518	0.826	0.434		
SV	0.260	0.310	0.328	0.119	0.432	0.355	0.375	
eWOM x EB	0.526	0.417	0.623	0.488	0.857	0.485	0.781	0.452

The results presented in the table above show that the different study constructs have good distinguishability from each other as evidenced by a larger value of the square root of the AVE index (highlighted in bold on the main diagonal) being greater than the correlations between variables off the diagonal. For example, consider EV with an AVE value of 0.659, and the square root of this value is 0.812. This 0.812 value is higher than the correlation values in the corresponding column (0.404, 0.245, 0.397, -0.017) and row (0.271, 0.153, 0.337).

Furthermore, to assess the level of correlation between variables, the study employed the Heterotrait-Monotrait Ratio (HTMT) index. The results show that the HTMT indices for all pairs of variables within the first-order factor are below 0.9, satisfying the established criteria. This indicates that there is no excessively strong correlation between the variables, confirming the distinct and independent nature of the variables in the study.

Overall, the results of the discriminant index analysis demonstrate clear differentiation among the variables and the absence of significant correlations between them, establishing a foundation for the reliability and effectiveness of the research.

5.4. Hypotheses testing

The obtained results show that all relationships in the model satisfy p-values less than 0.05. The factors are interrelated and statistically significant.

Table 6. SEM analysis results

Paths	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values	Conclusion
IV -> EB	0.223	0.221	0.065	3.438	0.001	Accepted
SV -> EB	0.189	0.205	0.080	2.359	0.018	Accepted

EV -> EB	0.207	0.209	0.049	4.201	0.000	Accepted
DV -> EB	0.175	0.186	0.063	2.780	0.005	Accepted
AV -> EB	0.193	0.191	0.053	3.676	0.000	Accepted
EB -> JAI	0.293	0.298	0.066	4.422	0.000	Accepted
eWOM -> JAI	0.201	0.206	0.066	3.041	0.002	Accepted
eWOM x EB -> JAI	-0.126	-0.123	0.034	3.706	0.000	Accepted

Hypothesis 1a with p = 0.001 (less than 0.05) and Original Sample (O) = 0.223. That means the hypothesis is considered significant with a positive relationship. Therefore, the hypothesis can be accepted. The results of Hypothesis 1b support a significant positive relationship between candidate attraction based on Social value (p = 0.018, less than 0.05). Examine the relationship between the factors Hypothesis 1c with p = 0.005 (less than 0.05) also satisfies the statistical condition. Therefore, hypothesis H3 is accepted. Hypothesis 1d is accepted with p = 0.000 (less than 0.05) and the Original Sample (O) value = 0.175. Hypothesis 1e with index p = 0.000 (less than 0.05) and Original Sample (O) = 0.193 should be statistically significant. Hypothesis 2 with p = 0.000 (less than 0.05 level) and Original Sample (O) = 0.293 also proves that employer brand plays a certain role in influencing the job intention of candidates.

For the moderator variable, we will need to further consider the relationship between the eWOM variable and JAI. See the table above, the p = 0.002 (less than 0.05) and Original Sample (O) = 0.201 values show that eWOM has an impact on JAI. That is, if you hear or see a lot of positive reviews on electronic channels about the company/job, the intention to apply for a job increases. Hypothesis 3 also has p = 0.000 (less than 0.05 level), so there exists a moderating relationship of the eWOM variable on the relationship between EB and JAI. When considering this relationship along with the Original Sample normalized regression coefficient (O) = - 0.126, we see that they have opposite effects.

6. Discussion and Implication

6.1. The relationship between Interest Value and Employer Brand

The analysis findings reveal a positive association between interest value and the perception of employer brand. This suggests that individuals who perceive a higher interest value are more likely to find employers appealing and aspire to work for them. This relationship underscores the growing preference of Gen Z for work environments that offer ample opportunities for expressing creativity and contributing to innovative projects. The attractiveness of an engaging work environment stems from the potential for personal growth, intellectual stimulation, and involvement in groundbreaking initiatives.

Organizations that provide novel work approaches, such as flexible job arrangements, collaborative spaces, and autonomy in decision-making, are seen as supporting employees' needs for creativity and innovation. When organizations prioritize and promote creativity, they foster a culture of innovation and continuous improvement. Such values signal to potential candidates that their creative contributions will be recognized and encouraged, thus increasing their desire to be part of such an environment.

Consequently, organizations should emphasize their profile as producers of high-quality, innovative products and services. This can be achieved by showcasing success stories, highlighting awards and accolades, and presenting evidence of the impact of employee creativity on business outcomes. This helps to strengthen the perception of the organization as a desirable employer and attracts candidates who are motivated by the opportunity to contribute to meaningful and impactful work.

6.2. The relationship between Social Value and Employer Brand

The result obtained indicates that social value significantly contributes to an employer's brand. Gen Z individuals tend to favor employers who provide a happy work environment, foster good co-worker relationships, and promote a strong sense of team spirit. This reflects a positive organizational culture and a focus on employee well-being. When employees experience joy and satisfaction in their work environment, it creates a positive perception of the employer brand.

Good co-worker relationships also play a vital role in shaping an organization's employer brand. They foster a sense of belonging, teamwork, and cooperation among employees. When an organization promotes and values strong co-worker relationships, it signals a supportive culture and cultivates a positive social atmosphere within the organization.

To enhance their attractiveness and reputation, organizations should consider implementing employee engagement programs and team-building activities. These initiatives can help promote a positive work-life balance and encourage open communication and collaboration among employees. By fostering a supportive and inclusive work environment, organizations can strengthen their employer brand and appeal to Gen Z candidates who value positive social dynamics in the workplace.

6.3. The relationship between Economic Value and Employer Brand

The findings of the study have revealed that economic value positively impacts the perception of the employer brand. When an employer offers above-average salaries and attractive benefits, it provides the company with a competitive edge in attracting candidates. Moreover, opportunities for career advancement play a pivotal role in shaping the perception of the employer brand. By ensuring strong economic aspects, the company is viewed as an organization that values and respects employees' career growth. This contributes to attracting talented individuals and instilling confidence in potential candidates that they can thrive while working for the organization.

To further enhance this aspect, companies can focus on improving it by providing competitive salary packages that align with industry standards. Implementing appropriate performance-based reward policies can also incentivize employees and demonstrate the organization's commitment to recognizing and rewarding their contributions. Additionally, supplementing special compensation packages for unique cases or exceptional performance can further highlight the company's dedication to supporting employee financial well-being.

By strengthening the economic value aspect of the employer brand, companies can effectively position themselves as attractive employers and appeal to candidates who prioritize financial stability and opportunities for career growth.

6.4. The relationship between Development Value and Employer Brand

The results of the study indicate a positive relationship between development value and the perception of the employer brand. When an employer is perceived as providing personal recognition, fostering confidence, offering valuable experience, and serving as a stepping stone to future career opportunities, it creates a positive image of the employer in the eyes of potential candidates. Development value is a critical factor that influences the attractiveness of an employer. When an employer actively facilitates the growth and advancement of employees, it demonstrates a commitment to nurturing their development.

To enhance this aspect, the company should effectively communicate its employee development programs and initiatives. Providing staff training and development sessions can create an environment where employees can apply and expand upon what they have learned. These sessions contribute to employees feeling that they are continuously learning and have opportunities for personal and professional growth. Additionally, fostering a working environment that is oriented towards development is essential. This involves creating an open and supportive atmosphere that encourages constructive feedback, motivation, and support, enabling employees to reach their full potential.

By emphasizing and promoting development value, organizations can position themselves as employers that prioritize the growth and advancement of their employees. This can significantly enhance the perception of the employer brand and attract candidates who value opportunities for personal and professional development.

6.5. The relationship between Application Value and Employer Brand

The findings reveal a significant relationship between Application value and the perception of the employer brand. Companies that provide candidates with a strong sense of being able to apply their knowledge or offer opportunities for them to showcase their value through mentoring others can have a positive impact on the employer brand. These values contribute to creating a favorable perception that the company creates opportunities for development and knowledge sharing while fostering a collaborative work environment.

To attract Gen Z candidates, companies should actively demonstrate that they are a place where individuals are empowered to contribute and participate in practical projects. This can be achieved by recognizing and respecting employees' contributions and achievements. Additionally, providing opportunities for career advancement or rewards for successful accomplishments further reinforces the perception that the company values and supports employees' growth.

By highlighting the Application value aspect of the employer brand, companies can position themselves as organizations that provide meaningful opportunities for individuals to apply their skills and make a tangible impact. This can be an attractive proposition for Gen Z candidates who seek hands-on experiences and opportunities to contribute to real-world projects.

6.6. The Relationship between Employer Brand and Job Application Intention

The research results demonstrate the positive impact of Employer Brand on Job Application Intention. This means that when a company develops and maintains a strong and positive employer brand, it increases the likelihood of attracting candidate interest and intent to apply. A positive brand creates a favorable impression and communicates that the company is an appealing place to work. This can influence a candidate's intention to apply for a job within that company.

Candidates are more inclined to join organizations with a strong employer brand because they perceive that the company offers a positive work environment, growth opportunities, and personal development prospects. A strong employer brand also builds trust with candidates. When candidates believe in the company's image and values, they are more likely to intend to apply, as they believe the company will contribute to their personal growth and success.

To enhance job application intention, companies need to implement strategies to develop their employer brand. These strategies include:

(1) Identify and communicate what sets the company apart from other organizations. Highlight the company's values, culture, growth opportunities, and employee interests.

(2) Manage the company's reputation by maintaining an active presence in the market. Encourage positive reviews from current and former employees. Participate in community programs to demonstrate corporate social responsibility and commitment to ethical practices.

(3) Create a compelling Employee Value Proposition (EVP) that aligns with the employer brand. Offer competitive compensation packages, comprehensive benefits, flexible work arrangements, and opportunities for learning and growth. Foster a supportive and inclusive work environment where employees feel valued and engaged. Encourage collaboration, innovation, and open communication. Provide opportunities for career development and recognize employee achievements.

(4) Allocate resources for branding across various platforms. Utilize social media platforms, company websites, and professional networking sites to showcase the company's culture, employee success stories, and career opportunities. Participate in industry events, job fairs, and university recruitment programs to increase brand visibility and attract potential candidates.

(5) Encourage employees to become brand advocates by actively engaging them to share their positive experiences working for the company.

By implementing these strategies, companies can strengthen their employer brand, increase job application intention, and attract top talent to join their organization.

6.7. eWOM impact on the relationship between Employer brand and job application intention

Based on the findings derived from the analysis using structural equation modeling (SEM), it has been observed that Electronic Word-of-mouth (eWOM) evaluations influence the relationship between Employer Brand (EB) and Job Application Intention (JAI). A negative rating or review in eWOM can diminish the impact of the employer brand on a candidate's intention to apply for a job.

To mitigate the potential risks associated with eWOM, it is crucial for managers to actively shape and manage the organization's image across various social media platforms, online forums, and review websites. Building an effective eWOM strategy ensures that the organization's message and image are accurately conveyed, attracting potential job seekers. Additionally, creating a positive candidate experience throughout the recruitment process and beyond is essential. Companies should establish a professional and efficient recruitment process, maintain open and effective communication, and ensure that candidates have a favorable experience.

It is important to note that eWOM reviews are primarily shared by current or former employees of the company based on their experiences. Therefore, in addition to attracting new talent, companies must also focus on fostering commitment and satisfaction among existing employees. Establishing a feedback management mechanism to address any negative issues and providing comprehensive and authentic information allows job seekers to gain a proper understanding of the discussed matters.

By proactively managing eWOM and prioritizing a positive candidate experience, companies can enhance their employer brand's reputation and positively influence job application intentions. This, in turn, helps attract and retain top talent in a highly competitive job market.

7. Limitation

This study acknowledges several limitations that need to be considered. Firstly, the sample size used in the study is limited, and it may not fully represent the entire Gen Z population in Da Nang. The findings may not be generalizable to the broader population, and there may be other factors and perspectives that were not captured in the analysis.

Secondly, the study focuses specifically on Gen Z in Da Nang, which means that the results may not directly apply to Gen Z populations in other locations. Regional differences in culture, environment, and economic factors can influence the attitudes and behaviors of Gen Z, so caution should be exercised when applying the findings to other contexts.

Thirdly, the study was conducted over a relatively short period of time, which may limit the ability to capture long-term trends and changes in the attitudes and behaviors of Gen Z. It is important to recognize that perceptions and behaviors can evolve over time, and a longer observation period would provide a more comprehensive understanding.

Lastly, perception and behavior are complex and multifaceted. Each individual has unique concerns, values, and preferences, leading to a diversity of perceptions and evaluations of employer branding. This complexity may not be fully captured in the study, and there may be variations in how individuals within Gen Z in Da Nang perceive and evaluate employer brands.

It is important to consider these limitations when interpreting the findings of the study and to conduct further research with larger and more diverse samples to obtain a more comprehensive understanding of Gen Z's attitudes and behaviors in relation to employer branding.

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Factors Affecting Graduate Employability: An Extension of Careeredge Model

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ABSTRACT

Given Vietnam's rapidly developing economy and the surging demand for highly skilled human capital, this research study aims to explore the impact of factors in the CareerEDGE model on the employability of Vietnamese students. The study employs a Likert 7-point scale questionnaire and PLS-SEM approach on a sample of 207 students to examine the direct effects of emotional intelligence, degree subject knowledge, and career adaptability on student employability, while generic skills are found to have an indirect effect. Furthermore, the study delves into the role of career adaptability with self-confidence as a core factor in improving students' employability in today's competitive labor market. These findings provide valuable information for higher education institutions to enhance their training programs and better equip students for success in the workforce.

Keywords: Graduate Employability; CareerEDGE; Career Adaptability, PLS-SEM, Emotional Intelligence

1. Introduction

According to the Deputy Minister of Labor, Invalids, and Social Affairs of Vietnam, the economy is facing many challenges in 2023, specifically due to the ongoing Covid-19 pandemic and varying responses from different countries, this will affect production and business; while the conflict between Russia and Ukraine has led to a global supply chain disruption, particularly in manufacturing and processing industries. The economic recession, combined with high interest rates, has reduced consumer demand and affected business orders, leading to reduced working hours or unemployment for many workers, including graduates (2023). In this uncertain economic climate, transitioning from an academic environment to the workforce is already challenging (Koen et al., 2012), but it is even more difficult for graduates. According to data from the General Statistics Office of Vietnam (2022), the youth unemployment rate in the age group of 15-24 is 7.7%, much higher than the overall unemployment rate of 2.32%. To increase the employability of workers, especially graduates, they need to understand what is important to ensure they have a job in an unstable work environment and to adapt and develop their careers. Furthermore, according to

Bennet et al. (2016), unemployment often arises due to the mismatch between the qualities of new graduates and the qualities that employers require. Therefore, educational institutions need to equip their students with skills and knowledge that are appropriate for the labor market's context and demands.

Employability, according to Yorke (2004) and other researchers (Confederation of British Industry, 2009; Treasury, 1997), is defined as a set of skills, knowledge, and personal attributes that help graduates find employment and succeed in their chosen career, benefiting themselves, the community, and the economy. Employability is also influenced by environmental factors such as the labor market and employment demand according to Forrier & Sels (2003) and Rothwell et al. (2008). Several different conceptual models of graduate employability have been developed, such as (Yorke & Knight, 2004), Journey to Employment (Copps & Plimmer, 2013) and CareerEDGE (Dacre Pool & Sewell, 2007). Among them, CareerEDGE provides a framework of factors that impact employability and can easily be explained to students and their parents (Dacre Pool & Sewell, 2007), making it the most suitable model for the current study to answer the question: "What are the factors that need to be focused on to improve employability in the context of an unstable labor market?"

CareerEDGE was developed in 2007 (Dacre Pool & Sewell, 2007) and is still a theoretical model with limited empirical research. Therefore, the first objective of this study is to test the impact of CareerEDGE factors in the context of Vietnam. In addition, CareerEDGE mentions career confidence as a mediating variable between its factors and graduate employability, but there is no research on this relationship. From another perspective, career confidence is one of the four main aspects of career adaptability, so the second objective of this study is to examine the mediating role of career adaptability in the relationship between CareerEDGE factors and employability, with career confidence as a core factor.

Practically, this research can help policymakers, educational institutions, and lecturers improve the employability of graduates and ensure their readiness to enter the labor market. By understanding the challenges and opportunities that graduates face when transitioning from an academic environment to the workforce, this study will provide useful recommendations and solutions to help graduates improve their employability in the future.

2. Literature Review

2.1. Graduate employability

The concept of employability has been discussed for many years and has evolved over time. While Yorke (2004) and some other researchers (Confederation of British Industry, 2009; Treasury, 1997) defined employability similarly, focusing on skills, attributes, and knowledge that support graduates in finding employment that benefits themselves, employers, and the economy, other scholars such as Forrier & Sels (2003) and Rothwell et al. (2008) viewed employability as a more comprehensive concept, including both personal and environmental factors.

Rothwell et al. (2008) identified knowledge and skills, as well as career management and job search abilities (Hillage & Pollard, 1998), as important components of employability. However, considering environmental factors was also crucial, such as the labor market (McQuaid & Lindsay, 2005; Kirschenbaum & Mano-Negrin, 1999; Hillage & Pollard, 1998) and occupational demand (Mallough & Kleiner, 2001), which could significantly influence an individual's employability.

To help universities and stakeholders better understand and support the career development of students, various models of employability have been developed. For example, Knight and Yorke's USEM model (2004) aims to integrate employability into the university's teaching program by considering the perspectives of various stakeholders. CareerEDGE (Dacre Pool & Sewell, 2007) assesses employability at different stages. Bridgstock's Graduate Attributes for Employability (Bridgstock, 2017, 2009) emphasizes the importance of career management skills and social and networking attributes. Clarke's (2018) Integrated Model of Graduate Employability is based on different factors such as human and social capital, personal attributes, and the labor market.

For the purposes of this study, employability is considered from the perspective of individuals, especially university students or recent graduates. Therefore, this study uses Rothwell et al.'s (2008) definition of employability from the perspective of students: "the perceived ability to attain sustainable employment appropriate to one's qualification level."

2.2. Career Adaptability

As the main concept in adult career development, the concept of "career adaptability" was first proposed by Super and Knasel (1981). As indicated by Savickas (1997), career adaptability (CA) is the ability to deal with the unanticipated adjustments brought on by changes in the work and working conditions as well as the predictable responsibilities of preparing for and engaging in the work role. It was also described as "a tendency affecting the way an individual views his or her capacity to plan and adjust to changing career plans... especially in the face of unforeseen events" by Rottinghaus, Day, and Borgen (2005) in the other study. Both of these concepts focus on self-regulating processes, stressing how people respond to unforeseen circumstances and issues at work.

According to Savickas & Porfeli (2012), concern, control, curiosity, and confidence are the four psychosocial components that make up career adaptability. Concern means being mindful of one's career development and objectives. Control means remaining motivated and disciplined to achieve one's career goals. Curiosity means being open to options and information and confidence means believing in one's ability to realize one's career aspirations

Career adaptability is becoming a more relevant and desired skill among job searchers and employees as unstable economic conditions cause career uncertainty and ambiguous job positions (Savickas & Porfeli, 2012). And even Chong & Leong (Chong & Leong, 2017) have said that people who lack career adaptability are likely to experience excessive stress at work. Following these arguments, it can be said that career adaptability is an essential capability in the current context.

In Dacre Pool's (2007) model, career confidence is mentioned as an intermediate variable, but no study has been conducted on this relationship. From another perspective, career confidence is one of the four main facets of career adaptability (Savickas & Porfeli, 2012). Therefore, in this study, confidence will be used as a representative factor of career adaptability.

2.3. Theoretical background of research

2.3.1. CareerEDGE

Along with the attempts to clearly define employability, a range of models have been offered to illustrate the meaning of this complex concept of employability such as USEM account of employability (Yorke & Knight, 2004), Journey to Employment (JET) (Copps & Plimmer, 2013) and

CareerEDGE (Dacre Pool & Sewell, 2007). The USEM model (Yorke & Knight, 2004) is highly regarded for its high level of expertise and more scientific approach in thinking about employability. However, its weakness is that it is difficult for students and parents to understand. The Journey to Employment model (Copps & Plimmer, 2013) focuses on various factors in the employment process, providing an overall view of graduate employability. However, this model may be difficult to apply in practice due to its complexity. Meanwhile, the CareerEDGE model combines all the key factors of other models while providing the necessary clarity and simplicity. This model includes career development learning, experience (work and life), degree subject knowledge as well as generic skills and emotional intelligence. These factors help students develop the necessary skills and knowledge to meet the increasingly stringent demands of the labor market. The CareerEDGE model is a useful tool to help students develop their employability and achieve success in their careers in the future. It can be said that the CareerEDGE model has solved the limitations of the previous models. For instance, while the USEM model is indeed very academic and does not help to explain concepts to those who are not specialists in the field, in especially the students and their parents, CareerEDGE can be explained with ease to students and possibly their parents (Dacre Pool & Sewell, 2007). As a result, CareerEDGE becomes the most appropriate to carry this present study.

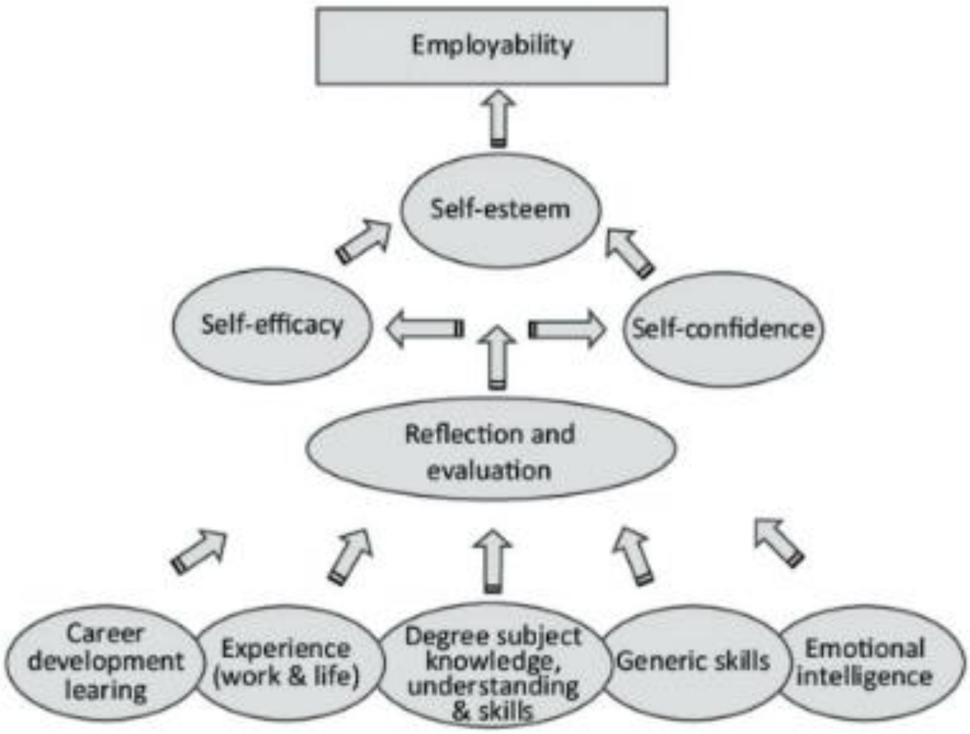

Figure 1. The CareerEDGE model.

(Source: Dacre Pool & Sewell, 2007)

The model shown in Figure 1 above highlights the crucial factors of employability and also proposes the way in which various parts would interact with one another. Darce Pool (2014) suggested that access to opportunities related to the five elements of the model - career development learning, experience (work and life), degree subject knowledge as well as generic skills and emotional intelligence - would help students develop their employability while they are attending university. As the CareerEDGE model is a theoretical model, it is appropriate to select some of the appearing factors to be included in subsequent studies. Therefore, in this study, three factors - Generic skills, degree subject knowledge and emotional intelligence - were used to investigate their impact on graduate employability.

2.3.2. Career Construction Theory

The career construction theory is a significant theory on career development. This theory, developed by Mark Savickas (Savickas, M. L., 2002), provides a comprehensive framework for understanding how individuals construct their careers. It emphasizes the importance of social roles, experiences and knowledge, personal view in forming one's own career concept, and underscores the role of career adaptability as a key psychosocial ability to cope with the demands and pressures of the career (Savickas, M. L., 2002). According to Berg et al. (2010), proactivity and adaptability have been viewed as important individual characteristics to navigate the increasingly complex and challenging career path. In this context, the career construction theory has served as a super useful theoretical perspective to explain motivation in career behavior throughout the lifespan (Savickas, 2005, 2013; Savickas, M. L., 2002; Savickas, 1997; Savickas et al., 2009). Based on this, Guan et al. (2013) drew on the career construction theory (Savickas, 2005, 1997) to investigate the role of career adaptability in the job search success of Chinese university graduates. From these arguments, in this study, the career construction theory is used as a fundamental theory to investigate the relationship between career adaptability and graduate employability.

2.4. Conceptual framework and hypotheses development

For many students, attending higher education is primarily motivated by the desire to study a particular subject in-depth and earn a degree that will improve their chances of finding employment in the future (Dacre Pool & Sewell, 2007). While a degree is crucial, it is not the only determinant in ensuring that graduates obtain acceptable positions. For instance, specialized knowledge is important for vocations like doctor and engineer, whereas employers are more interested in a broad "graduateness" for positions like manager (Yorke & Knight, 2004).

The content presented above does not imply that knowledge of the field does not affect graudate employability. According to Brown's research (Brown, 2004), graduate employability is correlated with the particular specialized information and abilities they obtained during their graduate studies. It is crucial to recognize the major significance of this structure for graduate employability because it is directly tied to a student's qualifications. Therefore, a hypothesis is developed:

H1a: Degree subject knowledge has a direct relationship with graduate employability.

In addition to its impact on graduate employability, knowledge of the field has been shown to affect career self-efficacy (a core factor used to represent career adaptability) (Negru-Subtirica & Pop, 2016). Therefore, the following hypothesis is proposed:

H1b: Degree subject knowledge has a direct relationship with career adaptability.

Generic skills, also known as "core skills," "key skills," or "transferable skills" (Gibbons-Wood & Lange, 2000), have become a prominent topic of discussion over the past 20 years, not just among academics but also among corporate representatives, members of various government organizations, and other stakeholders (Bratianu & Vatamanescu, 2017). As defined by Bennett, Dunne & Carré (1999), the term "Generic Skills" is used “to represent the skills which can support study in any discipline, and which can potentially be transferred to a range of contexts, in higher education or the workplace".

It was also stated that generic skills such as critical thinking, communication, and cooperation are emphasized as essential competencies that may be utilized to complete a range of jobs, including ones that deal with circumstances outside of a higher education institution (Sarkar et al., 2020; Gibbons-Wood & Lange, 2000). According to a study in Australia on graduate employability from the perspective of employers, lecturers, and students, companies seem to value generic skills more than subject expertise when hiring graduates (Ferns, 2012). Similarly, from the perspective of graduate students, it was believed that generic skills were more beneficial in their jobs (Sarkar et al., 2020). In this line, several studies also shown that generic skills increase the employability of university students (Vainikainen et al., 2015; Wickramasinghe & Perera, 2010). Among these line, it is hypothesized that:

H2a: Generic skills have a direct relationship with graduate employability.

In the modern labor market, where workers frequently experience various careers and several job transitions throughout their working life (Sullivan & Arthur, 2006), it is important to comprehend the context of potential career adaptability related to generic abilities. De Guzman & Choi (2013) in their study argued that in the constantly changing workplace, those with better generic skills can smoothly adapt to any situation. In the similar vein, in a recent study, it was studied that generic skills correlated favorably with career adaptability (Ebere & Onuoha, 2022). As a result, this current research hypothesizes that:

H2b: Generic skills have a direct relationship with career adaptability.

Emotional intelligence refers to "the subset of social intelligence that involves the ability to monitor one's own and others' feelings and emotions, to discriminate among them and to use this information to guide one's thinking and actions" (Salovey & Mayer, 1990).

Mayer et al. (1997) created a four-branch model to aid with emotional intelligence research. According to this model, emotional intelligence consists of four interconnected skills:

+ Perceiving emotion

+ Using emotion

+ Understanding emotion

+ Managing emotion

Cooper's research (1997) demonstrated that those with high emotional intelligence experience more successful careers, better health and stronger relationships with others than those with poor emotional intelligence. Numerous research' results supported the idea that emotional intelligence may anticipate important outcomes including improved interpersonal relationships (Lopes et al., 2004), job performance (O'Boyle et al., 2011), higher levels of stress resistance (Schneider et al., 2013), and effective leadership (Walter et al., 2011). Moreover, a recently published Malaysian study revealed that emotional intelligence of students in college is closely associated with career adaptability, which is important for graduate employment (Hamzah et al., 2021). Accordingly, it is hypothesized that:

H3a: Emotional intelligence has a direct relationship with graduate employability

Numerous other studies have produced findings that are consistent with the analysis shown above regarding Hamzah's study (Hamzah et al., 2021) on the beneficial association between emotional intelligence and career adaptability. Specifically, the result of Coetzee & Harry’s study (2014) demonstrated that individuals with strong emotional intelligence have the drive, the ability to self-regulate, and the preparedness to demonstrate strong career adaptability skills. In addion to that, emotional intelligence had been demonstrated to be a predictor for career adaptability (Parmentier et al., 2019). Thus, it can be seen that emotional intelligence positively impacts the career adaptability. As a result, it is hypothesized that:

H3b: Emotional intelligence has a direct relationship with career adaptability.

Guan and colleagues (2013) conducted a study in China based on career construction theory, which revealed that the four elements of career adaptability had a positive impact on the employment status of university graduates. Additionally, according to the career construction theory, the four factors are also believed to work together to provide an overall index of career adaptability (Savickas & Porfeli, 2012). This indicates that in the study mentioned above, career adaptability is strongly associated with employment status of Chinese university students after graduation. In the similar vein, Monteiro (Monteiro et al., 2019) demonstrated that students with more degrees of concern, control, curiosity, and confidence appear to be more likely to be employed 18 months following the labor market shift. Thus, the study proposes the link between career adaptability and employability:

H4: Career adaptability has a direct relationship with graduate employability.

In line with the arguments made above regarding the influence of degree subject knowledge, emotional intelligence and generic skills on career adaptability and the direct impact of career adaptability on graduate employability, the following three hypotheses are proposed:

H5: Emotional intelligence has an indirect impact on graduate employability through career adaptability.

H6: Generic skills have an indirect impact on graduate employability through career adaptability.

H7: Degree subject knowlegde has an indirect impact on graduate employability through career adaptability.

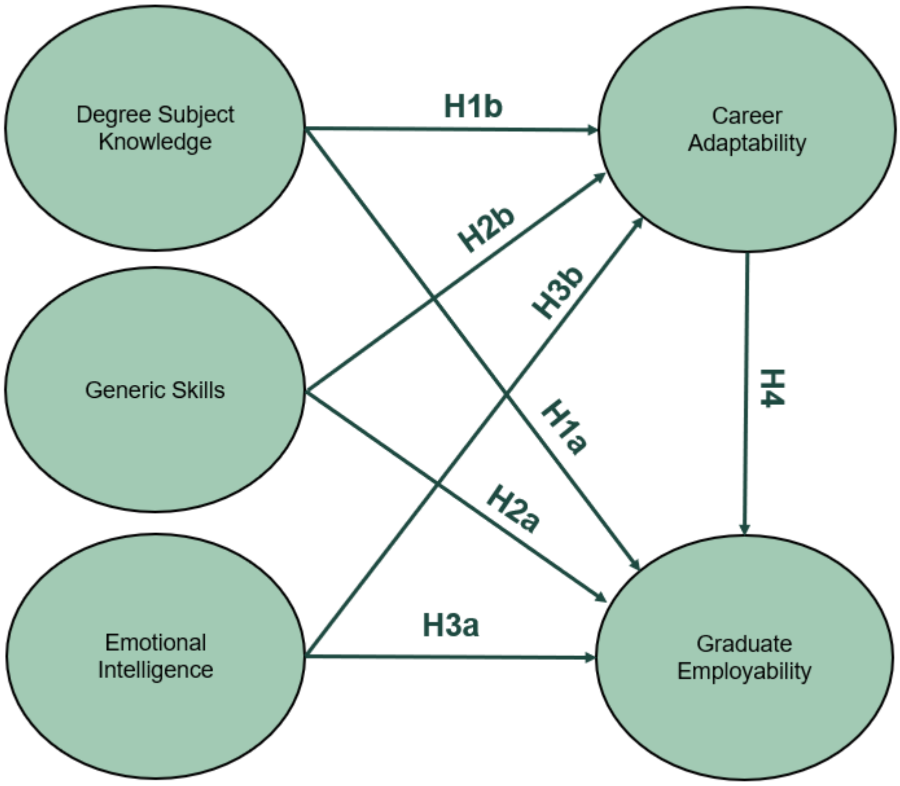

Figure 2. Proposed research model

3. Research Methodology

3.1. Research design

The primary objective of this study is to examine the influence of factors on graduate employability. To achieve this goal, a quantitative research approach was implemented, which aimed to predict the factors that affect graduate employability and test the hypotheses among the latent variables integrated within the framework suggested above. In this regard, utilizing a Structural Equation Modeling (SEM) procedure was considered as an effective method to evaluate the theoretical model and hypotheses.

3.2. Research instrument development

Employability (E), Career adaptability (CA), Degree subject knowledge (D), Emotional intelligence (EI) and Generic skills measurement scales were adapted from previous studies. All items were measured using a 7-point Likert scale, with 1 representing "strongly disagree" and 7 representing "strongly agree". Table 1 below provides detailed information on the items and sources cited for each scale.

Table 1. Measures of variables for the proposed model

Construct	Item codes	Adapt from
Graduate Employability (E)	E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E11, E12, E13, E14, E15, E16.	Rothwell et al. (2008)
Degree subject knowledge (D)	D1, D2, D3, D4.	Dacre Pool et al. (2014)

Generic Skills (GS)	IS1, IS2, IS3, IS4, IS5, IS6, IS7, IS8, LS1, LS2, LS3, CT1, CT2, CT3, SM1, SM2, SM3, SM4.	Chan et al. (2017)
Emotional intelligence (EI)	EI1, EI2, EI3, EI4, EI5, EI6, EI7, EI8, EI9, EI10, EI11, EI12, EI13, EI14, EI15, EI16.	Salovey and Mayer (1990)
Career adaptability (CA)	CA1, CA2, CA3, CA4, CA5, CA6.	Savickas & Porfeli (2012)

After the scales were translated (using so-called back translation procedure of 4 steps) (Iarossi, 2006), a list of measurement items was then sent to academic professionals who have expertise and research experience to request their opinions or comments with the specific aim of examining content validity. Content validity systematically evaluates the representativeness of a scale's content with respect to the domain it measures (Churchill Jr, 1979). Two academic experts were invited to participate in March 2023. They were asked to assess the applicability and representativeness of each measurement item with respect to the associated constructs in the model. Additionally, the experts were asked to provide comments and suggest alternatives where applicable. Before distributing for data collection, five untrained individuals were also invited to read it again to ensure its coherence.

3.3. Pilot Test

3.3.1. Data collection

A pilot study helps to develop the questionnaire by identifying possible weaknesses, ambiguities, missing questions and poor reliability. To do so, a sample size from 20 to 50 participants will be analyzed in order to provide feedback and help the researcher identify the potential weaknesses in this instrument (D. R. Cooper et al., 2003). The participants were instructed to complete the questionnaires and provide feedback regarding several aspects, including:

- Whether the respondents understand the purpose of the survey.
- The respondents' level of comfort in answering the questions.
- The clarity of the wording used in the survey.
- The clarity of time references provided in the survey.
- Whether the response categories are compatible with the respondents' experiences.
- Which survey items require the respondents to think critically.
- The cognitive processes employed by the respondents to answer difficult questions.
- The survey items that elicit irritation, embarrassment, or confusion.
- Whether the questionnaire is too lengthy.

These above questions are adapted from the checklist of concerns for pilot tests suggested by Iarossi (2006, pp. 90–92). The pilot study was conducted in March, 2023. The link of the online questionnaire attached to an invitation was sent via messages on Facebook and Zalo. There were a total of 50 responses. Not all the respondents had comments on the questionnaire, but many of them had the same ideas that the questionnaire was not too long and required from 10 to 15 minutes to complete. In addition, the structure and wording of the survey was clear and understandable.

3.3.2. Reliability of measure constructs

In the pilot study, the measure constructs' reliability is assessed by examining whether the observable items from a scale exhibit good correlation and express the same concept, as measured by the Cronbach's alpha coefficient (Pallant & Tennant, 2007). Churchill (1979, p. 68) affirmed that "the alpha coefficient should absolutely be the first measure calculated to evaluate the instrument's quality." A Cronbach's alpha coefficient greater than 0.7 is generally regarded as indicating high reliability (DeVellis, 2003). Based on the initial sample of 50 participants, the Cronbach's alpha coefficient for the scale was computed and found to be 0.878, exceeding the threshold for high reliability.

3.4. Sampling design

3.4.1. Choosing sampling technique

After considering various sampling techniques, convenient sampling was employed in this study as it can facilitate quick and efficient data collection while also being cost-effective (Malhotra et al., 2006). In this way, all members of the prospective groups were invited to participate in this research. The survey was conducted from March 2023 to April 2023.

3.4.2. Determining Sample Size

Hair Jr et al. (2021,p.39) stated that “the overall complexity of a structural model has little influence on the sample size requirements for PLS-SEM”. This is because the algorithm does not compute all relationships in the structural model at the same time. Instead, it uses OLS regressions to estimate the model’s partial regression relationships (Hair Jr, Hult, Ringle, & Sarstedt, 2021). However, some researchers still recommend a consideration in determining the sample in the application of PLS-SEM, fostering by the often-cited 10 times rule (Barclay et al., 1995), which indicates the sample size should be equal to the larger of (1) 10 times the largest number of formative indicators used to measure a single construct, or (2) 10 times the largest number of structural paths directed at a particular construct in the structural model. Accordingly, in this study, 4 and 7 were the largest number of formative indicators and structural paths respectively. As a result, the minimum sample size was estimated to be 40 or 70 cases.

3.5. Data collection

As previously mentioned, a convenient sampling method was utilized to conduct the survey. The online survey was administered through a Google Form specifically designed for this purpose. The study focused on university students from various universities across Vietnam and individuals who have graduated within 1-2 years and have found employment, making this methodology an effective means of reaching the target population.

3.6. Data analysis

The main methodology employed for data analysis in this study was Partial Least Squares - Structural Equation Modelling (PLS-SEM). The analysis procedure, consisting of three steps adapted from Hair et al. (2021), is illustrated in Figure 3. After being collected, the data were coded and imported into SPSS 26.0 and SmartPLS 4.0 software for statistical processing. A detailed discussion of each phase of the data analysis process is presented in the subsequent sections.

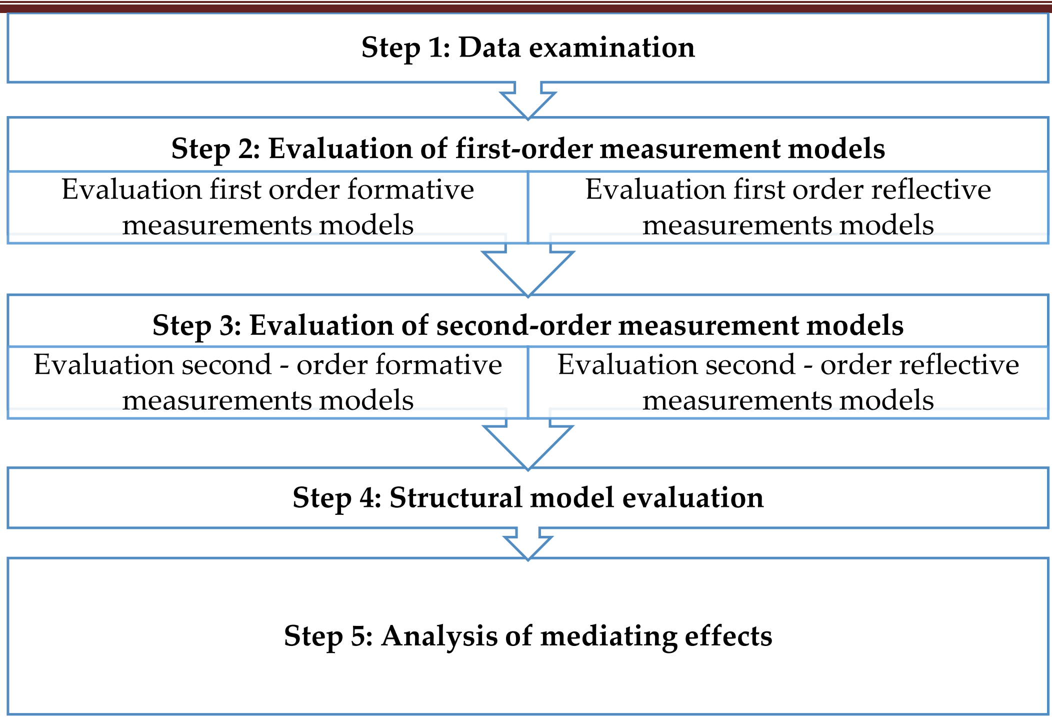

Figure 3. The analysis procedure

4. Research Results

4.1. Descriptive analysis

The demographic characteristics of the study participants are presented in Table 3, including gender, years of university education, registered university, and major. Of the 207 participants, more than four-fifths were female (82.6% female, 16.9% male, and 0.5% other). University students accounted for 98.6% of the participants, with 14.5%, 12.6%, 28.5%, and 43% of the participants being first-year, second-year, third-year, and fourth-year students, respectively; the majority of the surveyed students were from the University of Economics - University of Da Nang. Regarding their majors, most of the participants reported that their major was in economics, including Human Resource Management, Business Administration, and Marketing.

Table 2. Demographic profile of respondents

	Group	Frequency	Percentage
Gender	Male	35	16.9
	Female	171	82.6
	Others	1	0.5
Academic year	Graduated and employed	3	1.4
	First-year	30	14.5
	Second-year	26	12.6
	Third-year	59	28.5
	Fourth-year	89	43

Enrolled university	The University of Economics - Da Nang University.	171	82.6
	Others	36	17.4
Major subject	Human Resource Management	81	39.1
	Business Administration	50	24.2
	Tourism/Hospitality	14	6.8
	Marketing	10	4.8
	Others	52	25.1

4.2. The evaluation of measurement models

4.2.1. Evaluation of first-order measurement models

In this study, the relationship between first-order constructs and their corresponding manifest variables is reflective. Therefore, we employed evaluation using first-order reflective measurement models. The reflective measurement model was evaluated based on three parameters: outer loading (>=0.708), internal consistency reliability (>=0.7), convergent validity (AVE >=0.5), and discriminant validity (HTMT <0.9). The results in Tables 4 and 5 demonstrate that all evaluation criteria of the first-order outcome measurement model meet the standards.

Table 3. Results on the reliability and accuracy of variables (First-order)

	Reflective construct	**Indicator**	**Outer Loading**	**Cronbach's alpha**	**Composite reliability (rho_a)**	**Average variance extracted (AVE)**
Generic Skills	Interpersonal Skills (IS)	IS1	0.737	0.913	0.915	0.623
		IS2	0.8			
		IS3	0.817			
		IS4	0.775			
		IS5	0.732			
		IS6	0.839			
		IS7	0.786			
		IS8	0.824			
	Leadership Skills (LS)	LS1	0.841	0.85	0.852	0.769
		LS2	0.895			

		LS3	0.893			
	Critical Thinking (CT)	CT1	0.897	0.879	0.879	0.805
		CT2	0.913			
		CT3	0.881			
	Self-Management Skills (SM)	SM1	0.832	0.842	0.844	0.677
		SM2	0.799			
		SM3	0.85			
		SM4	0.81			
Emotional Intelligence	Self-emotion appraisal (SEA)	EI1	0.848	0.902	0.904	0.774
		EI2	0.911			
		EI3	0.909			
		EI4	0.847			
	Others' emotion appraisal (OEA)	EI5	0.908	0.926	0.926	0.819
		EI6	0.92			
		EI7	0.902			
		EI8	0.89			
	Use of emotion (UOE)	EI9	0.88	0.901	0.903	0.772
		EI10	0.875			
		EI11	0.904			
		EI12	0.854			
	Regulation of emotion (ROE)	EI13	0.912	0.937	0.938	0.842
		EI14	0.938			
		EI15	0.917			
		EI16	0.904			
Graduate Employability	University (Uni_E)	E1	0.734	0.907	0.915	0.686
		E2	0.716			
		E3	0.849			
		E4	0.899			
		E5	0.889			
		E6	0.864			
		E7	0.81	0.918	0.919	0.71

	Fieldstudy (Fieldstudy_E)	E8	0.888			
		E9	0.876			
		E10	0.812			
		E11	0.867			
		E12	0.8			
	Self	E13	0.841	0.896	0.896	0.763
		E14	0.889			
		E15	0.903			
		E16	0.859			

Table 4. HTMT criterion (First-order)

Construct	**CT**	**Fieldstudy_E**	**IS**	**LS**	**OEA**	**ROE**	**SEA**	**SM**	**Self**	**UOE**	**Uni_E**
CT											
Fieldstudy_E	0.549										
IS	0.81	0.584									
LS	0.82	0.543	0.864								
OEA	0.646	0.554	0.702	0.686							
ROE	0.71	0.58	0.629	0.618	0.698						
SEA	0.689	0.513	0.707	0.659	0.895	0.614					
SM	0.759	0.525	0.803	0.784	0.734	0.614	0.761				
Self	0.69	0.884	0.68	0.663	0.663	0.693	0.614	0.673			
UOE	0.646	0.565	0.739	0.643	0.752	0.675	0.774	0.814	0.722		
Uni_E	0.57	0.871	0.658	0.601	0.527	0.51	0.553	0.641	0.83	0.69	

4.2.2. Evaluation of second-order measurement models

Evaluation second - order reflective measurements models

Similar to what was mentioned above to evaluate the reflective measurement model, the evaluation criteria include outer loading, internal consistency, convergence, and discriminant validity. The results shown in Tables 6 indicate that all values meet the standard requirements.

Table 5. Results on the reliability and accuracy of variables

	Indicator	Outer loading	Cronbach's alpha	Composite reliability (rho_a)	Average variance extracted (AVE)
Career Adaptability (CA)	CA1	0.848	0.934	0.935	0.752
	CA2	0.840			
	CA3	0.880			
	CA4	0.866			
	CA5	0.897			
	CA6	0.871			
Degree Subject Knowledge (D)	D1	0.791	0.864	0.865	0.711
	D2	0.861			
	D3	0.871			
	D4	0.847			

Evaluation second - order formative measurements models

Through the two criteria of outer weight and outer loading using the bootstrapping method, the results show that all second-order formative indicators, including four indicators of Generic Skills, four indicators of Emotional Intelligence and three indicators Graduate employability are retained.

4.3. The evaluation of structural model

4.3.1. Collinearity assessment

The presence of multicollinearity was assessed using the variance inflation factor (VIF). The proposed model included two groups of predictor constructs: (i) D, EI and GS predicting CA, and (ii) CA, D, EI and GS predicting E. The VIF values for both sets were presented in Table 7 and indicated that most of VIF values were below the recommended threshold of 5.0 suggested by Hair et al. (2021). Therefore, it can be concluded that the predictor constructs in the proposed structural model did not exhibit issues with multicollinearity.

Table 6. Collinearity assessment (VIF)

	Career Adaptability (CA)	Employability (E)
Career Adaptability (CA)		3.777
Degree subject knowledge (D)	2.242	2.242
Emotional Intelligence (EI)	2.814	3.602
Generic Skills (GS)	3.747	4.482

4.3.2. Evaluation of structural model path coefficients

The Bootstrapping routine with 5000 samples was implemented to evaluate the path coefficients (β). Table 8 shows the results of path coefficients and the related t-values, p-values, and outcomes. The path coefficient was significant when the empirical t-value was higher than the critical t-value of 1.65, 1.96, and 2.57 at a significant level of 10%, 5%, and 1%, respectively (Hair Jr, Hult, Ringle, & Sarstedt, 2021). In terms of direct relationships, results revealed that t-values above 2.57 at a significant level of 1% confirmed four of seven hypotheses and t-values above 1.96 at a significant level of 5% confirmed one of seven hypotheses.

Table 7. Results of path significance of structural model

Hypothesis	**Path coefficient**	**t-value**	**p value**	**Result**
H1a: D → E	0.307	4.754	0.000	**Supported**
H1b: D → CA	0.007	0.121	0.904	**Rejected**
H2a: GS → E	-0.042	0.371	0.710	**Rejected**
H2b: GS → CA	0.441	6.140	0.000	**Supported**
H3a: EI → E	0.257	2.275	0.023	**Supported**
H3b: EI → CA	0.457	5.537	0.000	**Supported**
H4: CA→ E	0.381	3.850	0.000	**Supported**

4.3.3. Coefficient of determination (R^2 value)

According to Hair et al. (2021), the coefficient of determination (R^2) represents the percentage of variance of each dependent variable explained by the independent variables in the model. In this study, the R^2 values for two dependent variables, namely Career Adaptability and Graduate employability, were examined. As shown in Table 9, the results indicate that Career Adaptability explains 73.1% of the total variance, while Graduate employability explains 64.4% of the total variance in the proposed model.

Table 8. Results of coefficient of determination R2

Endogenous constructs	**R-square**	**R^2 adjusted**
Career Adaptability	0.735	0.731
Employability	0.651	0.644

4.3.4. Evaluation of effect sizes f^2

The effect size $f2$ was utilized to assess the impact on the dependent variables if a particular independent variable was excluded. Table 10 presents the results of $f2$ that examined the impact of independent variables on the two dependent variables, career adaptability and employability, in the proposed model. According to Cohen (1988), an $f2$ value of 0.02, 0.15, and 0.35 indicates a small, medium, and large effect of an independent variable on a dependent variable, respectively. The results show that two of three predictors, emotional intelligence and generic skills, had effects on career adaptability, specifically, emotional intelligence had a medium impact, while generic skills had a small impact.

Table 9. Results of effect size f2 analysis

Endogenous construct	Exogenous construct	Effect size (f2)	Inference
Career Adaptability	Degree subject knowledge	0.280	Medium Effect
	Emotional Intelligence	0.196	Medium Effect
	Generic Skills	0.000	No effect
Employability	Career Adaptability	0.110	Small Effect
	Degree subject knowledge	0.120	Small Effect
	Emotional Intelligence	0.053	Small Effect
	Generic Skills	0.001	No effect

4.3.5. Evaluation of predictive relevance Q2 and the q2 effect sizes

Table 11 shows the results of Q2 for the evaluation of predictive relevance associated with dependent variables in the theoretical model using the blindfolding in SmartPLS 4.0. The Q2 value proposed by Hair et al. (2021) was greater than 0, indicating the predictive relevance of the model. In particular, the Q^2 values for career adaptability and employability of students are 0.544 and 0.498, respectively, both higher than the threshold value of 0. Additionally, the effect size of Q^2 assesses the impact of independent variables on the model's predictive ability. The results show that emotional intelligence (EI) and generic skills (GS) have a small impact on the predictive relationship of career adaptability (CA). Similarly, career adaptability (CA), degree subject knowledge (D), and emotional intelligence (EI) have a small impact on the predictive relationship of employability of students.

Table 10. Results of Q2 and q2 effect size

Dependent constructs	Independent constructs	Q^2 included	Q^2 excluded	Effect size (q^2)	Inference
Career Adaptability	Degree subject knowledge	0.544	0.546	-0.004	No effect
	Emotional Intelligence	0.544	0.487	0.125	Small effect
	Generic Skills	0.544	0.506	0.083	Small effect
Employability	Career Adaptability	0.498	0.467	0.062	Small effect
	Degree subject knowledge	0.498	0.466	0.064	Small effect

Dependent constructs	Independent constructs	Q^2 included	Q^2 excluded	Effect size (q^2)	Inference
	Emotional Intelligence	0.498	0.486	0.024	Small effect
	Generic Skills	0.498	0.503	-0.010	No effect

4.4. Analysis of indirect effects

To assess the mediating effect of a variable in the relationship between two other variables, a bootstrapping method proposed by Zhao et al. (2010) was utilized. Mediation is considered to be supported if the bootstrapped indirect effects are significant with a t-value greater than 1.96 at a significance level of 5%, and the confidence interval does not include zero (Zhao et al., 2010). Therefore, an examination of the significance of indirect relationships among the variables was conducted, and the results of the indirect effects that met the criteria are presented in Table 12.

Table 11. Results of indirect effects

Indirect paths	Path coefficient	t-value	p values	Results
D → CA → E	-0.007	0.328	0.743	Rejected
EI → CA → E	0.16	3.24	0.001	Supported
GS → CA → E	0.13	3.132	0.002	Supported

5. Discusssion and Conclusion

5.1. Theoretical contributions

In order to enhance graduate employability, it is important to understand what to focus on, such as generic skills, emotional intelligence, degree subject knowledge, or career adaptability. This study proposed a model that explains the direct relationship between degree subject knowledge, emotional intelligence, and their impact on graduate employability. Unlike previous studies (Vainikainen et al., 2015; Wickramasinghe & Perera, 2010), this study did not find a direct effect of generic skills on graduate employability. This result may be explained by the individual and demographic characteristics of the participants. However, the study provides a new perspective by showing that generic skills and emotional intelligence indirectly affect graduate employability through career adaptability. On the other hand, the hypothesis of the direct effect of degree subject knowledge on career adaptability, as well as the mediating role of career adaptability in the relationship between degree subject knowledge and graduate employability, was not supported in this study. This may be due to the small sample size, which did not provide enough data to test the hypothesis.

In summary, this study examined the impact of three factors in the CareerEDGE model in the context of Vietnam. The results showed that emotional intelligence and degree subject knowledge have a direct impact on graduate employability, while generic skills indirectly affect graduate employability through career adaptability. These results contribute to empirical research on the CareerEDGE model proposed by Dacre Pool (2007).

Furthermore, the results showed that career adaptability, as a core factor, directly affects graduate employability and mediates the relationship between emotional intelligence and generic skills on graduate employability. Therefore, the mediating role of career adaptability with career confidence as a core factor was also tested, contributing to research on the relationship between career confidence and graduate employability.

5.2. Practical implications

The management implications of this study are very important for policymakers, educational institutions, and students in improving the employability of Vietnamese university students. Specifically, policymakers can use the findings of this study to develop policies that support the development of key factors. For example, policies can be applied to provide opportunities for universities to offer courses and training programs focused on developing emotional intelligence, degree subject knowledge, and generic skills. Additionally, policies can be developed to encourage employers to provide opportunities for career development and growth, which can promote career adaptability.

Educational institutions can also use the results of this study to adjust and improve their training programs to better meet the demands of the labor market. The study's results indicate that lecturers should focus on developing emotional intelligence, degree subject knowledge, and generic skills in their teaching programs. This can be achieved through integrating experiential learning activities, such as internships and project-based learning, to provide students with opportunities to develop these skills.

For students, the results of this study provide a clearer view of the important factors that influence their employability. They can use this information to guide their learning and self-development efforts, in order to best prepare for the future and improve their competitiveness in the job market. Specific actions that students can take to improve their employability include:

- Focus on developing degree subject knowledge: Students should focus on studying their major courses at school as well as seeking information about the industries they are interested in.
- Develop communication skills: Students can participate in classes or practical sessions to improve their communication skills in various situations, such as presentations, discussions, and information exchange.
- Develop critical thinking skills: Students can participate in discussions, read books, and engage in critical thinking activities to improve their analytical, evaluative, and reasoning abilities.
- Develop leadership skills: Students can join clubs or group projects to learn how to delegate tasks, make decisions, and keep a team operating efficiently.
- Develop self-management skills: Students can learn how to manage their time, set goals, and stay motivated in their learning and self-development.
- Seek internship and networking opportunities: Students should look for internship opportunities to gain practical experience and establish relationships with lecturers, colleagues, and employers through networking events, volunteer activities, or internship programs.

- Be proactive in seeking self-development opportunities: Students need to actively seek opportunities to develop themselves, such as participating in extracurricular activities, reading books, watching online courses, participating in contests, or research projects.

5.3. Limitations and future research

This study still has some limitations. Firstly, because the survey participants were students from different majors and fields at universities in Vietnam, the specific characteristics of each field have not been fully measured. Future studies could focus on a specific industry or field to better target policy implications for that field.

Additonally, the sample size is relatively small, with only 207 valid responses out of a total of 238 collected from students at several universities in Da Nang and Ho Chi Minh City, predominantly from the University of Economics - Danang University. Therefore, the results may not fully represent the entire population of Vietnamese university students; future research could expand the sample size and include more diverse universities and regions to increase the generalizability of the results.

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PART 12.

ECONOMICS & DIGITAL TRANSFORMATION

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Digital Transformation with Green Growth, International Experience, Outlook and Implications for Vietnam

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ABSTRACT

Digital transformation with green growth is changing the apperance of many countries and localities in the world in general and Vietnam in particular. The digital transformation associated with green growth continues to be one of the sectors that makes an important contribution to the realization of the long-term development goals. Competition in digital transformation associated with green growth becomes an inevitable trend that countries take part in to realize sustainable development goals. This trend even develops stronger due to new problems such as renewable energy, cybersecurity and political turmoils in some areas of the world. In Vietnam, although this issue has been paid attention and demonstrated through the implementation of the national sustainable development strategy, there are still some inadequacies. Studying the international experience in recent years, in which, research on digital transformation associated with green growth of some regions such as Europe, China, Netherlands and Asia provides valuable lessons for Vietnam to catch up with the world. In addition, the article is written basing on the reference from specialized studies in recent times and the application of several methods, namely synthesis, analysis, comparison. It aims to highlight common issues of digital transformation as well as some recent trends of digital economy development. Also, some experiences for Vietnam's digital transformation associated with green growth are discussed.

Keywords: digital transformation, green growth, digital economy, Vietnam.

1. Introduction

Digital transformation plays an important role in enhancing management capacity, creating new jobs, taking advantage of management experience and accessing modern technologies,

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contributing to promoting economic and social development. Besides, digital transformation associated with green growth is the issue of great concern to many countries. It can be seen that the effective management of digital transformation associated with green growth will facilitate national economy and make digital transformation become one of the most important resources for development. However, apart from the positive sides from digital transformation, it still has some bad effects on the economy and society regarding high investment costs, security problems, negative side from social issues, etc. Inefficient transformation model, problems of network infrastructure, network security... make green growth unattainable as well as degrade the natural environment.

Base on using of a number of methods such as: the method of analysis - synthesis; historical - logical method; comparison - contrast method and through a review of a number of documents on digital transformation associated with green growth, the study analyzed and clarified a number of issues such as: (1) Some common issues about digital transformation and green growth: "Digital Transformation and Environmental Sustainability: A Review and Research Agenda" by Feroz et al in 2021; "Building sustainable smart cities and the green building agenda" by K. Lamola in 2023; "Research on Sustainable Design of Smart Cities Based on the Internet of Things and Ecosystems" by Gao et al. 2023… (2) Current development trend of digital transformation and green growth: "Accelerating the Digital Transformation of Smart Cities in COVID -19 Pandemic Context" by L-D. Radu and A. I. Vodă in 2023; "Can Digital Transformation Drive Green Transformation in Manufacturing Companies?—Based on Socio-Technical Systems Theory Perspective" by Zhang et al. 2023…(3) International experience in digital economic development associated with green and sustainable growth: "The EU could take a step towards its 2050 climate target – if new ecodesign rules phase out sales of fossil fuel boilers - EEB - The European Environmental Bureau" by Dao in 2023; "Towards a green, digital and resilient economy" by the European Commission in 2022…

2. Literature Review

2.1. Some common issues about digital transformation and green growth

2.1.1. Dual transformation: digital transformation associated with green growth is an important future trend associated with the application of technology and communication to improve life and society.

In recent years, the concept of digital transformation (DT) or digital transformation has attracted much attention from many countries around the world. Digital transformation is a concept that describes the use of information and communication technology to improve the quality of life, business processes, and management efficiency of states, enterprises, systemic corporations and other entities[1]. Digital transformation refers to a broad transformation in many fields, namely business, technology, education, healthcare, government, and society, through changing the the ways of organisation, management, work, data, production process. Digital methods (Big Data, IOT, AI...) help to create new services and experiences. In particular, the goal of digital transformation is to to enhance the competitiveness, creativity and sustainability of organizations and society. This brings about many benefits such as increased productivity, improved service quality, process optimization, error reduction, increased interoperability and communication which altogether create new values and faciliate socio-economic development.

Notably, digital transformation associated with green growth helps to optimize productivity and save resources through the application of smart technology and automation. It is also beneficial to the environment by reducing emissions. Besides, the dual transformation can provide effective analysis tools and techniques to optimize environmental management environmental. On the contrary, green growth based on digital transformation helps to obtain information about the environment, minimize negative impacts on the environment and devise sustainable solutions. At the same time, digital transformation can: promote the development of renewable energy technologies, smart water management systems, smart transportation systems; create a favorable environment for creativity; encourage green start-ups, green solutions and green business models.

2.1.2. Digital transformation associated with green growth, sustainable development focusing on environmental protection, sustainable use of resources; promote globalization

The concept of digital transformation associated with green growth emphasizes that the development of digital technology must go hand in hand with environmental protection, sustainable use of resources and promotion of the digital and green economy. This is a positive concept in ensuring sustainable development and creating a healthy living environment for the community [2]. In addition, digital transformation is accelerating the process of globalization and world cohesion as follows:

Digital transformation associated with green growth and sustainable development aims to exploit effectively and sustainably such natural resources as energy, water and building materials [3]. This can be achieved through the application of digital technology, the digitization of energy-saving content, the use of renewable energy sources, smart water management and the use of green materials.

Digital transformation associated with green growth focus on digital traffic and transportation systems. The transformation focuses on developing digital traffic and transportation systems associated with green development issues [4]. This includes promoting the use of public transport and non-polluting vehicles, and the development of a smart transport infrastructure system.

Digital transformation associated with green growth focus on effective management of the environment and pollution. This type of transformation places emphasis on environmental management and pollution reduction through the implementation of digital technology for air quality monitoring, waste management waste water recycling, clean industries development and creation of jobs in renewable balanced energy sector.

2.2. Current development trend of digital transformation and green growth

In the recent decades, the study of digital transformation (DT) has attracted much interest from scholars worldwide. Numerous Countries, cities, industries, companies and people face the same challenge in adapting to the digital world. Digital transformation is important for the private and public sectors because of the enormous benefits that it brings about. As globalization intensifies, digital transformation is an inevitable approach to ensure organizations stay on track. Here are some important trends in this area:

2.2.1. The trend of shifting investment to blockchain for green growth

The investment in blockchain to promote green growth is a trend in the field of investment and sustainable development. Blockchain is a peer-to-peer network-based technology that allows for the safe and transparent storage and sharing of information. Currently, the trend of data integration and analysis in the form of blockchain is being strongly promoted, in which the application of digitization focuses on collecting, analyzing and using data to improve decisions and management towards the goal of greening social issues such as resource management, energy market, ecosystem. Technologies such as artificial intelligence, machine learning, and data analytics are being applied to better understand country and regional performance and provide useful information for development decisions and plans. In resource management, the blockchain application trend boosts transparency and waste reduction based on tracking the origin of resources, clean water and recycled products. In the renewable energy market, blockchain creates decentralized renewable energy markets, allowing users to exchange renewable energy directly with each other, without going through traditional intermediaries. This creates a flexible system and helps to increase the development and use of renewable energy. Regarding the management of forests and ecological systems, blockchain can be used to manage and protect important forests and ecological systems through monitoring and validating environmental protection activities such as mining, logging, monitoring wildlife migrations and protecting important lands. In particular, in carbon transactions, blockchain helps to track and control carbon transactions to help reduce emissions and greenhouse effects, and promote the development of environmental protection projects. This trend contributes to fix the existing problems between traditional management, digital transformation and green growth basing on centralized digitalization, creating the interaction between infrastructure, public services and environmental management [5]. In addition, this trend also promotes the development of a digital urban ecosystem, in which businesses and organizations can interact and collaborate in the development process. The platform of dual transformation is developed to connect stakeholders and create a new effect on the development process.

2.2.2. Trend of virtual business cooperation

Since the advent of Covid-19 pandemic, the trend of virtual business cooperation in digital transformation associated with green growth is a breakthrough method to promote sustainable development and economic growth [6]. This form of cooperation refers to the use of digital technologies to connect businesses, organizations and individuals in a virtual environment to promote the green economy. First, it eases the access to the global green market. In particular, virtual business cooperation opens the door for organizations, businesses and individuals to easily access the global green market. Virtual business platforms allow enterprises to create networks of partners, customers and suppliers around the world, expand their marketing capabilities and access new green resources [7]. Second, it enhances creativity and innovation. Virtual business cooperation creates favorable conditions for creativity and innovation. Organizations, businesses and individuals can connect with developers and experts from all over the world to create new ideas, products and services for green growth through digital technology applications. Third, it helps to reduce emissions and pollution. The business in green growth on the virtual market can help reduce emissions and pollution from reduced mobility. Instead of face-to-face meetings and work travel, organizations, businesses and individuals can use information technology to hold online meetings, share documents, and work remotely. As a result, subjects have more time to create and encourage breakthrough thinking and self-development through an innovative model approach and a combination of physical and digital elements.

3. Experiences of Other Countries

Digital transformation associated with green growth and national economic development has become an inevitable trend in the world today. The evidence is that many developed regions and countries in the world have constantly applied different methods to plan, build, attract and successfully apply this trend and achieve outstanding achievements, of which Europe, Netherlands, Estonia … are typical examples.

3.1. Europe is a pioneer in promoting the digital economy associated with reducing emissions effects

Currently, Europe is the leading organization in promoting the digital economy, reducing emissions, and greening life. In fact, Europe has used a number of measures to realize long-term deflation goals and implement green urban development policies through the implementation of energy saving combined with policies to promote the use of renewable energy, reduce environmental pollution and especially attract investment for green smart cities. In May 2023, the European Commission encouraged the adoption of a new Ecological Bill to promote the development of the digital economy associated with green growth. Accordingly, this Bill, when passed, will achieve the following goals: allowing the EU to achieve its climate "ambition" by 2050; supporting the Europeans to save about 900 Euro/year; creating more than 1.2 million jobs across Europe and boosting GDP growth at a steady rate of 1%/year; ending dependence on imported fossil fuels [8].

The digital economy development model is based on the two main pillars of "investment and reform". The European Commission considers investment as a key to stable and sustainable growth, and a prerequisite for accelerated digital and green transformation. However, they need to be accompanied by reforms to ensure that all EU rules are aligned with key EU goals, creating the right social and economic context that encourages households. and businesses participate.

To make these transitions, the EU is expected to increase its investment by 520 billion euros a year over the next decade. Accordingly, about 390 billion Euro/year will be devoted to the decarbonization process and the energy sector; €130 billion/year for other environmental goals, all tied to digital transformation [9]. In addition, in the survey of September 2022 and April 2023 of "Research and Markets", many businesses poured money to support digital transformation investments in some regions, including Europe. Accordingly, this market will reach 5.2 trillion USD by 2023 [10]. According to the research by GlobeNewswire, this market generates an estimated annual sales of hundreds of billions of dollars a year, and is also very labor intensive.

3.2. China creates a vibrant start-up environment, rapidly develops digital infrastructure to increase productivity of green factors

In the context of pollution and depletion of resources, digital transformation associated with green growth is clearly shown through green factor productivity (GTFP). Currently, the Chinese government has been implementing synchronously to develop these factors.

(a) **For the application of digital transformation to develop renewable energy**: China has digitalized the renewable energy production process through the application of digitalization technologies in the energy production process. solar and wind energy; deploy automated and digital monitoring systems to increase operational efficiency and manage energy resources [11]. In addition, the Chinese government has also invested in smart grids that enhance the integration and controllability of renewable energy sources to improve the management and operation of the power system. In addition, the country has also used artificial intelligence (AI) and big data to improve forecasting, and the data analytics model management has been developed to make early forecasts, helping to optimize the forecast. exploitation and use of renewable energy sources [12]. At the same time, China has also built e-commerce systems and digital communication platforms to facilitate the purchase, sale, transaction and management of renewable energy.

(b) **Digital transformation associated with cities and smart transportation systems**: The Chinese government has taken a number of actions, namely investing in the construction of information technology infrastructure such as telecommunications and internet to build smart cities that ensure fast and stable connectivity for urban residents; strengthening intelligent management and public services, in which traffic monitoring, lighting systems, waste management, and water and energy management are paid much attention to optimize resource exploitaion, waste reduction and energy saving so that the quality of life is improved; speeding up the development of green technology in construction, greening construction and managing construction works in urban areas; synchronizing energy management systems, automatic control systems and development of environmentally friendly construction technology [13].

In addition, China has applied and digitalized an intelligent urban transport system, traffic management and distribution system, and traffic control and notification system to improve transportation efficiency, reduce congestion, reduce traffic congestion and optimize vehicle use. China has also encouraged the use of green means of transport such as electric cars and vehicles powered by renewable energy. It has built an electric charging system for green vehicles, improving the intelligent transportation process through the application of digital technology to manage efficiency and reduce emissions

3.3. The Netherlands aims to strengthen reforms, invest in quantum technology and research and develop green hydrogen

Over the past few years, the Netherlands has continuously invested in digital transformation associated with green growth across the board. In 2021, the Netherlands ranked 4th in the Digital Economy and Society Index (DESI). One year later, it rose to 3rd position. Currently, the Netherlands ranks second in terms of human resources and connectivity in the digital field and ranks fourth in digital technology integration and digital public services. According to the European Commission, digitalization is the main strength of the Netherlands. In fact, the Dutch Digital Strategy (DDS) has updated all the new digital policies in the world since its first publication in 2018. The Netherlands plans to spend 20 billion euros on digital transformation through the National Growth Fund (National Growth Fund - 2021). To date, 960 million euros have been allocated to different projects. projects in quantum computing, artificial intelligence (AI), life sciences and health [14]. In addition, hundreds of millions of euros worth of investment has also been proposed for digital projects, focusing on green growth, smart cities, research and knowledge development.

(a) **On quantum technology and its achievements for green growth**: The Netherlands has focused on the development of quantum technology and become one of the world's leading countries in this field, focusing on a number of issues. First, the Netherlands established the National Quantum Technology Foundation – 2019 and the Quantum Delta Fund (2020) to support the development of quantum technology, in which research and start-up projects are much invested.

Second, the Netherlands has established a network of connections between quantum technology companies and leading universities. Several companies such as QuTech (a joint venture between Delft University and TNO), Delft Circuits, and Qu&Co have been involved in the development of quantum technologies and applications. Thereby, cooperation between companies and universities (Delft University, Leiden University, University of Amsterdam) has created a dynamic and innovative environment for quantum technology. Third, the Dutch Government has promoted the application of quantum technology through the establishment of the Center for Research and Application of Quantum Technology to strengthen cooperation between research centers and businesses [15].

Notably, quantum technology supports the green growth process by providing high-performance energy solutions and using resources intelligently. Quantum computer systems are used to optimize energy management, upgrade the production process, reduce emissions and save resources. In terms of environment analysis and simulation, quantum technology provides the ability to analyze and simulate the environment accurately and in details, allowing environmental scientists and managers to evaluate impact of human activities on the environment. Regarding operational system, quantum technology can provide optimization algorithms for operational systems, such as transportation and energy management systems. This helps to reduce traffic congestion, optimize resource usage and reduce emissions [16].

(b) **Regarding the research and development of green hydrogen**, quantum technology plays an important role in the development of green hydrogen. It provides the in-depth analysis and simulation of chemical processes related to the production of green hydrogen, which helps to optimize electrochemical reactions and the efficient conversion of energy into green hydrogen. Next, quantum technology can assist in the simulation and design of new materials for blue hydrogen-related devices and structures. For example, quantum photovoltaic materials are used to improve the efficiency of solar devices to generate electricity for the electrolysis of water. Besides, quantum technology facilitates water electrolysis for green hydrogen production. Quantum optimization algorithms are used to create favorable conditions, from the amount of input voltage and current to the type of material and catalyst used (de Risi et al., 2023) [17]

4. Lessons Learned and Policy Implications for Vietnam

4.1. Dual transformation outlook

a) **Prospects of digital transformation associated with green growth of the world and the region:**

Despite many shortcomings and consequences, development prospects of the digital transformation process associated with global green growth can continue to be promoted. This market is still attractive to many countries and despite uncertain conditions such as conflicts and demonstrations in the coming years. Digital transformation is likely to reach a new height and brings more benefits by 2030 and the following years [18]

Besides the advantages, investment in the digital transformation market is necessary for the development of many countries. The investment trend is a matter of great concern. Currently, uncertainties in regional cooperation and political commitment tend to dominate this issue. Therefore, win-win cooperation is a crucial measure to solve transnational challenges, and simultaneously enhance national and international risk management for the sake of sustainable development.

b) **Prospects of digital transformation associated with green growth in Vietnam**

Following the trend, investment in digital transformation associated with green growth of countries in Vietnam will also achieve significant growth steps, focusing on a number of sectors such as technology, green energy, medical number, etc.

Increasing investment in the multifaceted technology sector is a priority of some developed countries in Asia Pacific region. Though the investment in green and health sectors in the region increased between 2008 and 2010, the influence of uncertain issues such as the stagnation of the world economy and instability from regional has curbed the investment in the field. The investment trend is not likely to make any breakthrough till the second quarter of 2024. However, analysts are optimistic about the possibility that such countries as Korea, France, and Japan will invest more into Vietnam in the fields of technology, medicine economy, digital businesses and smart cities.

4.2. Opportunities and challenges

In the context of digital transformation development associated with green transformation on global scale, Vietnam has both advantages and disadvantages in the building the development model. In particular, Vietnam continues to be one of the countries with the best potential for economic growth because of a young population, a high level of technology growth and a stable political situation. Vietnam becomes an outstanding market for digital businesses while political uncertainties occur in different parts of the world. However, besides the advantages, Vietnam will also face many difficulties in digital development such as poor network infrastructure, cybersecurity threats and limited investment capacity.

On the positive side: Many foreign enterprises from France, India, Indonesia, Brazil, South Korea ... want to invest in the equitable energy transition (JETP), smart cities, digital offices and digital work in Vietnam. According to Vietnam Briefing Magazine, by May 2023, 80% of surveyed enterprises have assessed that the investment environment in Vietnam is quite positive in medium and long-term. Currently, these businesses are planning to expand their market share in Vietnam.

The number of foreign businesses investing in the digital field associated with green growth in Vietnam increases because: Competition in digital transformation activities in the world, especially digital transformation associated with green growth are continuing to directly affect the business of these enterprises in general. This causes many businesses to change their investment strategies to increase market share; The unsecure situation in some regions and the world drives the investors to seek for stable markets like some ASEAN members [19]; Vietnam's digital development speed is increasing dramatically, along with the improvement of digital infrastructure, making Vietnam more and more attractive.

Some limitations and causes: Besides the positive aspects, investment in the digital field in the coming time in Vietnam still reveals certain limitations:

Limitations from foreign investors: The scale of investment projects is still small and restricted in some certain sectors. It is due to the fact that most foreign businesses only focus on some projects which require little capital but yield high profits. Therefore, they may not take into account some sectors in need of investment like automation, smart cities, and renewable energy.

Limitations from Vietnam: Although investment environment in Vietnam has been improved, there are still many shortcomings. Thus, it is not attractive to many quality investment projects from developed technology countries; Infrastructure, supporting industries, and digital transformation industries have not yet met the needs of FDI enterprises. According to data from the Department of Industry - Ministry of Industry and Trade, by March 2023, Vietnam had 3800 supporting industry enterprises, accounting for about 0.64% of the total number of operating enterprises and accounting for 2.1% of the total number of enterprises in operation. Supporting enterprises in Vietnam are small in scale and have unsustainable business strategies. At the same time, over 90% of Vietnam's supporting enterprises have outdated or medium-level technology, which is difficult to meet the needs of enterprises in smart urban construction; The policy to attract and manage digital transformation development is still inadequate. The inconsistency in local and central policies makes it difficult for investors to initiate their projects. Besides, some businesses can take advantage of weaknesses in Vietnam's management policies to exploit natural resources, labor and pollute the environment.

4.3. Some solutions for Vietnam

- Vietnam should balance between green growth and digital infrastructure development by improving the management process. It will help Vietnam avoid being exploited by foreign countries in the development of digital models. Besides, it is necessary to take into account the the cooperation in human resources and experts training in this field.

- Vietnam should take advantage of digital investment activities, digital transformation to increase capacity and competitiveness. Vietnam needs to adjust policies to attract and manage digital investment activities, in the direction of selecting and screening projects applying digital technology. In particular, businesses and projects with the goal of restructuring the digital economy in association with green and sustainable growth should be prioritized. A digital investment map associated across Vietnam should be created. Besdies, Vietnam should focus on optimizing the management capability in the context of the 4.0 technology revolution. Last but not least, learning the digital transformation models from other countries may help Vietnam to reach the target with less time and resources.

5. Conclusion

Utilizing resources for digital transformation in association with green growth is a common trend of many countries around the world, including Vietnam. Over the past decade, international experience in the development and digital transformation associated with green growth has made progress and contributed to the world economic development. Despite many fluctuations, the trend and prospect of digital transformation associated with global green growth will continue to be promoted owing to its great benefits. For Vietnam, digital transformation associated with green growth will be prioritized, focusing on a number of fields such as green energy, renewable energy, healthcare, digital economy, smart cities… However, besides the positive aspects, green growth also has many limitations that need to be addressed. The balance between benefits and risks to achieve sustainable development is a dilemma not only for developing countries but also for developed countries in the world. Learning lessons from other countries and applying them appropriately to the actual situation in Vietnam is an urgent requirement for the government and localities. With valuable lessons learned from other countries that are pioneers in digital transformation associated with green growth, Vietnam needs to accurately and comprehensively assess the impacts as well as the two-way relationship between direct investment and socio-economic development. By doing so, Vietnam will be able to uphold its strengths and overcome difficulties to conduct the digital transformation associated with green growth successfully in the coming time.

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Organizational Structure of Auction Enterprise According to Vietnamese Law

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ABSTRACT

The article focuses on analyzing the organizational structure of the auction enterprise in accordance with the law on enterprise and the law on auction in Vietnam, including private auction enterprise and partnership auction company. On the basis of comparison with the provisions of the laws of France, Germany, China, Japan and the United States, the article points out the inadequacies and limitations from the provisions of Vietnamese law on organizational structure of the auction enterprise. From there, the article proposes a number of directions to overcome the shortcomings and limitations of Vietnamese law, orienting the integration process of auction enterprise in Vietnam into the emerging auction market flourishing in the world.

Keywords: organizational structure; auction; auction enterprise; law; private auction enterprise; partnership auction company.

1. Introduction

In the world, auction has a long history of formation and development, around 500 BC in Babylon (Learmount, 1985, page 5). Here, the objects being auctioned are the wives. Gradually, auction is becoming more and more popular, and the property being auctioned is also diverse in types. Along with the development of information technology, online auction form was born to meet the increasing needs of property buyers and sellers.

Auction is a form of property buying and selling in which there is asymmetry of information between buyers and sellers. An auction is when one party to a transaction knows some information about the transaction and the other party does not (McAfee & McMillan, 1987, page 699). The term "auction" is derived from the Latin word "auctio" which means to increase (Learmount, 1985, page 6). "The word "auction" therefore is largely presumed to discribe a proceeding at which the public are invited to compete for the purchase of property by successive offers of advancing sums"

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(Learmount, 1985, page 6). On the other hand, auction is a method of determining the value of an item and following the law of value (Vijay Krishna, 2010, page 118). Auction from the point of view of economic researchers is a market mechanism that, by clear rules, translates the bids of market participants into the allocation of resources (Günter Knieps, 2015, page 287). “An auction is a sales event wherein potential buyers place competitive bids on the property or services either in an open or closed format” (Banton, 2021). It can be seen that the common feature of the auction is the openness and competition among the bidders. Property sold through auction will be assessed at its best fair market value. Because, when the property is put up for auction, the determination of the starting price as well as the order and procedures are carried out by qualified persons or at least according to the wishes and will of the property owner.

Auction with its role becomes a business line, especially a conditional business line in most countries around the world, including Vietnam. An auction enterprise is the one that conducts business activities on the market for the purpose of making a profit; therefore, it is also governed by the laws of the market economy. Auction is a special line of business - an intermediary in the purchase and sale of property between people who have the need to buy and those who have the need to sell property, therefore, the State's special regulation for the auction business is inevitable.

In Vietnam, the auction activity appeared since the French colonial period, carried out by facilitators. Although born quite late compared to other countries with a long history of auction, auction in Vietnam is increasingly asserting its position in the economy, increasingly promoting the role of this service not only as a judicial assistance but also in the role of finding the true value of the property sold through auction. However, auction in Vietnam, compared to other countries in the world, is still on the way to affirming as a real industry and business in the market, bringing significant profits to investors. This is also the reason why the regulations on auction enterprise conditions in Vietnam have certain differences compared to the laws of other countries in the world. One of the conditions that Vietnamese law sets for an auction enterprise is the type of business. An auction enterprise can only be organized under one of two models: a private enterprise or a partnership company. The common feature of these two types of businesses according to the provisions of Vietnamese law is the unlimited liability of the owner of the private enterprise and the general partner of the partnership company. “Unlimited liability is understood as the end or to the end of the debt payment” (Phat, 2002, page 39). The regulation that auction enterprise in the form of private enterprise and partnership company are economic organizations with unlimited responsibility for their activities will contribute to improve the legal responsibility of auction business in practice, thereby contribute to protect the legitimate interests of auctioneers and auction participants, ensure professionalism in the organization and operation of the auction business, consistent with the development orientation of auction practice (Ministry of Justice of Vietnam, 2015, page 10). Each type of auction business has its own and common points in the organizational structure as prescribed by law. However, the organizational structure of the private auction enterprise and the partnership auction company is still very different from the provisions of the laws of other countries in the world and there are certain limitations. These limitations more or less affect the reputation and business performance of the business. This is one of the barriers that prevent property auction activities in Vietnam from being integrated into the exciting development of auction activities in the world. Auction in Vietnam have not really created trust, the choice of relevant parties, especially the choice of individuals and organizations that voluntarily sell properties under their ownership through auctions.

2. The organizational structure of auction enterprise in Vietnam

2.1. The organizational structure of a private auction enterprise

In Vietnam, private enterprise is an enterprise owned by an individual (Clause 1 Article 188 of Enterprise Law in 2020). A private enterprise is a form of business owned by an individual - the owner of the business. A private enterprise can be considered as an extension of the business owner (Cuong, 2010, page 26). The owner of a private enterprise is the person who has the full right to decide all activities of the business from the time the business is about to be established until the business goes into operation, the use of the business's after-tax profits and the implementation of other financial obligations of the business decide the "fate" of the business. The owner of a private business may directly be the Director or General Director of the business or may hire another person to hold this position to run the business activities of the business. Whether hiring a Director or General Director or not, the owner of a private business is still the person who is unlimitedly responsible for all business activities of the business, even for damages caused by the fault of the hired Director or General Director. The owner of a private business is the legal representative of the business, the representative of the business in the proceedings at the Court or Arbitration, and the representative of the business to exercise other rights and obligations (Article 190 of Enterprise Law in 2020). With this regulation, a private enterprise is only a legal form for the business owner to conduct business activities, the legal status of the business and the business owner seems to be the same. Moreover, this regulation can lead to many troubles when the owner of a private business dies or becomes incapacitated, but the private enterprise still exists (Nghia, 2015, page 182).

Private auction enterprise is an enterprise engaged in conditional business lines. Therefore, the law on auction has specific conditions for business founders and managers. The owner of a private auction enterprise must be an auctioneer. This regulation also means that foreign investors are not allowed to set up a private auction enterprise in Vietnam because one of the criteria of an auctioneer is a Vietnamese citizen (Clause 1 Article 10 of Auction Law in 2016).

On the other hand, an auctioneer who is the owner of a private auction enterprise may not hire another person to act as a Director, but the business owner himself will be the Director of the business (Point a Clause 3 Article 23 of Auction Law in 2016). Thus, in a private auction enterprise, the auctioneer is the person who decides and is responsible for all activities of the business from the time the business is preparing to be established until the business goes into operation, as well as the other problems. That is, the business operation of the business completely depends on the will of the auctioneer who is the business owner, the law does not interfere much in the organizational and management structure of the business because this is inherently a form of personal business. The only business line of a private auction enterprise is auction. If in the past, "an auction enterprise is an enterprise operating in multiple industries, including the business of auction services" (Hai, 2015, page 42), now, "this is organization is established with the sole function of trading auction services without any other business function" (Huong, 2021, page 27). Because the current Vietnamese law does not recognize multi-sector business rights for auction enterprise in general and private auction enterprise in particular. The owner of a private auction enterprise both runs the business of the business and operates the auctions signed by the business with individuals and organizations wishing to sell properties through auctions.

In addition to the auctioneer is the owner of the business and concurrently the Director, the organizational structure of a private auction enterprise may also have other functional departments such as accountants, treasurers, secretaries, etc. even the auction department includes auctioneers. However, the current law "does not have specific regulations on organizational structure and personnel of auction enterprise" (Loan & Linh, 2019, page 52). The relationship between the owner of the private auction enterprise and the employees in these departments is an employment relationship. An auctioneer, when operating an auction, has the rights and obligations prescribed by law, besides, the auctioneer also has the rights and obligations under the labor contract entered into with the owner of the private auction enterprise.

In short, the organizational structure of a private auction enterprise is very simple. The auctioneer is the owner of the business, concurrently the Director of the business, has full authority to decide all activities of the business as well as the hiring of employees working at the business and is not responsible for such activities. This simple organizational structure is only suitable for small and medium-sized auction enterprise. In fact, a part of auction enterprise operate in a lack of professionalism, small scale and fragmentation (Ministry of Justice of Vietnam, 2022, page 11). With the simple organizational structure of a private auction enterprise, it will be advantageous for auctioneer as business owner not to focus too much on company governance, but mainly on the operation and management of auction operations, ensure that the auctioneer at the business run the auctions in the correct order and procedures and do not arise any negative effects affecting the reputation of the business, increasingly creating trust with customers, promoting auction activities in general to be more and more developed and popular, becoming a real industry and business in the market, not just stopping at the main judicial support role. In fact, there are also private auction enterprise with a very simple organizational structure but reputable auction activities, so they can conduct a relatively large number of auctions compared to the common ground of other auction enterprise in the same province, city directly under the Central Government where the business is headquartered. For example, Tra Vinh Private Auction Enterprise (Tra Vinh) has undertaken 55/116 local auctions (accounting for 47.4%) in 2022 (Department of Justice of Tra Vinh Province, 2022).

However, with that simple organizational structure will also lead to certain consequences. In case in a private auction enterprise there is only one auctioneer who is the business owner and there are no other auctioneers, all auctions will be run by the auctioneer who is the business owner. At that time, if the auctioneer, because of the pursuit of profit, generates negative consequences, affecting the rights and interests of the parties involved, even negatively affecting the market price, causing "distortion" the nature and role of auctions, leading to society's negative perception and attitude towards this activity. Typically, that is the violations of An Giang Private Auction Enterprise (An Giang). This business has only 01 auctioneer who is the owner of the business and has 01 labor contract, but this person is the business owner's wife. According to the conclusion of the Inspector of the Department of Justice of An Giang Province, this business, from January 1st, 2020 to June 30th, 2021, had many violations in the auction such as not listing the remuneration auction services, auction costs, auctioneer's practice principles; auction notice boards and Auction Regulations are placed in the reception room so it is not convenient for the auction participants those who access information related to the auction; promulgate the Auction Regulations applicable to each auction, publicly notify the auction that is not in compliance with regulations. In addition, the inspection conclusions also show that in the past time, Mr. Nguyen Xuan Phuc is a business owner with a lack of courtesy, lack of standards when guiding and explaining questions of customers those who register to participate in the auction. In addition, the inspector of the Ministry of Justice also pointed out the shortcomings and violations of this business and related units in the auction organization. Specifically, in October, 2017, this business signed with Thoai Son District Judgment Execution Sub-Department (An Giang) auction service contract No. 19/HDDVDGTS to auction the right to use 04 land plots at the price starting at 2.35 billion VND. However, the business issued the Auction Regulations that did not conform to the content in the auction service contract, did not issue the Regulations for each auction, causing difficulties and restricting customers from registering to participate auction, issue various types of auction notices with different contents, to those who do not have the right to purchase auctioned property in accordance with the law applicable to that type of property participating in the auction, etc. (Linh, 2022).

In addition, with the provisions of the Auction Law, the auctioneer being the owner of a private auction enterprise and the Director of the business, compared with the Enterprise Law in 2020, is not really consistent. According to the provisions of the Enterprise Law, if the owner of a private business does not directly manage and administer the business activities of the business, he or she may hire another person to act as the Director or General Director (Clause 2 Article 190 of Enterprise Law in 2020). Then, through the contract, the person representing the business owner can be the Director or General Director. Meanwhile, the Auction Law only requires the owner of a private auction enterprise to be an auctioneer and at the same time the Director of the business, which means he does not hold the position of General Director as prescribed by Enterprise Law. This can be explained as Auction Law was promulgated in 2016, then the Enterprise Law in force in Vietnam is Enterprise Law in 2014. According to the provisions of the Enterprise Law in 2014, if the owner of a private enterprise does not directly manage the business activities of the business, he may hire another person to act as a Director to perform this work (Clause 2 Article 185). That is, in the organizational structure of a private enterprise according to the provisions of the Enterprise Law in 2014 there is no title of General Director. With this new regulation of the Enterprise Law in 2020, the current question is whether a private auction enterprise has the title of General Director or not. If so, can the owner of a private auction enterprise hire someone else to fill this position? Considering the fundamental origin of the Auction Law, it is clear that the purpose of the legislator is in a private auction enterprise, the auctioneer must be the manager of the business and not someone else hired. However, with the inconsistency in regulations on positions in the organizational structure of management of private auction enterprise between the Auction Law and the Enterprise Law, it is difficult to avoid the most difficulties and confusion when applying the law. That is from the perspective of words and terms in the text. And that does not mean that the author fully supports the provisions of the Auction Law. The issue that the owner of a private auction enterprise must be an auctioneer is necessary and continues to exist in Vietnam. However, assuming the intention of the legislator, the owner of a private auction enterprise is not allowed to hire other people to act as the Director or General Director, but must concurrently hold these positions in the business need to be reviewed and re-examined. According to the data published on the National Property Auction

Portal, most private auction enterprise have only one auctioneer, 39/47 private auction enterprise (Ministry of Justice of Vietnam, 2022), that is, the only auctioneer who is both the business owner and the Director or General director of the business, the business also does not hire more auctioneers under the employment contract. At that time, the operation of the auctions and the operation and management of the business are all undertaken by the auctioneer. The organizational and management structure of a private auction enterprise according to current regulations has been consistent between the management and administration of the business and the professional activities of the auctioneer. Meanwhile, these two activities require completely different competencies, qualifications, expertise and profession. After all, the main activity of an auctioneer is still to run auctions. There are businesses that organize and conduct auctions very effectively, then, even though there are auctioneers working under the labor contract regime, the business owner auctioneer must also focus on in researching, organizing and operating auctions in the most effective way. The management and administration of business activities of businesses is difficult to guarantee. On the other hand, there are auctioneers with very good expertise and expertise, who set up private auction enterprise but do not have experience, expertise, or expertise in business administration (such as human resource management, business strategy, etc.). If the business is small in size, the organizational structure is simple; this is not a big problem. But if the business is growing and operating beyond the management capacity of the auctioneer who is the business owner but is not allowed to hire a Director or General Director to represent the business owner to manage and run the business, the effective of the business results of the business are difficult to achieve as expected. Furthermore, even if a Director or General Director is hired, the auctioneer as the owner of a private auction enterprise is still responsible for all business activities of the business (Clause 2 Article 190 of Enterprise Law in 2020). The important issue is that when establishing a contract to hire the Director or General Director, the business owner needs to clearly define the rights and obligations of the person being hired. Of course, it is also not necessary here to force a private auction enterprise to hire a Director or General Director to manage and run the business. This problem can completely be decided by the auctioneer who is the business owner.

In addition, the failure to regulate the organizational structure of the property auction enterprise is also a matter of concern. Especially for private auction enterprise, businesses with only one auctioneer account for a high percentage like today. If you ignore the corporate accounting department, because the Accounting Law does not require a business to have an accounting apparatus in its organizational structure, but can hire outside accounting services (Clause 1 Article 49), then at least most auctioneers also need to have staff to support a number of tasks related to auctions such as drafting auction service contracts, drafting auctioned property purchase and sale contracts, drafting Regulations auction, perform work related to announcement, listing of auction, bookkeeping, arrangement, record keeping, auction documents, etc. Furthermore, when administering the auction according to the current regulations, auctioneers also need helpers to record auction minutes. However, this professional division has not been recognized by specific provisions in the Auction Law. Also a judicial title and works in the field of judicial assistance, but notaries, according to the draft of Notary Law (amended), a completely new title has been included in the provisions of the draft – letter notarization sign. The draft also stipulates specific standards for the Secretary of notary operations, aiming to carry out the task of this title, which is to help notaries perform notarization operations. After a long time the Notary Law was in effect and applied in practice, legislators have realized that it is necessary to have an official title with certain standards to assist notaries instead of being employees employed by the notarial practice organization but not specified in the organizational structure of the notarial practice organization. Auctioneers also need a help desk, helping the auctioneer prepare for work before, during and after the auction.

2.2. The organizational structure of the partnership auction company

A partnership company has at least 2 general partners and may have limited partners. General partners are individuals and limited partners can be individuals or organizations. In a partnership auction company, the organizational and management structure of the company includes general partners, the President of the Board of Partners, partners of the Board of Partners, Director or General Director. In which, the Board of Partners includes all partners of the company (general partners and limited partners, if any). The partnership auction company has at least one general partner who is an auctioneer, the General Director or Director of the partnership auction company is an auctioneer (Point a Clause 3 Article 23 of Auction Law in 2016). According to the provisions of the Enterprise Law, the President of the Board of Partners shall be elected by the Board of Partners from among the general partners and concurrently act as the Director or General Director, unless otherwise provided for in the company's Charter (Clause 1 Article 182 of Enterprise Law in 2020). The President of the Board of Partners, the Director or General Director of the company manages and runs the daily business of the company as a general partner (Point a Clause 4 Article 184 of Enterprise Law in 2020). Thus, if the company's Charter stipulates that the Director or General Director of the company is not the President of the Board of Partners concurrently, that position must be held by another general partner. That means the partnership company does not have the right to hire a Director or General Director. In a partnership auction company, the company can have only one auctioneer who is a partnership member who is also the General Director or Director of the company, and the company's Charter will be limited in the right to "stipulate otherwise" in this case. This limitation comes from the constraints of the Auction Law.

If, in a private auction enterprise, the law has unified the professional activities and business management activities of the auctioneer, then in the partnership auction company, besides the auctioneer, the company's business operations are also shared with other general partners (who may or may not be auctioneers). However, the position of Director or General Director of a partnership auction company must also be held by an auctioneer. Unlike the Notary Office, which is also organized in the form of a partnership company, the general partner of the Notary Office must be a notary, while the Notary Office has no limited partners. The Head of the Notary Office must be a partnership notary and the legal representative of the Notary Office (clause 1 and clause 2 Article 22 of Notary Law in 2014). A partnership auction company only needs to have at least one general partner who is an auctioneer. The company may have limited partners. The legal representative and the organization that runs the day-to-day business of the partnership auction company are all general partners, who may or may not be auctioneers (Clause 1 Article 184 of Enterprise Law in 2020). Of course, partnership members can agree to limit the partnership members in carrying out the day-to-day business of the company. Compared with notary activities, the role of judicial support of auction activities is much more limited, especially when auctioning voluntary property. Auctions are more closely related to the business purpose of the business. Obviously, this is an industry and business in the market, but its inherent nature has not been fully recognized in Vietnam. Compared with the Notary Office, the organizational structure of the partnership auction company is closer to the provisions of the Enterprise Law on partnership companies and the "company" character is more evident. A Notary Office has only the Head of the office as the manager, a partnership auction company still has a general partner, the Board of Partners, the President of the Board of Partners, the Director or General Director is the company’s manager. Together with the Department of Justice, the operation registration file of the Notary Office does not have a company charter (Clause 3 Article 23 of Notary Law in 2014), while this is the mandatory document for the partnership auction company (Point b Clause 1 Article 25 of Property Auction Law in 2016). However, that does not mean that the management structure of the partnership auction company is complete and suitable for the actual needs of the company. There are two issues that need to be studied about the organizational structure of a partnership auction company in accordance with the current law as follows:

Firstly, according to author Pham Duy Nghia, business in service industries usually requires little capital and quick turnaround (Nghia, 2004, page 260), most service businesses are usually small in scale and scope, narrow microactivity. The current auction enterprise in Vietnam also belongs to the majority of those businesses. Therefore, Vietnamese law sets conditions on the type of enterprise for an auction enterprise, which, in addition to the purpose the legislator aims at, is also consistent with the actual size of the business. However, for a partnership auction company, the organizational and management structure of the company is not as simple as that of a private auction enterprise. This comes from the very mixed provisions of the law on enterprise in Vietnam. Meanwhile, the laws of France, Germany, Japan, and the United States do not limit auction enterprise to establishing, organizing and operating under certain models. Auction enterprise may choose to establish, organize and operate under any type of enterprise governed by the laws of that country. If the auction enterprise chooses to establish under the partnership model, the company's organizational structure shall comply with the provisions of the French Commercial Code (Frnace), Commercial Code (Germany), Companies Act (Japan), Washington Partnership Regulations (USA), Florida Partnership Law (USA), Texas Business Organization Law (USA), Alabama Partnership Law and Limited Partnership Law (USA). The provisions of Vietnamese law on partnership companies are not the same as other countries in the world. While the partnership companies under the laws of many countries clearly define two basic types of partnerships: the first, general partnership companies only include general partners with joint responsibilities and unlimitedly, these general partners have the right to manage and represent the company; the second type, limited partnership companies include two types of general partners and limited partners, general partners with unlimited liability and limited partners with limited liability. These two types of partnerships are regulated in French Commercial Code, German Commercial Code, Japanese Companies Act, Washington Partnership Regulations (USA), Florida Partnership Law (USA), Texas Business Organization Law (USA), Alabama Partnership Law and Limited Partnership Law (USA). The partnership company model in Vietnam has only one, but includes both types of partnership companies according to the laws of other countries. This can create advantages for investors when organizing and operating a company under this type of company. The company is free to choose whether to admit or not to limited partners. However, the "mixed" regulations and cumbersome organizational structure of a partnership company under Vietnamese law also cause many difficulties for the international integration of this company model.

The management structure of the partnership company is also a matter of concern. The Enterprise Law of Vietnam requires a partnership company to always have a Board of Partners. Meanwhile, the majority of partnership companies in Vietnam has small capital scale and is not favored by investors. With a cumbersome management structure as prescribed by Enterprise Law, it will take time and cost for the company. Sometimes it takes the company's opportunity to make quick business decisions. Long-standing regulatory experience of France, Germany, Japan, the states of the United States (Washington, Florida, Texas and Alabama), for partnership companies (general partnership companies and limited partnership companies) shows that the laws of these countries do not require a partnership company to follow a certain management structure. The "partner" nature of this type of company is reflected in the fact that the management of the company is due to the agreement of the members and is reflected in the company's Charter. Compact and flexible organizational structure is suitable to the size of the majority of partnership companies. Moreover, the laws of other countries do not require the business manager or the auction company to be an auctioneer like the current Vietnamese law. Self-administering, running the business and running the auctions are the decision-making right of the auctioneer, depending on their capacity, qualifications and experience. That means the laws of the countries have separated between the professional activities and the company governance and management activities of the auctioneer. The unification of these two activities in accordance with the Auction Law in Vietnam to some extent makes the business performance of the business not as expected. According to author Pham Duy Nghia (2004): “The function of company law is, after all, to encourage people to invest capital and participate in business” (Nghia, 2004, page 259). Adam Smith (1776), through the theory of "invisible hand", once affirmed that: "Every individual always tries to find a way to use the capital and wealth he has for his own benefit". Adam Smith (1776) also drew the practice: "The process of maximizing self-interest naturally or rather, necessarily, leads the individual to promote the benefit of the community". For a partnership auction company, the conditions set forth by the Auction Law mainly focus on management, administration, responsibility and facilities without any capital requirements. Therefore, in fact, many partnership auction companies in Vietnam, the registered charter capital is very low, the company only has a limited number of general partners as prescribed by law and no limited partners. As of August 2022, there are 402 partnership auction companies nationwide. Of which, there are 305 companies with only 2 general partners, 76 companies with only 3 general partners, 17 companies with only 4 general partners, 4 companies with only 5 general partners (Ministry of Justice of Vietnam, 2022). However, with the current provisions of Vietnamese law, the organizational structure and management of a partnership auction company, like other partnership companies, must have a Board of Partners. The decision on business activities of the company must also be approved by the Board of Partners meeting. With a small scale, it is not necessary to have a rigid organizational structure according to the provisions of the law.

Secondly, like a private auction enterprise, the Director or General Director of a partnership auction company must also be an auctioneer. Although besides that, there are other general partners in the company, who may or may not be auctioneers, who hold the right to run the company's business activities, but with this regulation, it partly shows the intention of the company of the legislator is to unify the professional activities and business operations of the auctioneer. Meanwhile, as analyzed, these are two activities that require different experience and professional expertise. Moreover, with the current provisions of the Enterprise Law, a partnership company cannot hire a Director or General Director; this position must be taken by the general partner of the company. There are two issues to discuss here. The first, not recognizing the right to hire a Director or General Director for a partnership company which limits the company's rights compared to other types of businesses, and partly limits the "partner" nature of the partnership company. The second, for a partnership auction company, auction is a professional activity of an auctioneer, which cannot be equated with professional activities with corporate governance. An auctioneer may be good at expertise, but that does not mean that he or she has the ability to manage the company, because besides the auction business, the auction partnership company also has many other activities that require company governance capacity such as human resources, accounting, finance, labor, etc.

The laws of France, Germany, Japan, and the states of the United States (Washington, Florida, Texas and Alabama) do not set any conditions on the type of business for the auction business or company. Therefore, a business or an auction company can choose to establish and organize according to one of the types of companies or one-owner businesses prescribed by law. Although Chinese law does not limit auction enterpries on the type of business, auction enterprises are established and organized under one of the types of businesses governed by Company Law (Article 10 Auction Law). China's Company Law governs only two types of companies, limited liability companies and joint stock companies. Therefore, auction enterpries in China can only be established and organized under those two types of companies.

In addition to the organizational and management structure that is different from that of a private auction enterprise, a partnership auction company may still have professional divisions in the company's organizational structure as mentioned in the private auction enterprise.

3. Some proposals to improve Vietnam's legal regulations on the organizational structure of auction enterprise

Limitations in legal regulations are a huge barrier to the development of auction activities in Vietnam in general and auction enterprises in particular. The professionalism in the operation of the auction enterprise that the legislators expect is difficult to achieve. Activities of auction enterprises, especially private auction enterprises, have not been effective (Department of Justice of Binh Thuan Province, 2022). In order to ensure the freedom to do business, freely decide on the organizational structure of the business, towards creating favorable conditions for the auction business to become a business conducting business activities to seek profit in the market, at the same time, not forgetting the intermediary role of the auction business in the sale and purchase of property, it is necessary to change the attitude and view of management towards auction activities in general auction industry in particular in Vietnam.

3.1. For private auction enterprise

Firstly, instead of assigning state administrative agencies with heavy administrative work, Vietnam should learn from the experiences of countries with developed auction activities, with the advent and the growth of auction businesses such as France, Germany, Japan, China, the United States, etc. requires a specialized agency with experts, professional auction houses are established to license and specialized supervision over the activities of property auction businesses. Through supervision, this specialized agency has the power to impose administrative sanctions on auctioneers and auction enterprises that violate the law in auction activities, or transfer documents to the investigation agency to conduct criminal prosecution procedures for auctioneers who show signs of violating the provisions of criminal law in auction activities. With the current administrative procedure-heavy management of the Department of Justice, Ministry of Justice over the activities of auction businesses, with civil servants who do not have professional expertise in auctions, detecting acts of collusion, price lowering, "green army, red army", "backyard" in auction activities, is not a simple story.

Secondly, to be able to separate the company governance and the property auction activities of the auctioneer, both to ensure effective company governance and to create favorable conditions for the auctioneer to be a business owner. The private auction business focuses on the expertise and operations of the property auction so that the auctions promote optimal efficiency, the Property Auction Law should not force the auctioneer - the owner of the private auction business must concurrently hold the position of Director or General Director of the business. That means, depending on the size, operation situation as well as the experience and capacity of the auctioneer who is the owner of a private auction enterprise, the business owner can freely choose the organizational and management structure of the business. Business owner is to hire a Director or General Director to represent him or her in company governance or to concurrently hold the position of Director or General Director without having to pay wages to the hired person. Ross (1973), Jensen and Meckling (1976) analyze the conflicting dependency relationship between business owners and managers through agency theory. According to this theory, between owners and managers, they all run towards their own goals. While the owner's aim is to maximize profits, the manager's aim is to maximize his utility. Therefore, when establishing agency contracts, it is necessary to analyze the commitment of the parties to perform (Tu, cited in Jensen and Meckling, 1976). In case the business owner hires a Director or General Director, the business owner should be careful in establishing a lease contract, clearly defining the rights and obligations of the Director or General Director in managing and operating business activities of the business, limiting the Director or General Director's excessive interference in the organization and administration of the auction.

The legislative experience of all countries shows there is almost no national law that requires the manager of an auction enterprise to be an auctioneer. Voluntary furniture auction companies need a Director, members or employees who have the qualifications necessary to conduct the sale or have a certificate, degree, or recognition from the Auction Council is equivalent to auction under certain conditions, which is a requirement set forth in the Commercial Law of the French Republic (Article L321-8); Auction companies need qualified auctioneers and employees to conduct auction business, which are requirements set forth by the Auction Law of the People's Republic of China on auction businesses (Article 12); In the United States, an auction company must have an auctioneer, but not necessarily a manager, as required by Washington Law (RCW Article 18.11.095-1b of the Auctioneer Registration Act), Florida (Section 468.385 (7a) Occupation and Employment Regulations), Texas (Section 1802.051(c) Employment Code), Alabama (Section 34-4-25(a) Auctioneer Licensing Act).

Adam Smith (1776) expressed his opinion through the doctrine of the invisible hand theory: "the government of each country does not need to interfere deeply in the activities of individuals and businesses, which can operate on its own in the market" (Tu, cited in Adam Smith, 1776). According to F. A. Hayek, the ultimate purpose of law is to create, protect and expand individual human freedom, not to abolish or limit individual freedom. [...] People will not have freedom without the presence of law (Locke, cited in F. A. Hayek, 2011). Alfred Dupont Chandler (1977) through the theory of visible hand also said that: "As businesses grow in size and diversity, managers become more professional, business management separates from its ownership" (Tu, cited in Alfred Dupont Chandler, 1977). Therefore, in Vietnam, it is possible to continue to maintain the condition that the person establishing an auction enterprise is an auctioneer and the person who is responsible for all activities of the business, but should give businesses the freedom to choose their organizational structure, especially private auction enterprises. Therefore, it is necessary to remove from Point a Clause 3 Article 23 of Auction Law in 2016 that the auctioneer is the owner of a private auction enterprise and concurrently the Director of the business. A part of Point a Clause 3 Article 23 of Property Auction Law in 2016 should be amended as follows: *"a) A private auction enterprise whose owner is an auctioneer [...]".*

Thirdly, Auction Law needs to supplement the regulations on the secretary of auction operations as experienced from the provisions of the draft of Notary Law (amended). Although this is a new regulation in the draft of Notary Law, it is the result of the process of drawing practical experience in notarization activities. Not as developed as notarization, but in an auction a series of procedures need to be prepared and carried out before, during and after the auction ends. In fact, auction businesses, especially private auction enterprises, have to recruit staff to help the auctioneer, at least record the auction minutes in the auction. Recognizing the secretariat of auction opertions not only concretizes the standards for this department, but also ensures an organizational structure in line with the requirements of practice for the auction business and its operations. Accordingly, after the addition of Article 19 of the current Auction Law, the duties and standards for the secretary of auction operations are added as follows:

"Secretary of Auction Operations"

The Secretary of Auction Operations is responsible for assisting the auctioneer in performing auction operations in accordance with the regulations. A Secretary of Auction Operations has the standards specified in Clause 1, Clause 2 Article 10 of this Law."

3.2. For a partnership auction company

The necessary issue now is to have breakthrough innovations in the Enterprise Law provisions on the type of partnership companies. Researching and absorbing legislative experiences from countries around the world, expanding the types of partnership companies in Vietnam. In the immediate future, there are general partnership company and limited partnership company. From there, the auction enterprise, besides the private enterprise, can also choose to establish, organize and operate under various types of partnership companies.

Regarding the organizational and management structure for two types of partnership companies, Vietnamese law should abolish the provisions on the Board of Partners. That is, in a general partnership company and a limited one, the general partners both hold the right to operate and manage the company. The company does not need to have a Board of Partners. The collection of voting opinions to approve issues related to the company's business is also done according to the principle of majority of general partners. The form of collecting opinions can be through a meeting of partners or other forms specified in the company's Charter. The abolition of the Board of Partners in the organizational structure of the partnership company in general and the auction partnership company in particular will make the company's management structure more flexible. The company's decisions, accordingly, are also quick and timely in the context of a fiercely competitive market economy. Moreover, this compact management structure is also suitable for the small and medium scale of the vast majority of partnership companies in general, and auction partnership companies in particular in Vietnam. Although it is a conditional business company, it is still a typical type of "partner" company. The State has intervened and regulated the partnership auction company through regulations on establishment conditions, the company management and the law should give it the right to freely decide based on the agreement of the partners. However, auctions in Vietnam are currently not very popular and create confidence for stakeholders. Therefore, the regulation that the partnership auction company must have at least one general partner who is an auctioneer should continue to be maintained. That is, at least one of the company managers must be an auctioneer. At a minimum, that manager of the company can conduct auctions, manage and direct auctioneers in the company on auction operations and comply with auction law. The company's reputation has since been affirmed in the market, creating trust for partners, customers and the whole society.

Promoting the "partner" nature, while learning from the experiences of France, Germany, Japan and the states of the United States, the Enterprise Law of Vietnam should expand the recognition of the right to agree of the general partners in the field of hiring a Director or General Director to manage and run the daily business of the partnership company, instead of being undertaken by a general partner as in the current regulations. There was once an opinion that: “The conditions for the Director or General Director of a business are very vague and quite general. The role of the Director or General Director in a business is very important, which can affect the effectiveness of business operations, so the business itself will choose capable individuals to appoint. The State does not need/should not interfere in this matter” (Vietnam Chamber of Commerce and Industry and The World Bank, 2017, page 19).

For a partnership auction company, professional activities of auctioneers and business operations are two different categories, requiring different professional experience and expertise. Therefore, retaining the condition "partnership auction company with one member who is an auctioneer" is necessary in the context of auction in Vietnam today, but the provision "General Director or Director of the auction partnership company as an auctioneer” is unnecessary, and can even lead to the manipulation of the power of the auctioneer in the partnership auction company, especially for companies that only there is only one auctioneer. When the Enterprise Law recognizes the right to agree to hire the Director or General Director of general partners, the partnership auction company, the general partners may also agree to hire the Director or General Director. Auctioneer is dedicated only to his/her profession - running auctions. Of course, if the auctioneer is capable enough to both perform professional activities and manage and operate the company's business activities, he or she can still hold this position. Accordingly, Point a Clause 3 Article 23 of Auction

Law in 2016 should be amended as follows: "[...] *The partnership auction company has at least one general partner who is an auctioneer"*.

4. Conclusion

As a business operating in a special line of business with certain binding conditions from the law, the organizational structure of an auction enterprise is also associated with its unique business line - auction. With the research, analysis and comparison between the provisions of Vietnam's law and the laws of other countries, it shows that the organizational structure of auction enterprise in Vietnam is greatly adjusted from the laws of the State. However, those legal provisions have interfered to the point of greatly limiting the freedom of business in doing business. The urgent and important issue today is the need to change attitudes and views on the role and position of the auction enterprise. The business needs to get rid of the cover of "judicial assistance" that it has been recognized so far. In order for the auction enterprise to conduct business activities to seek profit in the market, it is necessary to change from the legal regulations on business to the partnership company model, which is an urgent issue today. On that basis, amendments to the regulations on the management of the auction enterprise in the provisions of Auction Law also need to be carried out immediately. In addition, there are additional regulations for the title of the secretary of auction operations and specific standards for this title to support the operation of auction business in general and auctioneers in particular.

Most importantly, it is still necessary to immediately establish a specialized agency with auction experts to both license and manage the auction enterprise and the team of auctioneers in Vietnam. The management is professional and strict but does not place heavy emphasis on cumbersome administrative procedures, causing difficulties and inconveniences for business, creating conditions for business to perform well the intermediary role in buying and selling property, thereby, both achieving the profit target of the business while protecting the rights and interests of related parties.

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Digital Marketing: Some Trends in The Context of E-Commerce Development

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ABSTRACT

Social network has developed significantly in recent years. In the era of the Industrial Revolution 4.0, the Digital Marketing industry is changing strongly with digital platforms that are applied the latest technologies. Digital Marketing is marketing activities carried out on digital platforms. Digital marketing is one of the most important strategies of companies. Businesses will no longer approach customers in traditional ways. Instead, electronic information channels will be used, which can be mentioned as: Email, Website, Facebook. Through digital platforms, marketing professionals can boost customers' purchase intention and strengthen the brand image of the business. Therefore, digital marketing plays an important role in increasing the competitive advantage, attracting potential customers and contributing to improving business efficiency of enterprises. This study aims to investigate the conceptual understanding of digital marketing, analyzing some digital marketing trends in Vietnam and offer some recommendations for the businesses in the context of recovering from the COVID-19 pandemic. In order to achieve the purpose of this study, a qualitative research method was selected.

Keywords: Digital marketing, e-commerse platforms, consumers behavior, social media, social networks

1. Introduction

The development of information technology has strongly promoted the increase of digital marketing. Nowadays, companies are interested to increase their capabilities with focus on the purchase intentions of the customers to accept and use the modern marketing means that encourage these companies to integrate and employ digital marketing strategies and focus on the usage of online platforms like social media [1]. The marketing strategies used by the companies in this era of

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internet advancement for the purpose of selling the product are referred to as digital marketing. In the early stages, the concept of digital marketing emerged just to provide the text-based information of products and services offered by the company [2].

In addition to this, digital marketing serves as the platform for advertising while helping the manufacturers in terms of interacting with the customers [3].

After a long period of being affected by the COVID-19 pandemic, the change in consumers' online shopping habits and the explosion of many applications could lead companies to focus on the development of digital marketing. The consumers have spent millions on online shopping since modern applications and smartphones make this process easier and more available with lower costs, and most people spend many hours a day browsing various shopping services [4].

The finding of [5] provides that digital channels such as cell phones, social media and websites have abilities to arouse need understanding step of the consumer buying-decision process specially for high-involvement products. Branded cosmetics could consider as high involvement products. According to [6], the usage of digital channel communication is developing in its way gradually specially in COVID-19 pandemic situation. Now customers are mostly going through digital channel activities while buying any high involvement products such as branded cosmetics.

Moreover, along with individuals customer, now marketers, producers, sellers and companies are using social media to promote their products, encouraging buyer to buy their products, increasing brand awareness, brand loyalty, brand trust and ultimately maximize their profits. Companies also getting feedback from consumer online and then develop their marketing mix accordingly [7].

The concept of digital marketing in the narrow definition of the word means marketing products and services using digital channels, but in the broadest sense of the word, it means the use of digital technologies to attract customers, promote the brand, retain customers and increase sales [8].

There are some research about trends in digital marketing in the world. The study of [9] examines the trends of digital marketing in the context of information society development. These authors report that digital marketing is a method of adaptation to contemporary realities. They also identify and analyze marketing during the COVID-19 pandemic and challenges for the development of digital marketing by using relevant supportive studies. The finding of [10] identifies global digital e-marketing trends in the world. The author use the tools of economic and statistical analysis of modern trends in the development of e-marketing. Moreover, this study considers the current trends of marketing development in the world and predicts the development of digital marketing for the next 5 years. In Vietnam, the study of [11] analyzes market potential and growing condition of digital marketing, the reality of applying digital marketing in Vietnam firms and giving some recommendations for Vietnamese enterprises. The research of [12] shows opportunities for the development of digital marketing in Vietnam in the post COVID-19 pandemic. These authors represent development opportunities for businesses applying digital marketing in production and business activities.

The statistics of [13] shows that the trend of users accessing the Internet and social networking sites is growing strongly in Vietnam. Therefore, digital marketing is a field that businesses need to focus on to survive and thrive. The purpose of this study is to represent theoretical framework of digital marketing. Furthermore, the research study will analyze some trends of digital marketing in Vietnam and give some recommendations for the business in the context of post COVID-19.

2. Literature review

2.1. Definition of digital marketing

A number of research documents provide a detailed insight on Digital Marketing.

The term digital marketing refers to the use of digital channels to market products and services in order to reach consumers. This type of marketing involves the use of websites, mobile devices, social media, search engines, and other similar channels. Digital marketing became popular with the advent of the internet in the 1990s. Digital marketing involves some of the same principles as traditional marketing and is often considered a new way for companies to approach consumers and understand their behavior. Companies often combine traditional and digital marketing techniques in their strategies [14].

The concept of digital marketing could be defined as applications of modern digital technologies integrated with the traditional marketing strategies in order to achieve the ultimate marketing objectives. The companies adopt this new type of marketing also to gain big momentum to support the easy trade through advanced applications found in the smartphones which encourage the trading activities and have become a marketplace [15].

Digital marketing is often confused with online marketing. Nowadays, tablets continue to merge with phones and laptops and apps are now used across multiple devices. Touchscreen is now very common across all devices. Facebook (now Meta) and Amazon have also to become global powerhouses, playing in many markets. It is clear to see that is now much broader than the online channels of the late 1990s and must be embedded into every thing we do. Digital marketing is an integral part of all marketing activities. This includes PR, creative direction, brand, Consumer Relationship Management, retention, product development, pricing, click-throughs and other actions [16].

Digital marketing is the use of technologies to help marketing activities in order to improve customer knowledge by matching their needs [17].

2.2. Brief history of digital marketing

The word Digital Marketing has been first introduced in the 1990s. Fiere competition pushed companies to include more features in their apps, such as advertising, marketing and sales implementation. Marketers have owned large online customers information through Electronic Consumer Relationship Management systems after the Web created. This led to its first searchable banners ad getting listed in 1995, that was the AT&T's "You Can" advertisement and 43 percent of viewers who have seen it have stuck on the commercial during the first few months. With ever more online users as well as the launch of iOS in 2001, consumers began to search for goods and to make decisions about their desires first, rather than contacting a salesman, creating a new challenge for a corporate marketing team. In 2008, business intelligence idea was introduced to address this above issue. Advertising automation support consumers in the segment of business, introduced multi-channel marketing strategies, and received customer data. In 2000 as well as in 2010, online marketing had become more complex, as the explosion of computers capable of receiving digital content contributed to rapid growth. Reports created in 2013 as well as in 2014 indicated development in online marketing. With advancement of technology networks like LinkedIn, Instagram, YouTube and Twitter, customers in everyday life are heavily dependent on digital systems [18].

2.3. Digital marketing channels

Digital marketing aids marketers to reach their products for users through several channels such as email marketing, online advertising, social media marketing, mobile marketing, etc. [19].

2.3.1. Email marketing

Email marketing enable firms or an individual to connect to customers and to send advertisement messages that assist in building brands by creating awareness which further leads to gain customer loyalty [20]. Email marketing is a type of direct marketing that uses email to message or communicate promoting funds to connect audiences [21].

E-mail marketing is an important medium of marketing communication especially for companies seeking to build and maintain closer relationships with customers [22].

2.3.2. Online advertising

Online advertising is a form of promotion that convinces customers to make purchasing decisions and provides information to the audience marketing [19]. The consensus is that online advertising produces positive returns, but the magnitude varies significantly by product category, customer segment, and ad format [23]. Online advertising can help companies promote their products without geographical borders. Online advertising can seizure the chance to reach their users through numerous online platforms, to give awareness of their products, and to increase their sales in the future [24].

Thus, online advertising plays an important role in digital marketing. Online advertising’s effectiveness in purchasing decisions, is fairly used to online advertising with a positive attitude towards online advertising [19].

2.3.3. Social media marketing

Figure 1 shows the alignment that needs to occur between what can be loosely be called “Operations” and the Marketing team in support of Customers. Included in “operations” are the functional areas that control product design and manufacturing, customer service and support polices, warranty services and similar. Instead, it is by changing the product design, the service policy or similar in order to align the expericence with the expectation or to ensure the replicable delivery of “delight”, for example, as Zappos does when it upgrades shipping to “Next Day” for no other reason than to delightfully surprise a customer [25].

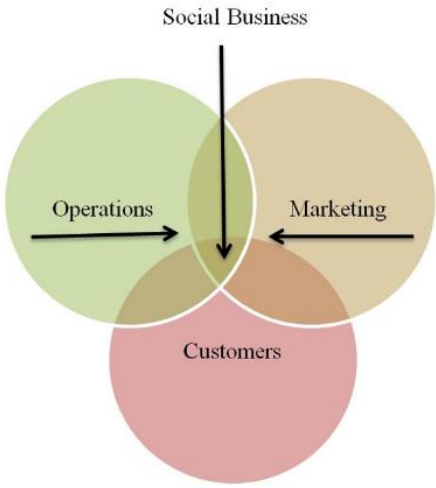

Fig. 1. The Marketing – Operations Connection

Source: [25]

Reference [19] shows that general forms of social media comprise Facebook, Twitter, LinkedIn, and YouTube. At present, social media is a platform for marketers to have conversations with consumers.

2.3.4. Mobile marketing

According to [26], the difference between conventional media marketing and mobile marketing is that the former pushes products to consumers, while the latter pulls individual consumers with media contents that are specifically tailored to their needs.

Digital marketing budget, according to eMarketer is projected to enjoy a thirty- six percent increase in subsequent years as a result of mobile marketing [27]. Mobile marketing has emerged as one of the exciting interactive communication mode channels between firms and customers. Messages through such media affect their decision to buy [19].

The research of [28] implements with systematic mapping method including 121 studies. The result indicates that digital marketing channels dominated by social media marketing and website. The study of [19] analyzes the influence of digital marketing on purchasing decisions in Jordan. The authors showed that digital marketing, such as social media marketing and mobile marketing, has a profound impact on consumer purchasing decisions. Moreover, email marketing as a digital marketing channel is the most negligible influential factor in student purchasing decisions. However, according to the research of [29], email marketing has the strongest relationship and most effect on consumers' buying decision compared with social media, websites and online advertising.

3. Methodology

This study is a type of exploratory research using qualitative analysis. Secondary data and information were collected from various sources including articles, other researchers and some reports relating to this research. For instance, the authors use many figures published by "We are social" which is a global socially-led creative agency with unrivaled social media expertise. Their report provides an overview of digital marketing in the world in general and in Vietnam in particular. In addition, a report published by Google, Temasek and Bain & Company is used to present the current situation of e-commerce development in Vietnam.

The methodology used was that of a literature review.

4. Analyzing some trends of digital marketing in Vietnam

4.1. Content creation will be an essential skill for a businessman

In the past, brick-and-mortar sellers might not have needed to know much about product photography or video techniques, and didn't even need to write about their store. Only big companies and brands have a team of visual designers and content creators. When necessary, businesses can outsource banner services, billboards for their stores.

Today, everything has moved online, shoppers and sellers are on it. The demand to learn about products and stores before buying is increasing on digital platforms. Business people not only need to move their stores online, but also need to change the way they advertise their products. The fierce competition to sell goods on digital platforms depends largely on the images, videos and quality of the livestream hours of online stores. Besides, hiring people will cost a lot and the content on the online store needs to be updated regularly, so possessing content creation skills including photography, video recording and livestreaming is a necessary trend for a businessman.

"Adequate information support is becoming an urgent requirement of the time, because it is information, along with science and human intelligence, producing new knowledge, begin to gradually change the foundations of contemporary society, give it the characteristics of a new type of society – information society" [9].

There are many tools to help online shops quickly grasp the technology and create quick and quality content to meet the needs of the general retail business. For example: Canva, Facebook Footage, Tiktok, Capcut, etc. These tools can easily be registered for free and do not take too long to learn how to use. It is a far from expensive design tools that are difficult to use for non-designers like Adobe Illustrator, Adobe Photoshop, etc.

In short, content creation skills are a trend that business people need to grasp when doing digital marketing.

4.2. The trend of connecting e-commerce platforms

Online stores are transitioning from traditional to online and especially on e-commerce platforms. The COVID-19 pandemic has also exploded this transformation dramatically in recent years. Many famous online business and service platforms such as Amazon, Ebay, Airbnb, Uber, Grab,… or Shopee, Lazada, Tiki, Baemin, Foody, ... in Vietnam have become familiar to consumers.

A store can put its business on many e-commerce platforms for trading. The management of goods, warehouses and transportation is also difficult on separate e-commerce exchanges. And the trend can start from this challenge of real traders. Connect, synchronize stores on different platforms. With the development of technology, this trend is expected to come true not far away.

Maybe there will be a new application that connects the floors, or the floors can share together to support online shops with better business. Many other e-commerce platforms may appear and continue to inherit previous platforms.

It is noted that 73% of shoppers use multiple channels before completing a purchase, connecting e-commerse platforms provides additional revenue streams to traditional pillars of revenue such as in-store commerce. Headless and modular commerce systems like fabric promise scale, speed, and efficiency by leveraging APIs and microservices to connect channels together [30].

Wix Enterprise, Sellercloud, and Ecwid are some multichannel e-commerce software systems that can be helpful for online stores looking for ways to connect their sales channels [31].

In Vietnam, OnCustomer is the first multichannel customer communication platform. This is the product of the Novaon Group. OnCustomer helps the customer care staff communicate with clients anywhere, either on websites, mobile phones or social networks such as Zalo or Facebook [32].

4.3. Multi-channel advertising and Artificial Intelligence in digital marketing

"Omnichannel promoting is a developed type of multichannel advertising that assists you with giving a comprehensive shopping experience to your purchasers" [33]. Omnichannel advertising has been talked about as much over the years as omnichannel selling. Selling on the website, on social networks, on Youtube, on Tiktok, on e-commerce platforms, ... and advertising also needs to run on those channels (email marketing, social marketing, Youtube marketing, Tiktok marketing, etc.).

Shopify Plus, Adobe Commerce, SellerChamp, and Algolia are some of the most popular examples of omnichannel e-commerce platforms [31]. There are three outstanding omnichannel examples in the world, including Amazon, Apple and Sephora. For instance, Amazon has an app and website that are automatically synced and create an omnichannel customer experience by enabling payment methods.

In Vietnam, the Omnichannel mixed-store model will continue to grow with the restructuring of operations from physical stores, warehouses to back office headquarters. The survey of [34] also shows that four of the top six factors that drive customers to shopping, specifically: Door-to-door delivery, and delivery speed (89.22%); Products are diversified and abundant (52.94%); Easy ordering method (50.98%); Save shopping time (49.02%); There are many promotions (49.02%); Do not have to wait in crowded queues and contact many people (34.31%). As a result, creating a more responsive network is the most important for retailers to build in order to stay competitive in omnichannel and will require a change of mindset and operating patterns among retailers [34].

Central Retail Vietnam topped the list retail companies in 2021 [34]. It has also built a winning omnichannel platform in food, modelled after the success achieved in the Thai market, with omnichannel sales accounting for over 8% of Central Retail Vietnam's total sales.

Each advertising channel has different strengths and weaknesses and business people can take advantage to reduce costs with the desired effect. "Various YouTube, Instagram, TikTok influencers, opinion leaders inspire users of these social networks to buy "trendy" goods and services" [9].

Artificial Intelligence (AI) has been applied and deployed in many areas of life, including marketing. "Today, digital marketing is becoming an increasingly important tool for promoting almost any type of product compared to traditional marketing. It is also possible that in the coming years, this type of marketing will become dominant due to the steady growth of its areas of application" [9].

AI algorithms are installed on social platforms, search engines, and applications to help detect and understand customers' consumption habits and then make accurate recommendations that match their needs. and connect to online shops to satisfy customers. Search Engine Optimization techniques, keyword selection or AI tools will be an indispensable thing that businesses or service providers need to pay attention to to determine the needs of target customers. Customers can use AI to choose the best shades and colors for each skin color when buying Sephora's producs [31].

There is another reason why AI is changing the future of digital marketing. It is now much easier to find them online and connect with them. Companies like Google, Amazon, Facebook, and Apple make it possible to recognize user's voice without having to spend too much time learning how to use it.

In Vietnam, AI marketing is a relatively new term. Unilever's CLEAR brand, for instance, pioneered to use AI in marketing activities by launching a digital version of female singer Toc Tien in 2020 with the character's appearance created by 3D technology and a brain developed with Natural Language Processing technology. In another case study, Dove Vietnam used machine learning and AI in the Dove Hair Rewind Women's Day campaign, helping users create their own journey videos, thereby spreading the message "Your hair, your choice" [35].

4.4. The boundaries between retail and wholesale are erased by technology

In difficult times, agents and large companies also put their products on e-commerce platforms or applications to deliver to users. This causes unfair competition between retailers and wholesalers. To overcome these difficulties, entrepreneurs have to renew themselves with new platforms and innovations in marketing. For example, farmers have to livestream products themselves right from the farm, new circular business models also begin to appear and change in accordance with the economic situation at home and abroad.

"Contemporary globalization processes and open markets, on the one hand, increase the opportunities for sales of goods and services of entrepreneurs, on the other hand, lead to increased competition and the need for constant and balanced struggle for a potential customer" [9]. Technology does not distinguish one person or another, but only analyzes and compares based on real data. This is also a challenge as well as an opportunity for newcomers, who quickly grasp technical platforms to apply in their business.

4.5. Platforms, applications and technologies are increasingly diverse and constantly changing

Technology in general develops every second and so does online sales or online marketing. Many social networking platforms were born, many technology applications were invented and built to meet the strong needs of the market and end users. In Vietnam, smartphones and trading applications on them are preferred by customers and are increasingly friendly and convenient. Accommodation services, transportation, experiences and many shopping applications are installed and regularly updated by users.

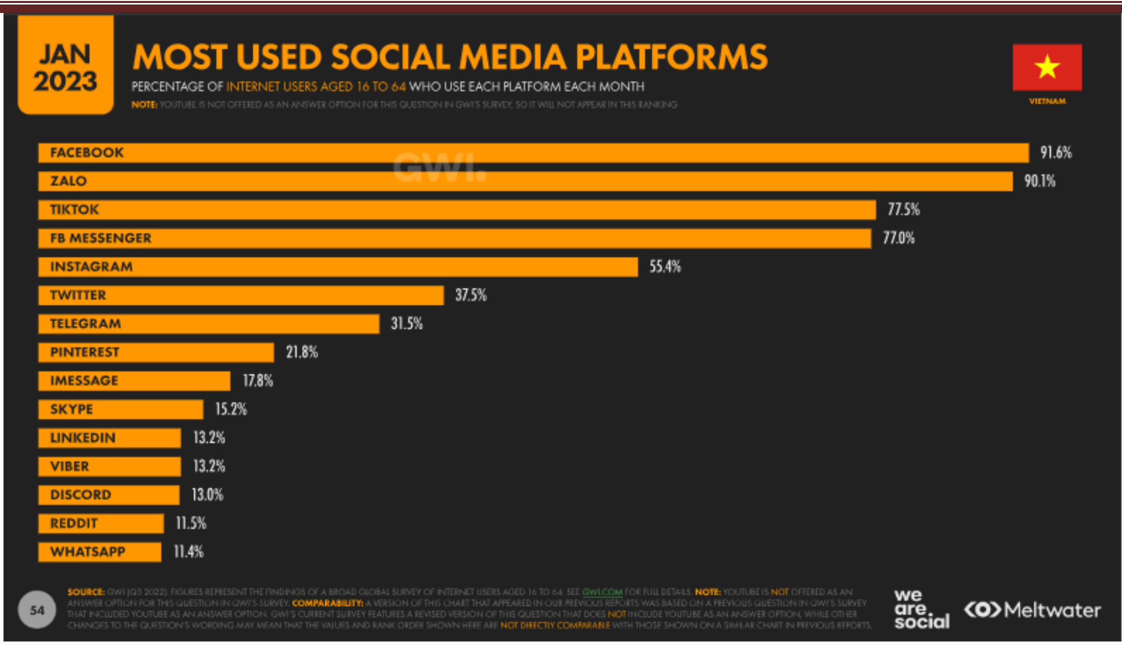

Fig. 2. Statistics about the percentage of the most used social platforms

Source: [13]

According to [13] in January 2023, Facebook and Zalo are the two most active social networking platforms in Vietnam. The majority of users use Facebook, with 91.6%, followed by Zalo, at 90.1%. Therefore, advertising on the Facebook and Zalo platforms is also being used more and more popularly. Facebook Messenger, Tiktok and Instagram also attract many people. Meanwhile, LinkedIn or Reddit is not widely used, with about 11%.

"Under the influence of informatization of society, the spread of innovative development of the economic environment are transformed all its components, including changing approaches to marketing, which uses more and more digital opportunities to increase its efficiency" "Internet services, web portals, e-shops, trading platforms and various online financial and banking services, systems of enterprise software, e-financial services, online learning, e-mail, e-media, e-government have become commonplace today. In these conditions, businesses must be competitive and effectively sell their goods or services to consumers, taking into account the characteristics of informatization of society" [9].

E-commerce platforms, such as Shopee, Lazada, Tiki, Sendo or social networks, such as Facebook, Zalo, Tiktok regularly change and update new policies on the platform. This makes the promotion of products on those platforms must also make appropriate changes and strictly comply with the principles and regulations on that platform.

4.6. Smarter users and the influence of Key Opinion Consumer/ Key Opinion Leader

"Today, the consumer always has access to the Internet, the buyer is more aware due to the availability of information about the desired product, has ample opportunities to communicate with other users, get feedback and real characteristics about the quality of goods or services. Such a consumer makes his informed choice, relying not only on the advice of friends and relatives, but also on reviews available on social networks" [9].

Users now not only buy according to their needs anymore, but also demand higher requirements. They know how to compare prices, know how to look for reputable brands, they evaluate the buying and selling process from ordering to receiving goods,... Customers are getting really smart. This leads to services, products and sellers to improve the quality of their products and services significantly.

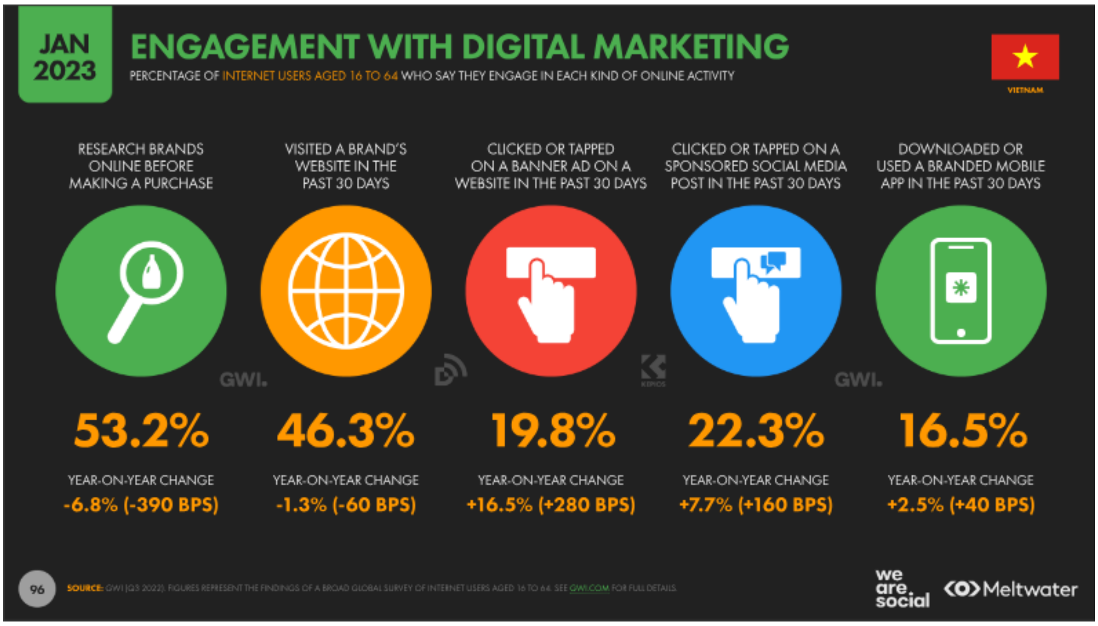

Fig. 3. Statistics about engagement with digital marketing

Source: [13]

Figure 3 shows that the rate of Internet users researching brands online before making a purchase is 53.2%. The second rank belongs to visiting a brand's website in the past 30 days, with 46.3%. These figures are much higher than that of three remain kinds. This shows that customers tend to find out information about brands and products before deciding to buy.

Following the trend outlined in [36], "The Explosion of online video platforms creative multi-screen solution for video" lead to the trend "The influence of Key Opinion Consumer/ Key Opinion Leader (KOC/KOL)" in the coming years. KOC/KOL create a lot of content especially videos about their experiences and share with the community. The finding of [37] shows that KOL is effective in building the brand image. Key Opinion Leaders (KOLs) are primarily employed as ambassadors for promoting the brand image of a company. These endorsers often achieve good results in marketing campaigns. The study of [38] indicates that the KOLs would represent some trustworthy people for other physicians to follow. The research of [39] applies content analysis on YouTube channels. They found an increasing trend of opinion leaders who are authentic and trustworthy on YouTube to promote beauty and fashion products in German.

Many customers are affected by the influence of KOC/KOL on social networks to purchase psychology. They put their trust in product quality through reviews or recommendations of KOC/KOL. Understandably, when one person has influence over many people, they can direct all consumers the way they want. The KOC/KOL rental service is growing rapidly and is also very effective for businesses in promoting their products. The social media users are mainly prone to depend on the comments they receive from friends or family members [29]. According to [40], each dollar invested in the campaign with an influencer is estimated up to 6.5 times. The report of [13] shows the percentage of Internet users aged 16 to 64 who use channels for researching online brand. The rate of social networks channel is the highest, at 58.9%, followed by that of search engines, at

51.3%. The figures for consumer reviewers is 39.6%. This means that KOC has a significantly impact on finding brands of buyers.

Besides, epidemics, political situations, wars between countries, economic recession or inflation that are happening in the world also lead to the psychology of shoppers. They also face many difficulties when prices escalate, so spending can be tighter and more economical.

5. The current situation of e-commerce development in Vietnam in recent years

According to a report by [41] in 2022, 90% of digital consumers plan to maintain or even increase their use of e-commerce platforms in the next 12 months. The majority of consumers focus on "Food Delivery" (60%) and "Online Grocery Purchase" services (54%). Vietnam's economic growth slowed down due to the Covid-19 pandemic, but in 2021, the digital economy in general and e-commerce in particular showed significant development. The total gross merchandise value (GMV) of the e-commerce industry in Vietnam grew dramatically from US $5 billion in 2019 to US $11 billion in 2021 with a growth rate of 47% and is expected to soar to US $32 billion in 2025. Vietnam's digital economy hit US $23 billion in 2022 and is predicted to reach US $50 billion by 2025, making it the fastest growing market in Southeast Asia region thanks to the booming e-commerce sector. E-commerce has become a driving force in the growth of Vietnam's digital economy.

6. Conclusion

The information society changes rapidly and continuously, leading to the need for digital marketing to adapt quickly and appropriately. Doing business on the digital platform has almost dominated the market share compared to the traditional one, everyone owns smart devices and has an internet connection and makes full use of the utilities on that device, including shopping. The convenience and time-saving when shopping through mobile applications or websites has changed the shopping habits of users, especially during the past pandemic years. So surely digital marketing methods must quickly adapt, grasp trends and stay ahead to be an effective and smart way of doing business for businesses and retailers. The gap of categories from large and small companies is narrowing and there is strong competition on e-commerce platforms. Support tools are increasingly friendly, intelligent and regularly upgraded with new development trends. However, everything has its downside, it is necessary to analyze and clearly identify the new needs of customers for sustainable development, which is necessary for businesses in general and retailers in particular.

The study offers some implications for the businesses in developing digital marketing. First, according to the figures 2 about social media platforms used the most, enterprises should advertise on platforms such as Facebook, Zalo, Facebook Messenger, Tiktok. For instance, building a ChatBot system to automatically reply on Messenger to customers effectively and quickly or considering TikTok social network because of its popularity and friendliness. Second, designing a professional website and optimize search engines to increase customers' experiences and brands search. Third, connecting sales channels, advertising channels and product distribution channels based on online platforms. In addition, marketers should implement digital marketing strategies in the direction of content creation on social networking and e-commerce platforms and consider using the influence of KOC/KOL. Last but not least, continuously updating trends in digital marketing and innovating processes, services and products play an important roles in meeting customer demands and keeping up with the pace of the world. However, businesses may face many challenges when applying these solutions suggested above. For instance, keeping up with changing social trends. This can be explained by the fact that the lifetime of a trend is very fast and customers have many choice in making purchasing decisions. In addition, financial difficulties can become a barrier preventing companies from achieving its goals. Moreover, the issue of human resources needs to meet higher requirements when implementing digital marketing strategies.

The limitation of this study is the lack of primary data and based on implementing literature review. Future research directions can include investigating the impact of the trends mentioned above on purchase decisions.

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Gaps Between The Accounting Student's Perception of The Importance of Desired Skills and The Extent Attained

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ABSTRACT

This study explores students' perceptions of the gaps between their expectations about the importance of desired skills in professional practice and the level of skill development attained during accounting studies. The data for the analysis were collected using a survey of 251 accounting students. The findings highlight the importance of several desired skills for future accounting work and emphasize the need to develop Information technology skills in accounting education. The study's results also show that students experience gaps between their expectations and performance in various skill areas. The study extends the literature on such gaps by presenting accounting students' perspectives concerning a comprehensive list of technical and professional skills, including skills related to the latest technologies. It offers suggestions about activities that probably need further emphasis in accounting education to improve professional skills.

Keywords: Accounting education; Desired skills; Importance – Attained gap; Information technology skills; Student perceptions.

1. Introduction

Business changes are occurring swiftly, and employers' requirements regarding accountants have highlighted the need to build various vocational skills to adapt to this context. Specifically, the skills developing among the accounting curricula concentrate on preparing students sufficiently for future roles in accounting by developing vocational skills while studying at the university [1]. Kavanagh & Drennan have highlighted the future skills that accounting will likely need, including communication, personal, interpersonal, problem-solving, and teamwork [2]. Also, Bui & Porter

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point out that accounting education curricula should include the development of competence in vocational skills such as communication, teamwork, problem-solving, information technology, and other related skills [3]. Therefore, universities have started to emphasize developing vocational skills in accounting education curricula so that students can take advantage of such skills, which might make them attractive to employers across multiple work environments [4, 5]. However, the perception of the importance of these skills does not entirely coincide between educators and early-career accountants [5]. Although both agree that vocational skills should be incorporated into the accounting education curricula so students can have a successful accounting career upon graduation.

Tsiligiris & Bowyer point out that the fourth industrial revolution (4IR) presents many opportunities and challenges in the accounting profession [6]. Future accountants will need to train in the implications of 4IR for accounting practice and develop these skills to adapt to change. Through digital technologies, accountants can access previously unobtainable data in real-time, improve data quality through greater accuracy and timeliness, and improve information assurance for decision-making [7]. For these advantages to materialize, accountants must possess new skills, mainly revolving around data analytics. At the same time, accelerating the adoption of digital technologies is expected to automate a substantial portion of accounting tasks [8]. The analysis reveals that necessary skills for future accountants may be summarized into four categories: (a) Ethical skills; (b) Digital skills; (c) Business skills; and (d) Soft skills [6]. The growing importance of soft skills is also identified by research conducted by several international accounting professional bodies (e.g., CIMA, AICPA, and IFAC). More precisely, communication, teamwork, time management, and problem-solving skills are identified by employers as key prerequisites for accounting graduate recruitment and promotion careers [9, 10].

The data and technology skill sets emerged as the most important for the success of early-career accountants. Overseeing data processing was fundamental, including being digitally literate, tech-savvy, and familiar with the software [11]. Early-career accountants and managers strongly believed that technology changed the skills needed for those in the early stages of their careers to succeed. In contrast, technology was believed to change the skills needed for early-career accountants to succeed in the accounting profession. Suarta and colleagues analyzed accounting job announcements to consider information technology skills requirements in the context of the 4.0 technology revolution [12]. The results show that the skills are ranked highest: MS Office, Accounting Software, IT Literacy, Databases, ERP Software, Financial technology and software, Tax software, Data presentation, and other application programs.

The changing business environment and development of the 4IR led to academic documents for teaching and learning needing to be updated on time. The reason for this issue is that competencies acquired through early-career accountant training and desirable competencies from the employer are different. This research investigates the gap between the desired skill of an early-career accountant and the professional skills framework for students majoring in accounting studying at the University of Economics in Ho Chi Minh City to **(1) Measure the awareness of students in accounting about the importance of these skills, (2) Determine the level of desired skill attained during accounting studies in university, and (3) Determine how universities incorporate these skills into accounting curricula.**

This paper begins with this introduction section, and then Section 2 discusses the literature on vocational skills and the professional skills framework. Next, Section 3 discusses the methodology used in the paper. In Section 4, we report empirical results. Finally, Section 5 provides conclusions for the paper.

2. Literature review

2.1. Literature review

2.1.1. Profession skills framework

Jackson and colleagues proposed a capabilities framework for evaluating student performance in a work-integrated learning (WIL) setting that includes ten competencies [13] (Table 1). Industry 4.0 trends that particularly impact businesses are disruptive technologies and evolving work processes. The study asserts that the existing graduate capability framework was deemed fit for purpose. However, higher education needs changes to better capture current labor market demands. The study highlighted the need for digitally literate graduates who are resilient, adaptable, and able to work and communicate well with others from diverse backgrounds in virtual and face-to-face settings.

Table 1. A capabilities framework

Skills	**Items**
Data and technology	4
Working effectively with others	6
Communicating effectively	6
Self-awareness	4
Thinking critically	2
Problem-Solving	4
Enterprise	3
Self-management	4
Responsibility and accountability	4
Professionalism	6

Source: Jackson and colleagues [13]

To continue evaluating the professional skills framework while technological advances are applied in accounting careers, Jackson and colleagues investigated how early-career accountants (ECAs) and organizations value different skills among ECAs, how technology is impacting these skills, and the preparedness of ECAs for future technological work in various organizational settings [14]. Most ECAs and managers believed new technology influenced the skills required in accounting, yet the impact was considered excellent among ECAs, and the effects varied by the organization. The finding answered the question of how and why skills for success in accounting are evolving in the context of new technology and how prepared ECAs are for technology from both their and recruiters' perspectives.

2.1.2. Skills Required in accountant graduates

Tempone & Martin identified the need for communication, analytical, and problem-solving skills among accounting curricula because the accounting profession organization certainly expects such skills, and they are essential tools in interpreting financial and non-financial data within a business context [15]. Furthermore, Tan & Veal indicate that accounting educators and practitioners expect trainee accountants to be excellent communicators, problem solvers, and critical thinkers [16]. Kavanagh & Drennan have highlighted the future skills that accounting is likely to need, concluding that these skills include communication, personal, interpersonal, problem-solving, and teamwork skills [2]. They suggest that in accounting programs, more attention should be paid to training students in those skills that would help graduates succeed in the changing environment, and it seems that these comprise professional skills. Hassall and colleagues [17] pointed out a listing of the vocational skills: (1) Communication skills; (2) Group working skills; (3) Problem-solving skills; (4) Time management; (5) Information technology; and (6) Other skills, values, and knowledge and investigated the recognition that it is vital for accountants between employers and students. There is broad agreement between employers and students on the areas to prioritize. However, there are differences in the specific priorities. Employers and students agree that vocational skills development should be integrated into the accounting curriculum. CPAs, CMAs, and Auditors' communication skills, Interpersonal Skills, and Problem-solving skills are essential vocational skills the recruiter requires [18]. Similarly, Alshbili & Elamer [5] inherited the skills from the study of Hassall and colleagues [17] to investigate the relative importance of vocational skills between accounting educators and final-year accounting students. The findings indicate a general agreement between the two groups' opinions that vocational skills required by accounting employers encompass technical and cognitive skills and transferable skills such as communication, self-reflection, teamwork, and organizational skills. The results of this paper should be of interest to accounting educators, curriculum designers, and faculty responsible for reviewing and updating accounting curricula.

2.2. Proposed Desired Skills of Accounting in a technology context

The accounting profession has experienced significant changes in its adoption and use of new technology [19], driven by trends in, for example, intelligent automation, blockchain, big data, and cloud-based software [20, 21]. Indeed, new technology is considered one of the greatest business challenges for accountants in public practice [22] and is placing substantial demands on the profession. Accountants, especially ECAs, are now expected to have the expertise and skills to manipulate big data [23], be able to use and leverage emergent technologies, and have a thorough understanding of how they interact with and potentially change existing accounting knowledge and standards. In addition to technical skills and knowledge, essential skills include communication, critical thinking, teamwork, and analytical skills [24]. University efforts to foster these skills in emerging accountants focus on active and problem-based learning, which encourages collaboration, analysis, and reflection [25], authentic learning, where students engage with industry in the curriculum; and integrative learning, where they reflect on capability and self-development [26]. Universities' success, on the different hand, is influenced by overstuffed curricula, accrediting standards, and skill in innovative and effective teaching [27]. Consequently, stakeholders remain concerned that accounting graduate talent is not keeping pace with labor market demands, thereby highlighting a divergence between graduate skills and employer expectations [24, 25].

It is apparent that new technologies are transforming labor market requirements, leading to gaps between accounting employers' needs and higher education provision on requisite skills [28]. Although technological literacy is the most highly desired skill among new accountants [29], and preparing graduating students for new technologies is considered integral to undergraduate accounting curricula [19], it remains the top skill gap in the profession [30]. Collaborative and communication skills, commercial awareness, and wider sector knowledge are considered integral to contemporary work yet are underdeveloped in accountants [30, 22]. The accounting students expected all defined skills, on average, to be somewhat essential in their future work. However, professional and technological skills were ranked among the most important ones. Self-improvement and learning, self-management (time management included), and critical thinking, all belonging to professional skills, were essential skills, consistent with the findings of Kavanagh and Drennan [2], who also conclude that skills in areas such as continuous learning, analysis, critical evaluation, or time management are regarded as the most important ones by students [31]. Therefore, in this study, using vocational skills from the studies of Hassall and colleagues [17, 18], the revised scale of skills by Jackson and colleagues [11, 14] to give vocational skills required by ECAs in a new technological context. The research tests the perception of the importance of students' skills and then investigates to what extent students get these skills from accounting curricula.

Table 2. The vocational skills

Skills	Items
Communication Skills (CS)	1. Allow students or you to present and defend points of view and work outcomes in writing to peers and staff. 2. Allow students or you to verbally present and defend points of view and work outcomes to peers and staff. 3. Use of visual aids in presentations. 4. Listen effectively to gain information and understand opposing points of view. 5. Critically read written works, making judgments on their relevance and value.
Team-working skills (TWS)	6. Work with others in teams. 7. Organize and delegate tasks. 8. Assume leadership positions when necessary.
Problem-solving Skills (PSS)	9. Identify and solve unstructured problems. 10. Find creative solutions. 11. Integrate multidisciplinary knowledge to solve problems. 12. Perform critical analysis.

Skills	Items
Time management skills (TMS)	13. Achieve prescribed goals and outcomes in a timely and resourceful manner. 14. Complete tasks in a self-directed manner in the absence of supervision. 15. Manage one's own time effectively to accomplish goals. 16. Organize the workloads to meet conflicting demands and unexpected requirements. 17. Organize the workloads to recognize and meet tight, strict, and coinciding deadlines. 18. Select and assign priorities within coincident workloads.
Information Technology Skills (ITS)	19. Use of accounting software. 20. Knowledge of information sources 21. Read and analyze numerical data and apply it to a given context. 22. Select, use, and leverage appropriate technology to address diverse tasks and problems. 23. Be able to interpret data and use it in an informed way. 24. Retrieve, interpret, evaluate, and appropriately use information in a range of digital and printed formats.
Other skills, values, and knowledge (OS)	25. Commit to life-long learning. 26. Ability to develop methods of effective learning. 27. Behave in a manner that is sustainable and consistent with company policy and/or broader community values. 28. Accept responsibility for your own decisions, actions, and work outcomes. 29. Behave according to relevant professional standards, values, and codes of conduct. 30. Have a comprehensive and global vision of the organization.

Source: Hassall and colleagues (2003), Jackson and colleagues (2020), and Authors.

3. Methodology

3.1. Sample

The survey was sent to second-year, third-year, and final-year accounting students to address the first research question. Final-year students studied for the old training program, and 2nd and 3rd-year students used the new Accounting program. The Accounting program at UEH focuses on developing soft skills and updating knowledge about 4.0 technology. The program provides in-depth knowledge of accounting by Vietnamese regulations and international standards. Students are trained to use and apply 4.0 technology in accounting, including using advanced accounting software and data mining through artificial intelligence and machine learning, big data. The program provides the opportunity to become familiar with the modern accounting environment and apply new technology to solve real-world problems. In addition, students are encouraged to develop soft skills such as communication, teamwork, leadership and time management. The program also allows students to participate in extracurricular activities, real-life projects and interact with businesses to forge practical skills and build industry networks. The program's core objective is to instil passion and motivation in students to continue their studies and research in the field of accounting and at the same time to train high-quality accounting talent ready to adapt to 4.0 technology and professional development in an international environment.

Respondents were asked to rate the importance of each skill on a five-point scale from 1 = 'unimportant' to 5 = 'very important' on a list of 30 vocational skills (Table 2), divided into six skills: communication skills (5 items), team-working skills (3 items), problem-solving skills (4 items), time management skills (6 items), information technology skills (6 items), and other related skills, values, and knowledge (6 items). Also, the students self-evaluated the acquisition level of career skills in the training program from 1 = "weak" to 5 = "excellent" and then they gave their opinion on the impact of Industry 4.0 on accountants and auditors. The open question was used to investigate the need to integrate vocational skills into the training program and what activities universities need to organize to improve career skills for upcoming graduates.

3.2. Descriptive statistics

The results received 251 responses from students, of which 75 final-year students accounted for 29.9%, the number of 2nd and 3rd-year students was 39, and 137 accounted for 15.5% and 54.6%, respectively.

Table 3. Profile of participants (N = 251)

Year student	Respondents	Percentages
2nd-year student	39	15.5
3rd-year students	137	54.6
Final-year students	75	29.9
Total	**251**	**100**

4. Results and Discussion

4.1. Students' Perception of the Importance of vocational skills

Table 4 presents the outcomes of the student's perception regarding the significance of vocational skills. The average scores of the skills were relatively high, ranging from 3.93 to 4.53, with an overall average of 4.26. These findings indicate that a majority of accounting students recognized the importance of vocational skills for preparing themselves for future employment opportunities.

Table 4. Students' perceptions of the importance of vocational skills

Variables	Mean	Std. Deviation	Variables	Std. Deviation	Mean
iCS1	4.24	0.696	iTMS4	4.33	0.637
iCS2	4.22	0.731	iTMS5	4.21	0.748
iCS3	4.28	0.671	iTMS6	4.35	0.642
iCS4	4.47	0.683	iITS1	4.27	0.767
iCS5	4.43	0.638	iITS2	4.27	0.687
iTWS1	4.49	0.615	iITS3	4.29	0.685
iTWS2	4.20	0.675	iITS4	4.24	0.684
iTWS3	3.95	0.806	iITS5	4.19	0.729
iPSS1	4.04	0.763	iITS6	4.13	0.764
iPSS2	4.13	0.721	iOS1	4.12	0.804
iPSS3	4.20	0.716	iOS2	4.23	0.683
iPSS4	3.93	0.814	iOS3	4.18	0.668
iTMS1	4.53	0.622	iOS4	4.51	0.616
iTMS2	4.37	0.654	iOS5	4.45	0.633
iTMS3	4.19	0.705	iOS6	4.21	0.702

The study revealed a consensus among the three groups of accounting students regarding the significance of vocational skills. These skills were ranked highly (ranked 1-10). The surveyed accounting students particularly emphasized the importance of the following skills: listening effectively to gain information and understand opposing points of view; critically reading written works and making judgments on their relevance and value; working with others in teams; achieving prescribed goals and outcomes in a timely and resourceful manner; accepting responsibility for own decisions, actions, and work outcomes; and behaving according to relevant professional standards, values, and codes of conduct. The detailed outcomes are presented in Table 5.

Table 5. Vocational skills with a high-ranked average score

	The 2nd-year students			The 3rd-year students			The final-year students		
Variables	*Mean*	*Rank*	*SD*	*Mean*	*Rank*	*SD*	*Mean*	*Rank*	*SD*
iCS4	4.33	10	0.806	4.44	3	0.685	4.60	3	0.593
iCS5	4.46	3	0.756	4.42	5	0.627	4.44	6	0.598
iTWS1	4.44	5	0.598	4.44	4	0.651	4.60	2	0.545
iTMS1	4.44	5	0.718	4.49	1	0.620	4.64	1	0.561
iOS4	4.56	1	0.598	4.47	2	0.654	4.55	4	0.552
iOS5	4.51	2	0.683	4.41	6	0.670	4.51	5	0.529

4.2. Student Self-assessment of skills attained

Table 6 displays the outcomes of the self-assessment conducted by accounting students on their professional skills achievement. The average score of the skills was evaluated at 3.7, with a minimum of 3.2 and a maximum of 4.1. These findings indicate that the accounting students' performance in professional skills is moderate, implying that they need to invest more effort to enhance their professional skills.

Table 6. Student self-assessment of skill attained

Variables	Mean	SD	Variables	Mean	SD
aCS1	3.72	0.733	aTMS4	3.85	0.742
aCS2	3.55	0.796	aTMS5	3.57	0.852
aCS3	3.60	0.835	aTMS6	3.81	0.756
aCS4	4.03	0.729	aITS1	3.20	1.067
aCS5	3.73	0.799	aITS2	3.50	0.901
aTWS1	4.06	0.729	aITS3	3.50	0.901
aTWS2	3.72	0.835	aITS4	3.51	0.846
aTWS3	3.55	0.943	aITS5	3.35	0.948
aPSS1	3.42	0.879	aITS6	3.37	0.930
aPSS2	3.51	0.836	aOS1	3.86	0.782
aPSS3	3.49	0.901	aOS2	3.74	0.770
aPSS4	3.44	0.867	aOS3	3.85	0.749
aTMS1	3.85	0.854	aOS4	4.10	0.746
aTMS2	3.83	0.772	aOS5	4.06	0.732
aTMS3	3.77	0.806	aOS6	3.62	0.793

There are differences between the mean score of importance and attained vocational skills. The comparison results show that the skills achieved by students have yet to reach the expected level. Skills with a difference of 0.6 or more are 13 items in the communication and time management group (see Table 7). Notably, six out of six skills in information technology have a difference greater than 0.6, which shows that students need to be more equipped with IT to meet job requirements in the context of Industrial 4.0.

Table 7. Gaps between Importance-Attained Vocational skills

Variables	Importance	Attained	Different	Variables	Importance	Attained	Different
iCS1	4.24	3.72	-0.52	iTMS4	4.33	3.85	-0.48
iCS2	**4.22**	**3.55**	**-0.67**	**iTMS5**	**4.21**	**3.57**	**-0.64**
iCS3	**4.28**	**3.60**	**-0.68**	iTMS6	4.35	3.81	-0.54

Variables	Importance	Attained	Different	Variables	Importance	Attained	Different
iCS4	4.47	4.03	-0.44	**iITS1**	**4.27**	**3.20**	**-1.07**
iCS5	**4.43**	**3.73**	**-0.70**	**iITS2**	**4.27**	**3.50**	**-0.77**
iTWS1	4.49	4.06	-0.43	**iITS3**	**4.29**	**3.50**	**-0.79**
iTWS2	4.20	3.72	-0.48	**iITS4**	**4.24**	**3.51**	**-0.73**
iTWS3	3.95	3.55	-0.40	**iITS5**	**4.19**	**3.35**	**-0.84**
iPSS1	**4.04**	**3.42**	**-0.62**	**iITS6**	**4.13**	**3.37**	**-0.76**
iPSS2	**4.13**	**3.51**	**-0.62**	iOS1	4.12	3.86	-0.26
iPSS3	**4.20**	**3.49**	**-0.71**	iOS2	4.23	3.74	-0.49
iPSS4	3.93	3.44	-0.49	iOS3	4.18	3.85	-0.33
iTMS1	**4.53**	**3.85**	**-0.68**	iOS4	4.51	4.10	-0.41
iTMS2	4.37	3.83	-0.54	iOS5	4.45	4.06	-0.39
iTMS3	4.19	3.77	-0.42	iOS6	4.21	3.62	-0.59

To ensure reliability for our opinion, we used the paired samples test to test the difference in the mean of the importance of desired skills and the extent attained with 95% confidence. The result has 30 pairs corresponding to 30 skills with sig. = 0.000, this means that there is a difference between the importance and the degree of attainment of vocational skills by accounting students.

We also made a comparison based on the self-assessment results of accounting students among the three groups. These results are presented in Table 8. Contrary to popular belief that final-year students have the most acquired vocational skills, our results are the opposite. These numbers for the 2nd and 3rd-year students are more impressive than for the final-year students. We boldly explain that this is due to the difference in curricula between these two groups of students. The current accounting training program has added extracurricular activities to equip students with teamwork and problem-solving skills. Students can participate in early internship programs through professional competitions, specialized English, and talks by accounting experts working at the Big 4. These have helped students learn more about their careers. The goals of sustainable development, accounting, and auditing integration are widely communicated to students, affecting their perception of careers in the new context.

Table 8. Student's self-assessment Vocational skills attained

	The 2nd-year students			**The 3rd-year students**			**The final-year students**		
Variables	***Mean***	***Rank***	***SD***	***Mean***	***Rank***	***SD***	***Mean***	***Rank***	***SD***
Communication skills									
aCS1	3.72	17	0.686	3.71	12	0.787	3.75	12	0.660
aCS2	3.46	28	0.822	3.58	17	0.792	3.52	19	0.795
aCS3	3.74	16	0.966	3.57	18	0.838	3.57	17	0.756

	The 2nd-year students			The 3rd-year students			The final-year students		
Variables	*Mean*	*Rank*	*SD*	*Mean*	*Rank*	*SD*	*Mean*	*Rank*	*SD*
aCS4	**4.00**	**5**	**0.858**	**4.00**	**4**	**0.697**	**4.09**	**3**	**0.720**
aCS5	3.9	9	0.821	3.7	14	0.843	3.69	14	0.697
Team working skills									
aTWS1	**4.05**	**4**	**0.724**	**4.05**	**1**	**0.741**	**4.09**	**4**	**0.720**
aTWS2	3.95	8	0.887	3.69	15	0.881	3.67	15	0.704
aTWS3	3.62	22	0.907	3.55	20	1.014	3.51	20	0.828
Problem-solving skills									
aPSS1	3.69	19	0.922	3.48	27	0.908	3.17	29	0.742
aPSS2	3.59	23	0.938	3.55	19	0.849	3.39	24	0.751
aPSS3	3.67	21	0.927	3.53	22	0.94	3.33	25	0.794
aPSS4	3.59	24	0.938	3.5	25	0.925	3.25	27	0.68
Time-management skills									
aTMS1	3.87	13	0.894	3.8	8	0.906	3.92	5	0.731
aTMS2	3.87	12	0.732	3.83	6	0.828	3.81	10	0.692
aTMS3	3.87	11	0.732	3.7	13	0.902	3.84	8	0.638
aTMS4	**4.05**	**3**	**0.759**	**3.78**	**9**	**0.783**	**3.88**	**7**	**0.636**
aTMS5	3.74	15	0.751	3.54	21	0.939	3.55	18	0.722
aTMS6	3.79	14	0.767	3.82	7	0.824	3.80	11	0.615
Information technology skills									
aITS1	3.33	30	1.034	3.25	30	1.076	3.05	30	1.064
aITS2	3.54	25	1.022	3.51	23	0.908	3.45	21	0.827
aITS3	3.54	25	1.022	3.51	23	0.908	3.45	21	0.827
aITS4	3.72	18	0.944	3.49	26	0.841	3.44	23	0.793
aITS5	3.49	27	0.942	3.39	28	1.016	3.20	28	0.805
aITS6	3.46	29	0.913	3.36	29	0.937	3.33	26	0.935
Other skills, values and knowledge									
aOS1	3.97	6	0.811	3.84	5	0.807	3.83	9	0.724
aOS2	3.9	9	0.718	3.72	11	0.776	3.71	13	0.785
aOS3	**3.97**	**7**	**0.873**	**3.78**	**9**	**0.774**	**3.91**	**6**	**0.619**

	The 2nd-year students			**The 3rd-year students**			**The final-year students**		
Variables	***Mean***	***Rank***	***SD***	***Mean***	***Rank***	***SD***	***Mean***	***Rank***	***SD***
aOS4	**4.26**	**1**	**0.85**	**4**	**3**	**0.717**	**4.21**	**1**	**0.722**
aOS5	**4.13**	**2**	**0.833**	**4.01**	**2**	**0.767**	**4.11**	**2**	**0.606**
aOS6	3.67	20	0.838	3.63	16	0.831	3.59	16	0.699

We found some of the vocation skills to be highly achieved by all students on the rank of 1-10, including: Listening effectively to gain information and to understand opposing points of view; Working with others in teams; Organizing the workloads to meet conflicting demands and unexpected requirements; Behaving in a manner that is sustainable and consistent with company policy and/or broader community values; Accepting responsibility for your own decisions, actions, and work outcomes, and Behaving according to relevant professional standards, values, and codes of conduct.

However, by using the ANOVA test, we conclude that there is no difference in the self-assessment results between the three groups of accounting students (Sig.> 0.05). The results of the analysis are presented in Table 9.

Table 9. One-Way ANOVA analysis results

	Mean Square	**F**	**Sig.**
aCS	0.041	0.110	0.896
aTWS	0.209	0.438	0.646
aPSS	0.304	0.879	0.416
aTMS	0.245	0.571	0.566
aITS	0.494	0.733	0.481
aOS	0.376	1.090	0.338

4.3. Integrating vocational skills in the accounting curriculum

In addition to examining the accounting students' perceptions of the significance of vocational skills and evaluating their self-assessment of skill attainment, we are also interested in their perspectives on "The impact of the Industrial Revolution 4.0 on accountants and auditors." The findings reveal that 89.1% of the participants agree that accountants need to modify their working approaches to cope with the swift changes brought about by the Industrial Revolution 4.0.

To answer the third research question, “How will universities integrate these skills into accounting curricula?”, we concluded our survey with an open-ended question: “What measures do you think universities should take to enhance career skills for students who are about to graduate?”. We received numerous comments and recommendations from accounting students, which we have categorized and presented in Table 10.

Table 10. Synthesize suggested activities to improve the vocational skills of accounting students

Group	Suggested activities
Curriculum	• Teaching associated with practice should be reinforced rather than entirely theory-based; • Integrate practical knowledge and skills in teaching; • Skills training courses and activities to improve skills for the subjects; • Consulting for certification exams like ACCA and CPA using accounting software like MISA,... and accounting-audit support tools.
Technology to support careers	• Organize seminars to introduce tools and technologies to support careers; • Training skills in analyzing and processing data by software in practice.
Enterprise experience	• Organize for students to visit the reality of accounting and auditing companies; • Open short-term internships in enterprises; • Diversify and specialize in extracurricular activities; • Career orientation activities, exchange of career perspectives between students and Key Opinion Leaders (KOLs),**...**
Professional competitions	• Organize competitions related to majors so that students can approach the profession and know their qualifications; • Organize a contest on accounting and auditing software that students must participate in so that they can learn on their own.
Extracurricular	• Hold a simulation about the job application process; • Exchange activities with Sharks; • Contact sessions with speakers, integrated into teaching and learning methods, give students real-life experiences; • Activities to update knowledge about current and future innovations and convey information about the actual working environment compared to the university.

Source: Synthesized by authors

The accounting training program at UEH has been built to supplement skills and subjects on information technology in accounting; activities to practice communication skills, problem-solving, and teamwork; Academic competitions; and practical experiences have been implemented for students. Each semester, students can participate in at least one practical experience or thematic report from businesses; in the 3rd year, students can join the internship program early if they meet the employer's requirements use. In addition, academic clubs such as accounting and auditing clubs are also a place for students to train in professional knowledge through academic competitions and participate in student research competitions learn. In some specialized modules, students can interact with accountants and auditors at enterprises to share career prospects, knowledge to accumulate, and skills to practice to adapt to the real environment. With the changes in the training program, through the comparison results in Table 7, it is possible to see the difference between the groups of students in the degree of acquiring professional skills. However, the level of achievement is not large enough to make a difference in the level of achievement between different groups of students. Therefore, it can be seen that the university should consider the suggestions of students in Table 10 to develop a training program, combining skills training activities to help all staff have the opportunity to enjoy the full benefits of the university's set of improvements.

Also, from Table 7, , it is shown that IT skills are quite common, while studies confirm that accounting professionals also need digital and technological skills. Therefore, teaching in accounting programs should be updated, and the increasing adoption of new technologies should shape the practices related to the design, development, or implementation of accounting curricula. The findings coincided with those of Tsiligiris & Bowyer [6]. According to Qasim & Kharbat [19], Jackson and colleagues [14] also recommend paying more attention and devoting more resources to preparing future accountants for future technology demands.

Regarding improving the practical experience, career contests, and extracurricular activities, universities should consider modelling work-integrated learning, according to a talk by a specialist in accounting. Incorporated theory and practice, applying IT to solve cases in the practice of every subject. This means that besides updating curricula, changing teaching and learning methods is vitally important; universities, enterprises, and professional organizations in accounting and auditing train accountants in stakeholders' adaptive requirements.

5. Conclusion

The primary aim of this study was to investigate accounting students' perceptions regarding the gaps between their expectations and the level of skill development attained during their accounting studies, focusing on desired skills in professional practice. The findings revealed that accounting students across all groups recognized the importance of communication, teamwork, problem-solving, information technology, time management, and other related competencies for a successful accounting career in the future. Interestingly, the study also found that the students perceived themselves to possess these crucial vocational skills at a reasonably developed level.

These identified skills encompassed various aspects, including effective listening to gather information and understand divergent viewpoints, assuming responsibility for one's decisions, actions, and work outcomes, and adhering to relevant professional standards, values, and codes of conduct. The significance of addressing these gaps in accounting education to better prepare students for professional practice was emphasized.

Based on the self-assessment outcomes, it became evident that students require additional time and support to enhance their readiness for future careers based on their current skill set. Consequently, the integration of these skills into the accounting curriculum is crucial. The students' suggestions emphasized the need for extensive research and appropriate implementation of solutions in areas such as curriculum design, career support technology, business experiences, career competitions, and extracurricular activities to enhance students' career readiness.

This study makes a noteworthy academic contribution by shedding light on the skills where accounting students perceive gaps between their expectations and their actual skill development. It serves as a foundation for further research endeavors and the advancement of accounting education, allowing educators and curriculum designers to align their programs more effectively with the evolving demands of the accounting profession. The practical implications of the study suggest specific activities, teaching methodologies, and curriculum enhancements aimed at bridging the identified gaps. By prioritizing the development of communication, teamwork, problem-solving, information technology, time management, and other relevant competencies, accounting education can better equip students with the necessary skills and competencies for success in the dynamic accounting field.

6. Limitations and further research in the future

This study acknowledges several limitations that should be considered. Firstly, the sample size and response rate were relatively small, and the research was conducted at a single university, limiting the generalizability of the findings. Additionally, the overrepresentation of third-year students in the sample may introduce bias and affect the overall validity of the results. Furthermore, it is essential to recognise that the conclusions drawn from this study are based solely on the subjective perceptions of the student participants, and their expectations may need to fully align with the actual future importance of different skills or the comprehensive coverage of skills in accounting curricula.

Future research avenues can be explored to address these limitations and advance the field. For instance, investigating the perspectives and experiences of diverse stakeholders such as professional accountants, educators, and recruiters would provide a more comprehensive understanding of integrating skills in accounting training curricula. Additionally, examining the specific skills that significantly impact professional accounting practices or align with recruiter expectations would be valuable for improving the career readiness of accounting students.

Acknowledging these limitations and undertaking future research can attain a more robust and holistic understanding of the skills gap in accounting education. This will facilitate the alignment of curricula with the evolving needs and expectations of the accounting profession, ultimately enhancing the preparedness of accounting students for their future careers.

APPENDIX

Appendix A. Skill level importance by the second-year students, third-year students, and final-year students of accounting

	The 2nd-year students			**The 3rd-year students**			**The final-year students**		
Variables	**Mean**	**Rank**	**SD**	**Mean**	**Rank**	**SD**	**Mean**	**Rank**	**SD**
iCS1	4.28	15	0.724	4.23	15	0.728	4.23	14	0.628
iCS2	4.18	24	0.756	4.20	20	0.765	4.29	11	0.653
iCS3	4.28	16	0.647	4.26	11	0.689	4.31	10	0.657
iCS4	**4.33**	**10**	**0.806**	**4.44**	**3**	**0.685**	**4.60**	**3**	**0.593**
iCS5	**4.46**	**3**	**0.756**	**4.42**	**5**	**0.627**	**4.44**	**6**	**0.598**

	The 2nd-year students			**The 3rd-year students**			**The final-year students**		
Variables	**Mean**	**Rank**	**SD**	**Mean**	**Rank**	**SD**	**Mean**	**Rank**	**SD**
iTWS1	**4.44**	**5**	**0.598**	**4.44**	**4**	**0.651**	**4.60**	**2**	**0.545**
iTWS2	4.26	18	0.677	4.19	22	0.670	4.19	19	0.692
iTWS3	3.97	29	0.778	3.95	30	0.860	3.93	29	0.723
iPSS1	4.15	26	0.779	4.06	28	0.802	3.95	28	0.676
iPSS2	4.18	23	0.756	4.19	23	0.681	3.99	27	0.762
iPSS3	4.21	19	0.695	4.20	21	0.726	4.20	18	0.717
iPSS4	3.95	30	0.793	3.96	29	0.817	3.87	30	0.827
iPSS5	**4.44**	**5**	**0.718**	**4.49**	**1**	**0.620**	**4.64**	**1**	**0.561**
iTMS1	4.28	13	0.605	4.39	7	0.678	4.40	7	0.637
iTMS2	4.18	24	0.683	4.21	18	0.712	4.15	23	0.711
iTMS3	4.28	13	0.647	4.37	8	0.642	4.28	12	0.627
iTMS4	4.31	11	0.694	4.22	16	0.764	4.15	23	0.748
iTMS5	4.36	8	0.778	4.35	9	0.625	4.35	9	0.604
iITS1	4.44	4	0.718	4.25	13	0.784	4.21	16	0.759
iITS2	4.28	16	0.826	4.27	10	0.659	4.28	13	0.669
iITS3	4.38	7	0.711	4.22	16	0.704	4.36	8	0.629
iITS4	4.31	12	0.655	4.26	12	0.707	4.16	22	0.658
iITS5	4.21	21	0.732	4.20	19	0.739	4.16	21	0.717
iITS6	4.08	27	0.774	4.15	26	0.726	4.11	25	0.831
iOS1	4.08	27	0.929	4.15	27	0.791	4.08	26	0.767
iOS2	4.21	22	0.801	4.24	14	0.670	4.23	15	0.649
iOS3	4.21	19	0.732	4.18	24	0.696	4.19	20	0.586
iOS4	**4.56**	**1**	**0.598**	**4.47**	**2**	**0.654**	**4.55**	**4**	**0.552**
iOS5	**4.51**	**2**	**0.683**	**4.41**	**6**	**0.670**	**4.51**	**5**	**0.529**
iOS6	4.33	9	0.806	4.18	25	0.696	4.20	17	0.658

Appendix B. Student self-assessment of skill acquisition when comparing three groups of students

	The 2nd-year student			**The 3rd-year students**			**The final-year students**		
Variables	**Mean**	**Rank**	**SD**	**Mean**	**Rank**	**SD**	**Mean**	**Rank**	**SD**
aCS1	3.72	17	0.686	3.71	12	0.787	3.75	12	0.660
aCS2	3.46	28	0.822	3.58	17	0.792	3.52	19	0.795
aCS3	3.74	16	0.966	3.57	18	0.838	3.57	17	0.756
aCS4	**4.00**	**5**	**0.858**	**4.00**	**4**	**0.697**	**4.09**	**3**	**0.720**
aCS5	3.90	9	0.821	3.70	14	0.843	3.69	14	0.697
aTWS1	**4.05**	**4**	**0.724**	**4.05**	**1**	**0.741**	**4.09**	**4**	**0.720**
aTWS2	3.95	8	0.887	3.69	15	0.881	3.67	15	0.704
aTWS3	3.62	22	0.907	3.55	20	1.014	3.51	20	0.828
aPSS1	3.69	19	0.922	3.48	27	0.908	3.17	29	0.742
aPSS2	3.59	23	0.938	3.55	19	0.849	3.39	24	0.751
aPSS3	3.67	21	0.927	3.53	22	0.940	3.33	25	0.794
aPSS4	3.59	24	0.938	3.50	25	0.925	3.25	27	0.680
aPSS5	3.87	13	0.894	3.80	8	0.906	3.92	5	0.731
aTMS1	3.87	12	0.732	3.83	6	0.828	3.81	10	0.692
aTMS2	3.87	11	0.732	3.70	13	0.902	3.84	8	0.638
aTMS3	4.05	3	0.759	3.78	9	0.783	3.88	7	0.636
aTMS4	3.74	15	0.751	3.54	21	0.939	3.55	18	0.722
aTMS5	3.79	14	0.767	3.82	7	0.824	3.80	11	0.615
aITS1	3.33	30	1.034	3.25	30	1.076	3.05	30	1.064
aITS2	3.54	25	1.022	3.51	23	0.908	3.45	21	0.827
aITS3	3.54	25	1.022	3.51	23	0.908	3.45	21	0.827
aITS4	3.72	18	0.944	3.49	26	0.841	3.44	23	0.793
aITS5	3.49	27	0.942	3.39	28	1.016	3.20	28	0.805
aITS6	3.46	29	0.913	3.36	29	0.937	3.33	26	0.935
aOS1	3.97	6	0.811	3.84	5	0.807	3.83	9	0.724
aOS2	3.90	9	0.718	3.72	11	0.776	3.71	13	0.785
aOS3	3.97	7	0.873	3.78	9	0.774	3.91	6	0.619
aOS4	**4.26**	**1**	**0.850**	**4.00**	**3**	**0.717**	**4.21**	**1**	**0.722**

Variables	The 2nd-year student			The 3rd-year students			The final-year students		
	Mean	Rank	SD	Mean	Rank	SD	Mean	Rank	SD
aOS5	**4.13**	**2**	**0.833**	**4.01**	**2**	**0.767**	**4.11**	**2**	**0.606**
aOS6	3.67	20	0.838	3.63	16	0.831	3.59	16	0.699

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Improve The Quality of Food Services at Muong Thanh Grand Hotel Da Nang

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ABSTRACT

The quality of food service plays an important role in satisfying the needs of both individual diners and hotel guests in general. Due to the complex nature of the service, measuring and evaluating the quality of food service has not been extensively conducted in Vietnam. This study aims to assess the quality of food service at Muong Thanh Grand Hotel in Da Nang and propose some implied solutions to enhance the quality of food service there. The research results focus on identifying the structure of the fundamental factors of quality and constructing a measurement scale consisting of 32 observed variables for 7 fundamental factors of food service quality. The measurement scale was tested for reliability, convergent validity, and discriminant validity based on survey results from 200 randomly selected customers at the hotel. From these results, the study also examined the overall quality level and the quality level of the fundamental factors. Accordingly, the quality of food service at Muong Thanh Grand Hotel was considered as high level, but there are still several aspects rated at an average level. Based on these findings, the author proposes some implied solutions to improve the quality of food service at the hotel.

Keywords: food, hotel, quality, service quality, food service quality.

1. Introduction

Food service is an essential accompanying service in hotels. In addition to meeting the basic needs of dining for guests, food service in hotels aims to introduce regional cultural characteristics, providing relaxation, peace of mind, and comfort for guests during their stay. Guest satisfaction with the quality of food, beverages, and related services is a crucial factor in determining their overall satisfaction during their stay, which greatly affects the hotel's overall business performance. Food and beverage business is an attractive field with high-profit margins (Yulisetiarini, 2014). For 3 to 5-star hotels in Vietnam, revenue from food service accounts for 30% to 40% of the total hotel revenue (Vietnam Hotel Association, 2021). Therefore, food service in hotels is increasingly recognized as a primary service alongside accommodation. Consequently, continuously improving the quality of food service is an ongoing task and an important solution to enhance competitiveness, attract customers, extend their length of stay, and increase the hotel's business efficiency (Markovic, 2010).

Currently, there have been numerous studies on the quality of food service in restaurants conducted globally and in Vietnam. These studies focus on examining the relationship between restaurant service quality and customer satisfaction (Rhea L. Adriatico, May 2022), the relationship between restaurant service quality and customer loyalty (Yulisetiarini, 2014; Hà Nam Khánh Giao, 2023; Mai Ngọc Khương and Trần Uyên Trân, 2015), the impact of service quality and price in restaurant business on customer satisfaction (Rahman A., 2012), and the factors influencing restaurant service quality (Nguyễn Trọng Nhân, Huỳnh Tương Ái, and Lê Nhật Linh, 2016). Generally, these studies mostly aim to examine the factors influencing restaurant quality or the relationship between quality and customer satisfaction and loyalty, in order to assess the quality and make necessary adjustments in subsequent research.

Muong Thanh Grand Hotel Da Nang is a 4-star hotel and part of the luxury hotel chain operated by the Muong Thanh Group. Located in the city center of Da Nang, the hotel has great potential for development. After the Covid-19 pandemic, Muong Thanh Grand Hotel has gradually recovered, with increasing room occupancy rates and a diverse range of guests. Consequently, the demand for food service has also increased. Improving the quality of food service is a significant concern for the hotel. However, due to the complex and intangible nature of service quality, specific questions such as how current food service quality is perceived by customers, which factors need improvement, and what proposed solutions should be implemented remain unanswered. These practical questions serve as suggestions for conducting this research.

The objectives of this study are: (i) Identifying the fundamental factors of food service quality at the hotel's restaurant; (ii) Measuring the level of quality and determining the components of quality that need improvement; (iii) Proposing solutions to enhance the quality of food service at Muong Thanh Grand Hotel Da Nang. The research results will help hotel managers and staff gain a better understanding of the quality of food service they provide to customers, make investment decisions, improve service aspects, and bring about significant changes to enhance customer satisfaction.

2. Literature review and research method

2.1. Literature review

The quality of service is an abstract concept that can be defined in various ways, depending on the object and the research approach. This article approaches quality from the perspective of consumers and utilizes the concept of quality based on the TCVN - ISO 9000:2015 standard, stating that "Quality is the degree to which a set of inherent characteristics of an object meets requirements" (TCVN 2016). Accordingly, the quality of food and beverage services is the degree to which the quality characteristics of food, drinks, and accompanying services are capable of satisfying customer needs.

Quality directly impacts customer satisfaction, and enhancing quality is a sustainable development strategy for all types of businesses. Measuring quality aims to assess the extent to which current quality characteristics meet the needs of customers, serving as the initial step in the improvement process. While the quality of tangible products can be measured through specific and explicit regulations regarding standards such as shape, color, and materials, service quality is more abstract due to its inherent characteristics, including inseparability between production and consumption, intangibility, heterogeneity, and perishability. Consequently, measuring service quality is often complex and relies on the perception and evaluation of customers after using the service.

Up to the present time, numerous studies have been conducted to establish theoretical foundations and empirical models for service quality assessment. Among these models, the Gronross model (1984), Parasuraman et al. model (1985), Cronin and Taylor model (1992), and the IPA model by Martilla and James (1977) are considered exemplary and widely used.

In Gronross' (1984) quality model, service quality is assessed by comparing the value that customers expect before using the service with the value they receive after using it. Gronross employs three criteria: technical quality, functional quality, and image to measure service quality. Technical quality describes what service is provided and the quality that customers receive from the service. Functional quality describes how the service is provided and how customers perceive the outcomes of the technical quality. Image is an essential factor constructed primarily based on the technical and functional quality of the service, along with other elements such as tradition, word-of-mouth, and pricing policies (Gronroos C, 1984).

Parasuraman et al.'s model (1985) suggests that service quality is determined by the gap between customers' expectations and their actual perceptions after consuming the product. The authors developed the Servqual measurement scale, comprising five dimensions: reliability, responsiveness, assurance, empathy, and tangibles (Parasuraman, 1988). This scale can be applied to various service quality contexts but may require modifications or additions to suit specific circumstances. The scale consists of 22 observed variables.

Cronin and Taylor's model (1992) is an adaptation of Parasuraman et al.'s model (1985). When researching customer satisfaction and service quality, the authors argue that customers' perceptions best reflect service quality, while customer expectations are not included in this concept. Thus, they propose the Servperf model of service quality, where service quality is measured through customers' perceptions. The measurement scale in the Servqual model is reused but excludes the customer expectation component (Cronin Jr. 1992).

Both the Servqual and Servperf models are widely regarded as comprehensive, encompassing various aspects of service quality. However, the Servperf model is considered simpler and more user-friendly compared to Servqual (Phan Chí Anh 2013). As a result, the Servperf model has gained acceptance among researchers and is widely used in practice to measure the quality of various types of services.

2.2. Research framework and scales

Based on the analysis and synthesis of the aforementioned service quality models, this study adopts the Servperf theoretical model proposed by Cronin and Taylor (1992) as the research framework. The study utilizes a measurement scale consisting of five dimensions, namely reliability, responsiveness, assurance, empathy, and tangibles, similar to the Servqual model developed by Parasuraman (1988).

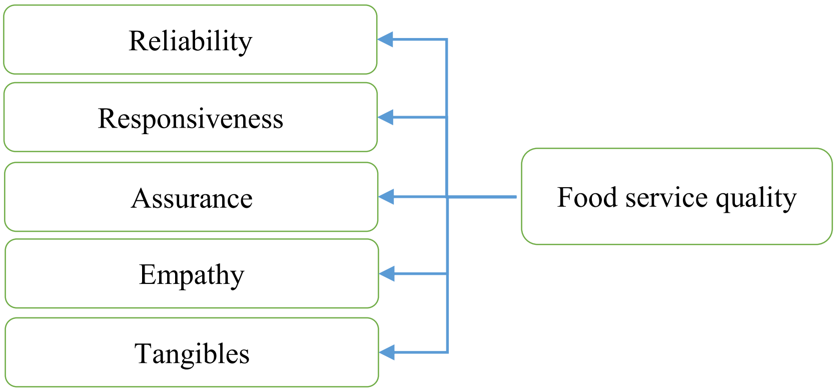


Figure 1: Research framework of fundamental factors in food service

This study utilizes 32 observed variables developed from 22 observed variables in the Servqual scale by Parasuraman, Zeithaml, and Berry (1988), which were subsequently adjusted and supplemented to fit the new research context, focusing on food services in hotels. The adjustment and supplementation process involved direct discussions with the restaurant staff of the Muong Thanh Grand hotel and preliminary evaluations from 15 customers.

- Reliability (REL) reflects the ability of Muong Thanh Grand Hotel Da Nang to provide reliable food services that meet the customers' needs and expectations. It consists of six observed variables: clear and accurate service information provided to customers before usage (REL1), the restaurant providing meals as scheduled (REL2), the restaurant delivering meals as advertised (REL3), appropriate pricing for the quality of dishes (REL4), local cultural flavors expressed in food and beverages (REL5), and staff behavior that instills trust (REL6).

- Responsiveness (RES) represents the staff's sense of responsibility, willingness, and readiness in providing services to customers. It includes seven observed variables: friendly and accommodating staff (RES1), diverse and easily selectable menu options (RES2), staff always willing to listen and address customers' inquiries about food and related matters (RES3), timely notifications of any changes in service delivery (RES4), delicious and appealing flavors of the dishes (RES5), dishes that cater to tourists' preferences (RES6), and various payment options such as cash and bank transfer (RES7).

- Assurance (ASS) demonstrates the staff's ability to ensure the quality of food services and provide necessary information to customers. It comprises seven observed variables: staff serving according to requirements and promptly (ASS1), staff possessing language proficiency and good communication skills (ASS2), the restaurant's service staff making customers feel confident and satisfied (ASS3), food and beverages meeting hygiene and safety standards (ASS4), clean and sanitary tables, chairs, plates, and utensils (ASS5), the restaurant ensuring security and safety for customers (ASS6), and customers not feeling inconvenienced by other dining tables (ASS7).

- Empathy (EMP) reflects Muong Thanh Grand Hotel Da Nang's ability to provide food services that meet customers' psychological and emotional needs. It consists of four observed variables: staff always understanding and caring about customers' individual needs (EMP1), the restaurant consistently showing concern for each customer (EMP2), staff always assisting customers in case of any issues (EMP3), and restaurant staff understanding customers' special requirements (EMP4).

- Tangibles (TAN) represent the physical elements associated with food services, including both tangible and intangible factors. It includes eight observed variables: well-presented and easily understandable menu (TAN1), visually appealing food colors and presentation (TAN2), impressive architecture and spacious restaurant space (TAN3), cleanliness of the restaurant (TAN4), visually attractive staff uniforms (TAN5), cleanliness of restrooms (TAN6), modern equipment, sound, lighting, and audiovisual devices in the restaurant (TAN7), and convenient parking facilities (TAN8).

2.3. Research method and source of information

In this study, the analysis methods include testing the reliability of the scale using Cronbach's Alpha (Nguyễn Đình Thọ, 2014), exploratory factor analysis (EFA) to assess the convergent and discriminant validity of the scale (Hair et all, 2010), and confirmatory factor analysis (CFA) to examine the fit of the research data (Anderson & Gerbing, 1988). A 5-point Likert scale is used to evaluate the observed variables, with 1 representing "strongly disagree" and 5 representing "strongly agree." Additionally, descriptive statistical analysis is employed to calculate the sample's mean values and other relevant measures.

To ensure the reliability of the testing, a sufficiently large sample size is required. According to (Hoelter 1983), (Hoyle 1995), và (Kline 2011), the most appropriate sample size should be at least 200 observations to provide a solid foundation for estimation. With 32 observed variables, a sample size of 200 customers was chosen in this study, randomly selected from tourists who used food services at Muong Thanh Grand Hotel Da Nang. The survey was conducted from December 2022 to May 2023, during the gradual recovery of tourism in Da Nang after the Covid-19 pandemic, with various significant events attracting visitors for sightseeing and business purposes. The operations of Muong Thanh Grand Hotel gradually returned to normal during this period.

3. Results of the assessment of food service quality measurement

3.1. Results of the assessment of measurement scale of food service quality

The measurement scale assessing the quality of food services in this study was developed from the Servqual scale by Parasuraman, Zeithaml, and Berry (1988). It was adjusted and supplemented to align with the food services provided at the hotel's restaurant. Therefore, it is necessary to conduct validation to ensure reliability, one-dimensionality, convergent validity, and alignment with the collected research data.

Reliability Assessment of the Measurement Scale using Cronbach's Alpha

This study employed the Cronbach's Alpha coefficient as a method of assessing the reliability of the measurement scale. The purpose was to test the reliability of 32 observed variables representing the five components that constitute food service quality. The testing criteria consisted of: Cronbach's Alpha values greater than 0.7 and the corrected item – total correlation exceeding 0.3 (Hair, J.F., et al., 2010). The validation was conducted for each group of observations corresponding to the five factors, and the results indicated that all observations met the criteria for reliability (**Table 1**).

Table 1: Reliability Assessment of the Measurement Scale

Observable variables	**Mean**	**Standard deviation**	**Corrected Item-Total Correlation**	**Cronbach's alpha**
Reliability (REL)				0.818
REL1	4.22	0.909	0.729	
REL2	4.35	0.807	0.598	
REL3	4.27	0.84	0.589	
REL4	4.32	0.866	0.693	
REL5	4.31	0.855	0.442	
REL6	4.01	0.829	0.446	
Responsiveness (RES)				0.84
RES1	4.30	0.851	0.559	
RES2	4.25	0.803	0.566	
RES3	4.42	0.891	0.632	
RES4	4.10	0.918	0.624	
RES5	4.52	0.771	0.585	
RES6	4.22	0.816	0.616	
RES7	4.22	0.948	0.58	
Assurance (ASS)				0.825
ASS1	4.20	0.901	0.566	
ASS2	3.92	0.879	0.481	
ASS3	3.70	0.906	0.513	
ASS4	4.33	0.837	0.597	
ASS5	4.42	0.929	0.636	
ASS6	4.60	0.905	0.577	
ASS7	4.32	0.837	0.617	
Empathy (EMP)				0.802
EMP1	3.95	0.927	0.528	
EMP2	4.56	0.839	0.654	
EMP3	4.48	0.865	0.681	
EMP4	3.90	0.838	0.608	

Tangible (TAN)				0.908
TAN1	3.66	0.866	0.718	
TAN2	3.80	0.831	0.475	
TAN3	4.57	0.881	0.765	
TAN4	4.52	0.869	0.713	
TAN5	4.01	0.902	0.766	
TAN6	4.21	0.847	0.752	
TAN7	4.23	0.873	0.717	
TAN8	3.22	0.845	0.718	

Source: Findings are derived the authors' survey

The Exploratory Factor Analysis (EFA)

The Exploratory Factor Analysis (EFA) was conducted to eliminate unreliable measurement items and retain those with high inter-item correlations, which can be condensed into factors that accurately reflect cultural characteristics in the model. In this study, EFA was performed for each constituent factor of service quality using techniques such as Principal Component Analysis, Varimax rotation, and Bartlett's test.

Before conducting EFA, the 32 observed variables from the 5 independent scales were examined. The data examination results revealed a Kaiser-Meyer-Olkin (KMO) value of 0.907, Bartlett's test of sphericity significance of Sig. = 0.000 ($p < 0.05$), and a cumulative variance extracted of 70.758% (> 50%). These findings indicate that the level of variance explanation for the observed variables included in the EFA of all research variables meets the requirements. Seven factors were extracted based on the criterion of eigenvalue > 1.101, which constitute the food service quality of Muong Thanh Grand restaurant (Table 2).

Table 2: Rotated Factor Matrix

Observed variables	**Factors**						
	1	**2**	**3**	**4**	**5**	**6**	**7**
ASS3	0.868						
ASS2	0.862						
RES1	0.856						
REL6	0.826						
EMP1	0.793						
RES3	0.752						
ASS1	0.735						
TAN1		0.845					
TAN3		0.832					
TAN5		0.815					

TAN8		0.814					
TAN7		0.792					
TAN4		0.768					
TAN6		0.76					
RES5			0.834				
RES6			0.789				
RES2			0.783				
REL5			0.777				
TAN2			0.724				
ASS6				0.897			
ASS7				0.857			
ASS5				0.842			
ASS4				0.753			
REL4					0.875		
REL1					0.821		
REL3					0.781		
REL2					0.76		
EMP3						0.903	
EMP4						0.829	
EMP2						0.684	
RES7							0.935
RES4							0.915

Source: Findings are derived the authors' survey

- The first factor (FAC1) consists of 5 observed variables: Local cultural representation in food and beverages (REL5), Diverse and abundant food choices (RES2), Delicious and appealing flavors (RES5), Food that suits the taste of customers (RES6), Beautiful and attractive food presentation and decoration (TAN2). This factor is named "Food".

- The second factor (FAC2) includes 7 observed variables: Trust-building employee behavior (RE6), Friendly and respectful customer service (RES1), Willingness of staff to listen and address customer inquiries about food and related issues (RES3), Accurate and timely service delivery (ASS1), Staff proficiency in foreign languages and communication skills (ASS2), Restaurant staff attitude that makes customers feel confident and satisfied (ASS3), Staff understanding and attention to customer needs (EMP1). This factor is named "Staff".

- The third factor (FAC3) comprises 7 observed variables: Well-presented and understandable menu (TAN1), Impressive and spacious restaurant architecture and space (TAN3), Cleanliness of the restaurant (TAN4), Eye-catching staff uniforms (TAN5), Clean restroom facilities (TAN6), Modern equipment, sound, and lighting in the restaurant (TAN7), Convenient parking area (TAN8). This factor is named "Facilities".

- The fourth factor (FAC4) includes 4 observed variables: Food and beverage hygiene and safety (ASS4), Cleanliness and hygiene of tables, utensils, and dining tools (ASS5), Restaurant security and safety for customers (ASS6), Customers not feeling inconvenienced by other dining tables (ASS7). This factor is named "Assurance".

- The fifth factor (FAC5) consists of 4 observed variables: Clear and accurate service information communicated to customers before usage (REL1), Restaurant providing dining services as scheduled (REL2), Restaurant providing dining services as introduced (REL3), Pricing matching the quality of the food (REL4). This factor is named "Reliability".

- The sixth factor (FAC6) includes 2 observed variables: Timely notification of any changes in meeting service needs (RES4), Diverse payment methods such as cash, transfer, etc. (RES7). This factor is named "Responsiveness".

- The seventh factor (FAC7) comprises 3 observed variables: Restaurant's demonstration of care for individual customers (EMP2), Staff assistance in resolving customer issues (EMP3), Staff understanding of customers' special needs (EMP4). This factor is named "Empathy".

From the 32 observed variables representing the 5 components of service quality, the exploratory factor analysis yielded 7 factors, and no observed variables were excluded. The model of fundamental factors for food service quality at Muong Thanh Grand restaurant and the adjusted measurement scales are presented in Table 3.

Table 3: Adjusted Model of fundamental factors in food service quality

No.	Symbol	Indicator variables	Explanation
1	FAC1	REL5; RES2, RES5, RES6, TAN2	Food
2	FAC2	RE6, RES1, RES3, ASS1, ASS2, ASS3, EMP1,	Staff
3	FAC3	TAN1, TAN3, TAN4, TAN5, TAN6, TAN7, TAN8	Facilities
4	FAC4	ASS4, ASS5, ASS6, ASS7	Assurance
5	FAC5	REL1, REL2, REL3, REL4	Reliability
6	FAC6	RES4, RES7	Responsiveness
7	FAC7	EMP2, EMP3, EMP4	Empathy

Source: Findings are derived the authors' survey

Confirmatory Factor Analysis (CFA)

Confirmatory Factor Analysis (CFA) is conducted to assess the model's fit with market data and evaluate the convergence and discriminant validity of the measurement scales. To evaluate the model's fit with market information, this study utilizes the following criteria: Chi-square test (requirement: $p > 5\%$); Chi-square adjusted for degrees of freedom (CMIN/DF < 3); Goodness-of-fit index (GFI ≈ 1); Comparative Fit Index (CFI > 0.9); Tucker and Lewis Index (TLI > 0.9); and Root Mean Square Error of Approximation (RMSEA < 0.08) (Hu & Bentler, 2009). The assessment results of the model's fit are presented in Figure 2.

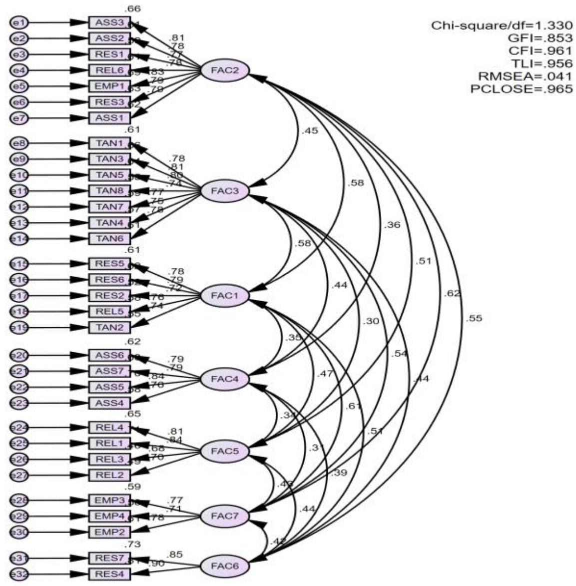


Figure 2 Confirmatory Factor Analysis (CFA) Standardized Loadings

All the Model Fit indices fall within the acceptable range: CMIN/DF = 1.330 < 3, GFI = 0.853 > 0.8, CFI = 0.961 > 0.9, TLI = 0.956 > 0.9, RMSEA = 0.041 < 0.08, PCLOSE = 0.965 > 0.05. Thus, it indicates a good fit between the model and the market data:

The convergence and discriminant validity among variable groups are demonstrated through a few of the measurement indices in Table 4.

Table 4: The summary of the convergence and discriminant validity of the measurement scale

	CR	AVE	MSV	FAC2	FAC3	FAC1	FAC4	FAC5	FAC7	FAC6
FAC2	0.923	0.630	0.384	**0.794**						
FAC3	0.914	0.604	0.340	0.455	**0.777**					
FAC1	0.871	0.575	0.370	0.580	0.583	**0.758**				
FAC4	0.874	0.634	0.191	0.361	0.437	0.353	**0.796**			
FAC5	0.843	0.576	0.259	0.509	0.296	0.468	0.343	**0.759**		
FAC7	0.798	0.568	0.384	0.620	0.541	0.609	0.312	0.429	**0.754**	
FAC6	0.870	0.770	0.303	0.550	0.440	0.509	0.391	0.443	0.424	**0.878**

Source: Findings are derived the authors' survey

The results in Table 4 show that the Composite Reliability (CR) values are all above 0.7, and the Average Variance Extracted (AVE) values are all above 0.5, indicating the convergence of the measurement scales. The square root of the AVE values (highlighted in bold) is greater than the correlations between latent variables (correlation coefficients below the bold diagonal), and the

Maximum Shared Variance (MSV) values are smaller than the AVE values, ensuring discriminant validity.

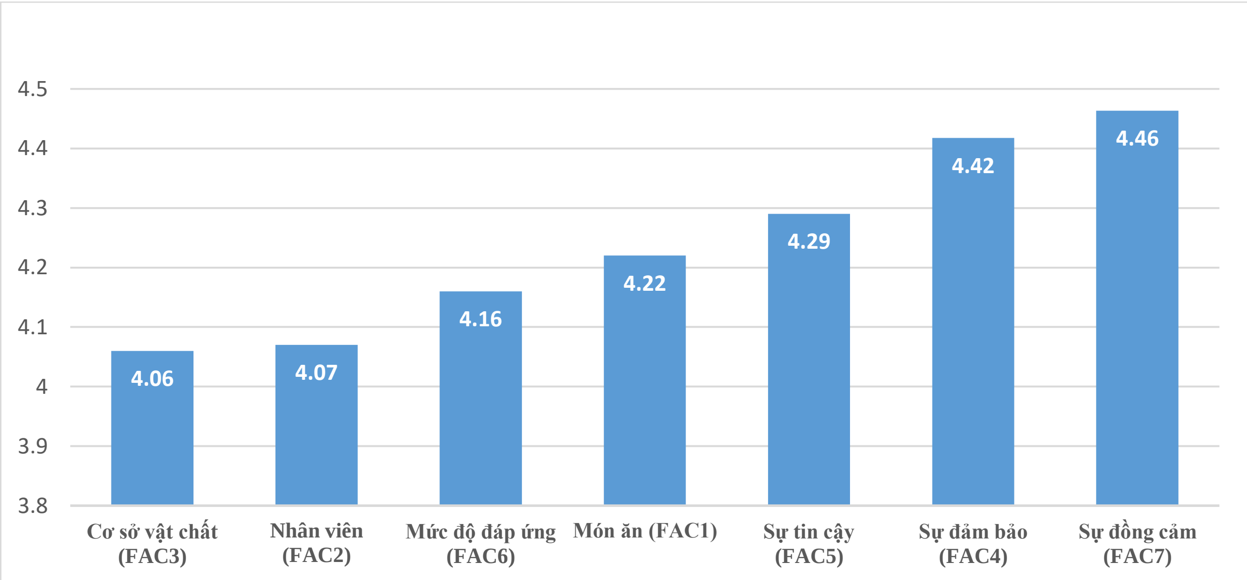
3.2. Evaluation of food service quality at Muong Thanh Grand Hotel & Restaurant, Da Nang

The measurement scales of the fundamental factors meet the requirements for reliability, convergence, and discriminant validity, indicating that the constructed model is appropriate for market data. This ensures a basis for evaluating the food service quality of the Muong Thanh Grand Hotel and Restaurant in Da Nang. Using a 1-5 scale, the classification criteria (Denison & Neale, 2000) are as follows: low (weak) for scores between 1 and 3.69, medium for scores between 3.70 and 4.19, and high for scores between 4.20 and 5.0. The quality assessment results for the hotel and restaurant are as follows:

In the overall analysis results, the average score for food service quality is 4.24, indicating a high level. However, it should be noted that these scores are currently at the lower end of the high range, suggesting that there is still room for improvement. The evaluation results for the seven fundamental factors of food service quality at the Muong Thanh Grand Hotel in Da Nang are presented in Figure 3.

The rating score for each factor indicates that two factors, namely "Assurance" (4.42) and "Empathy" (4.46), are rated at a very high level of quality. The factors "Food Quality" (4.22) and "Reliability" also achieve a high level of quality. It is important to notice that three factors, namely "Physical Facilities" (4.06), "Staff" (4.07), and "Responsiveness" (4.16), are rated at a medium level of quality. These areas are the key focal points for improvement to enhance the food service quality at the hotel.

Figure 3: The average values for the seven fundamental factors of food service quality



Source: Findings are derived the authors' survey

The quality assessment score for facilities was the lowest of all quality factors, with an average score of 4.06. This was due to a number of factors, including the tight parking lot (TAN8, 3.22), which was often overcrowded and inconvenient for customers, and the poorly presented menu (TAN1, 3.66), which made it difficult to find and choose dishes.

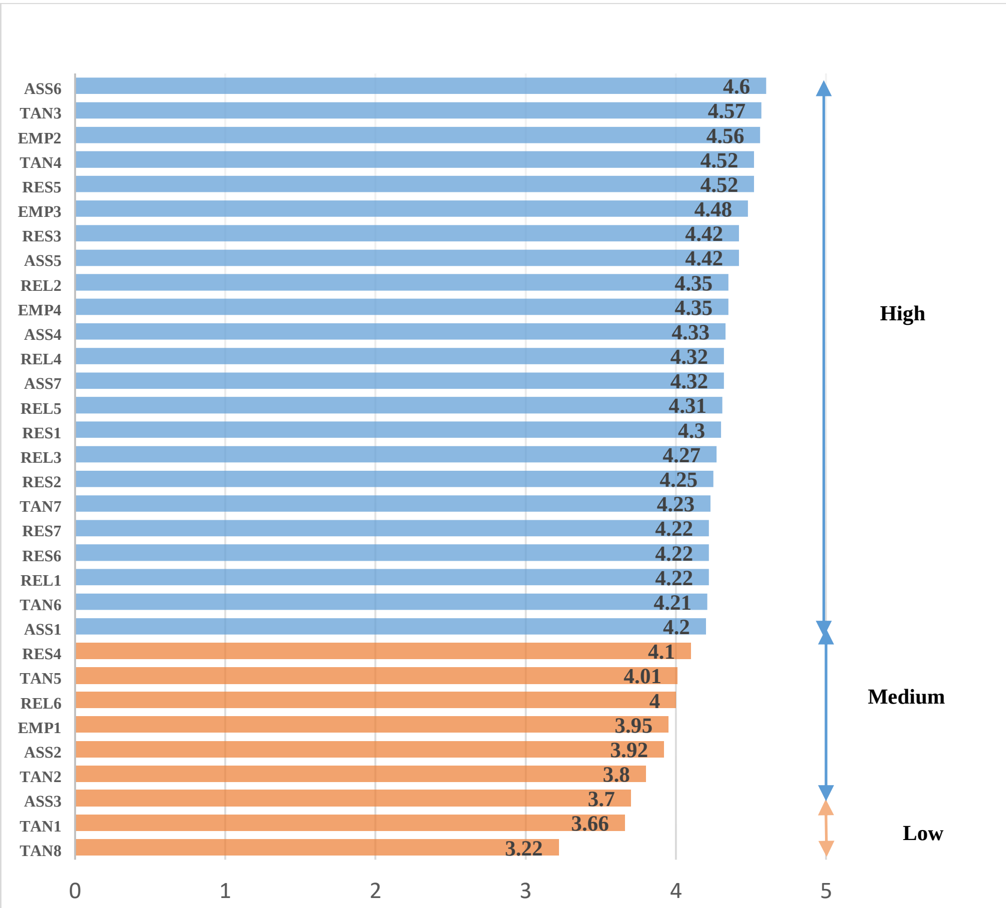
The staff received an average rating of 4.07, which is still considered low. This is despite the hotel's commitment to selecting, training, and regularly retraining its staff. However, some aspects of the staff's performance do not meet the expectations of customers at a 4-star hotel. For example, the observable variable ASS2 (3.92) indicates that the staff's foreign language and communication skills are not highly appreciated. Additionally, the observable variable EMP1 (3.95) suggests that employees are still limited in understanding and paying attention to each customer's needs. As a luxury hotel restaurant, tourists often have specific requirements about the food, such as its traditional cultural value, or even a lot of information about local culture and tourism. These limitations of the staff need to be addressed in order to improve the overall customer experience.

Food quality is a very important factor in the overall quality of food service. This factor received a fairly high rating (4.22), with customers consistently rating the taste, appearance, variety, and cultural significance of the food highly. However, the presentation of the dishes received a lower rating (3.8), which reduced the overall rating of all factors. This is a limitation that should be addressed in order to improve the overall quality of the food service.

The assurance and empathy dimensions of customer service received very high ratings (4.42 and 4.46, respectively). These are strong points in quality that Muong Thanh Hotel should maintain and promote more strongly to customers.

The assessment results of the observed variables for the fundamental factors of food service quality are presented in Figure 4.

Figure 4: Values of observable variables of food service quality



Source: Findings are derived the authors' survey

The observed variables TAN8 (convenient parking facilities), TAN1 (well-presented and easily understandable menu), and ASS3 (service attitude of restaurant staff that always makes you feel confident and satisfied) are considered at a low level. Additionally, the observed variables TAN2, ASS2, EMP1, TAN5, and REL6 receive evaluations at a medium level. This indicates that the fundamental factors related to the food service quality of the hotel, specifically the physical facilities and staff, are only rated at a medium level.

4. Proposed solutions to enhance food service quality at muong thanh grand hotel da nang

Muong Thanh Grand Hotel Da Nang is a top luxury hotel, so the majority of íts guests are high-income domestic and international individuals with exquisite and diverse expectations for food experiences. Therefore, continuously improving the quality of food services is a pressing requirement of Muong Thanh Grand Hotel Da Nang in order to meet the increasingly higher food expectations of guests. The evaluation results indicate that although the quality of food services is rated high, they also identify key areas that require continuous efforts for improvement in order to enhance the quality of food services at the hotel. Within the scope of this article, we propose the following key solutions based on the evaluation results:

Enhancing the quality of food and beverages:

The quality of food and beverages is a core factor in guest satisfaction. Although the rating for this factor is relatively high (4.22), Muong Thanh Grand Hotel should strive to further improve the level of quality. Firstly, it is necessary to maintain the diversity of the menu, with a special emphasis on highlighting the characteristic dishes of the Quang Nam region and the Muong Thanh Hotel system (Vietnamese northwestern dishes). However, there is a need to improve the presentation and arrangement of dishes. A shift in the mindset of menu preparation should be considered, starting with studying the customers' needs to determine the menu. This requires the hotel to regularly research and evaluate the demand to construct a menu that goes beyond the current capabilities of the hotel. Muong Thanh Grand Hotel needs to establish a menu system that incorporates representative dishes, thoroughly researching the characteristics of dishes from all over the country: origin, development, preparation process, equipment used in the cooking process, consumption methods, the position of the dish within the Vietnamese cuisine system, representative of which region, its significance, distinctive ingredients, nutritional value, and its role in community life. The menu should clearly convey the value and persuade customers, providing them with satisfaction. In ensuring the quality of the food, the role of the Head Chef is of utmost importance. Ensuring working conditions, using motivating tools, and creating motivation for the kitchen staff are significant.

Enhancing the competence of staff and developing a service style:

The current restaurant staff is not highly rated (4.07), mainly due to factors such as inadequate foreign language proficiency, inadequate customer interaction and service, inability to meet the diverse needs of customers regarding information about the dishes and other relevant information that may arise during the service process. The staff represents the face of the restaurant, and through their service, guests will perceive the quality of the restaurant's services. Therefore, training and development for the staff must be conducted rigorously and continuously. Training programs at Muong Thanh Grand Hotel should focus on the following aspects: the cultural value of cuisine, the history of the hotel and the restaurant, especially famous guests and important events organized here; uniqueness and differentiation of the restaurant compared to other restaurants in the hotel system in general; enhancing knowledge about the menu for the staff. The staff also need to experience the taste of the dishes, based on which they can present the dishes in an attractive manner to customers, or provide information about the composition and cooking method if requested by guests. Particularly, in order for customers to fully experience the value of Vietnamese cuisine, the staff must have a thorough understanding of it and convey inspiration to customers, creating a desire to consume the products. Regarding the service style, the staff needs to improve their behavior to instill trust in customers, provide prompt service, always be ready to assist guests, be enthusiastic, and demonstrate politeness in serving guests.

Strengthening the hotel facilities to serve customers:

The factor of hotel facilities is currently rated as being less satisfactory, primarily due to the inadequate parking facilities and the unattractive presentation of the menu. In order to address this issue immediately, Muong Thanh Grand Hotel needs to coordinate the traffic flow to the hotel effectively, search for and rent parking lots near the hotel to alleviate traffic congestion during peak hours. Additionally, the menu presentation should be redesigned to ensure visual appeal, provide complete information, and arrange the layout in a logical manner for easy reference and searchability. On the other hand, the restaurant space is considered beautiful, luxurious, and spacious. Muong Thanh Grand Hotel should further promote its strengths, with the restaurant space reflecting Vietnamese cultural elements while still maintaining an elegant and upscale atmosphere, which are aspects the hotel should strive to perfect.

5. Conclusion

With the aim of evaluating and proposing some suggestive solutions to enhance the quality of food services at Muong Thanh Grand Hotel, this article has made the following main contributions:

In terms of theoretical contribution, this study has constructed an appropriate quality evaluation and improvement program, including identifying the constituent elements of quality, developing a measurement scale, conducting data surveys, evaluating quality to identify weaknesses, and proposing suitable solutions. More importantly, it also contributes to the development and validation of a measurement scale consisting of 32 observed variables based on the adaptation of Parasuraman, Zeithaml, and Berry's (1988) Servqual scale for the restaurant and hotel industry. This measurement scale is widely applicable and can be used for various types of restaurants.

In terms of practical contribution, this study has identified seven essential elements of food service quality, such as food, staff, facilities, empathy, reliability, responsiveness, and assurance. It has also evaluated the quality levels of each factor and the overall quality of food services at Muong Thanh Grand Restaurant. Based on these results, the article has provided some recommendations to improve the food service quality that align with the hotel's reality.

However, it is important to note that this research has only been conducted for a specific context, namely Muong Thanh Grand Hotel Da Nang. This can be considered a limitation and serves as a starting point for future research endeavors.

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Solutions to Promote Digital Transformation in the Tourism Industry in Vinh Long Province

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ABSTRACT

Digital transformation is an inevitable trend in all business fields and is of great interest and policy implementation by the Government. Especially for the tourism industry of Vietnam in general and of Vinh Long province in particular, it is facing many difficulties after the Covid 19 pandemic. Therefore, in order to reduce costs and improve business efficiency, the application of Using digital transformation is an important job for businesses. This study conducts an overview analysis on the application of digital transformation of businesses in the tourism industry in Vinh Long province and proposes solutions to promote digital transformation for businesses in the tourism industry in the region.

Keywords: Digital transformation; Tourism industry; Vinh Long province

1. Introduction

Digital transformation is a topic of recent interest to researchers. Kraus, S., et al (2021) state that the research on digital transformation in the world has increased exponentially from 2018 to now[10]. This shows that the research on digital transformation is trending in the world. In Vietnam, the issue of digital transformation is also being concerned by our Party and Government, one of the things that shows that concern is that on April 22, 2022, the Prime Minister signed and promulgated decision No. 505. /QD-TTg to choose October 10 every year as the National Digital Transformation Day. The introduction of the National Digital Transformation Day aims to accelerate the implementation of national digital transformation tasks and achieve the effectiveness of the digital transformation program. In particular, Vinh Long province is a province in the Mekong Delta region, which also has many policies to implement digital transformation in the province such as: organizing activities to respond to the National Digital Transformation Day in 2022 and planning to implement the program of digital transformation in building new countryside towards smart new countryside in the period of 2021 - 2025 in Vinh Long province. In addition, Vinh Long province also implemented a plan to determine the index to evaluate the level of digital transformation of enterprises and support digital transformation enterprises in the province. Vinh Long is a province in the Mekong Delta in the south of Vietnam. Vinh Long borders the provinces of Tien Giang, Dong Thap, Can Tho, Tra Vinh, Soc Trang and Ben Tre. The topography of Vinh Long province is mainly fruit orchards interspersed with a system of canals and rice fields. Vinh Long is also a very interesting destination for tourists when participating in western tours. However, Vinh Long's tourism businesses are mostly classified as small and medium-sized enterprises, so the scale of investment is small, so in order to apply digital transformation, these businesses will encounter some difficulties such as weak capacity levels, problems of balance, use of investment capital and limited reproduction of enterprises. Therefore, this study assesses the current situation of digital transformation of businesses in the tourism sector of Vinh Long province, analyzes the opportunities and challenges in digital transformation for these businesses. From there, the study proposes a number of solutions to promote digital transformation for tourism businesses in Vinh Long province.

2. Literature Review and Methods

2.1. The concept of digital transformation

Digital transformation is a new and modern term in the business and technology literature that is defined by many authors as follows:

“Digital transformation – namely, the integration of digital technologies into business processes – has become increasingly imperative for contemporary organizations seeking to survive and attain competitive advantages in a digital economy”[12].

Digital transformation as the use of technology to radically improve the performance or reach of enterprises and is becoming a hot topic for companies across the globe. Executives in all industries are using digital advances such as analytics, mobility, social media, and smart embedded devices while improving their use of traditional technologies such as ERP (Enterprise Resource Planning) to transform customer relationships, internal processes, and value propositions [22].

“Digital transformation defines as the use of new digital technologies (social media, mobile, analytics or embedded devices) to enable major business improvements (such as enhancing customer experience, streamlining operations or creating new business models)”[5].

Digital transformation as a process in which digital plays a central role in creating and consolidating disruptive changes taking place in industry (area) and in society [9].

“The digital transformation refers to the economic and societal effects of digitisation and digitalisation. The digital revolution entails disruptions that are triggering innovations in business and consumption models, transforming production systems and value chains, reorganising economic sectors, generating new dynamics in the world of work, creating smart goods and services and introducing new conditions of competitiveness. It has consequences on citizens’ lives, in the manner they learn, work, consume, interact with each other and with their institutions.”[14]

Thus, recently, there are many definitions of digital transformation, but in terms of business, digital transformation is considered as the integration of digital technology into business activities leading to changes that are beneficial to business and bring value to customers. The work of digital transformation is to exploit the data obtained from the digitization process, then apply technologies to analyze and transform data into all areas of an enterprise, in order to take advantage of technology to change the way it operates, its business model, and delivers new value to its customers and accelerates business operations. Digital transformation is increasingly developed and widespread, it is applied in many different fields to change the way of living, working and production methods based on digital technologies. In addition, digital transformation affects not only operations, but also work culture, human relations, and the speed of change, on a micro-economic as well as a macroeconomic level.

According to Moreira, F., Ferreira, M. J., & Seruca, I., the digital transformation process is accelerated based on the following motivating factors: Internet of Things (IoT), Robotics Process Automation (RPA), Artificial Intelligence (AI), 3D Printing, 3D Visualization, Augmented and Virtual Reality, Sensors, Blockchain, Cloud Computing, Chatbot, Big Data and Cognitive Systems and Next Generation (NextGen) Security [13]. With the outstanding development of these factors, it will be a step forward to help economies implement digital transformation.

2.2. The application of digital transformation in tourism

Currently, a number of digital technologies are applied in tourism industry in the world and in some areas of Vietnam, including:

Internet of Things (IoT) is "a network of physical devices, vehicles, home appliances, and other items embedded with electronics, software, sensors, actuators, and connectivity, enabling these objects to connect and exchange data"[17]. IoT is used in combination with other technologies to apply to management and marketing in the tourism industry, through leveraging data sources to support smart tourism. As a result, this can improve the visitor's experience. [8]

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. In tourism industry, artificial intelligence makes services personalized and customized on demand, making travel easier and more comfortable based on the development of technology. As AI and robotics technology grow, more and more robots are being created in tourism and hospitality enterprises, offering different technical capabilities as well as repetitive, dirty and dangerous tasks [16]. AI technology developed in the tourism industry will create service robots with different technological options for ensuring the information, cleaning, disinfection, room service, etc. These can be digital guide, host, personal assistant, check-in, porter, cooking staff, and robot receptionist, housekeeping attendant, waiter, room server, chatbot and voice user interfaces, autonomous vehicles, etc. The application of AI technology in the tourism industry also helps businesses automate multi-channel marketing, booking assistance, identity verification, navigation and route finding, travel experiences, travel assistance, security, customer service, search and evaluate information and so on.

Big data analytics. In today's digital age, consumers and businesses generate vast amounts of data [14]. These data are used in management and marketing activities to give businesses the opportunity to grow and increase productivity, through predicting needs, consumer behavior, purchasing preferences. From there, businesses will build customer loyalty and satisfaction. [4][6].

Blockchain (BCT) helps businesses in the tourism industry to provide sales transactions, financial management and administration, based on a complicated digital algorithm that aggregates and organizes data into blocks, then assemble these blocks together using cryptography. As such, it has the potential to promote sustainable tourism and can be achieved with the cooperation of all stakeholders [19].

Mobile technology/cloud computing. Statista's database of key market indicators states that the number of smartphone users globally is increasing and the global number of smartphone users was forecast to continuously increase between 2023 and 2028 [3], so thanks to cloud computing, wi-fi, phones are used more for tourism purposes, including accessing real-time destination information, online booking and mobile payment. For businesses, cloud computing allows them to run their business from anywhere in the world. Mobile phones with their technologies play the role of travel agencies, tour guides, tour operators, travel maps, best restaurant locator, etc [8].

Augmented reality/virtual reality (AR/VR) is a digital environment that involves an interactive experience. AR systems provide tourists with a view of the world in front of them without actually being there, to discover historical information and adventure experiences [15]. VR allows tourists to almost immerse, orient and interact with different senses [20][2]. The applications of RA/VR in the tourism sector include Virtual and augmented marketing and advertising materials, advertisements, 3D environment, 360 degree visibility programs, virtual tours, digital historical and cultural tours and events, exploration of natural landscapes, augmented traveller experience at destination, travel assistant that help traveller in real-time, virtual and augmented games, etc [8]. This digital environment allows tourists to search for new and specific places and destinations and encourages a desire to travel [18][1].

Social media (SM). Today, it is important for everyone to be socially connected and they need to communicate, inspire and share each other's experiences on social media [2]. Therefore, if businesses want to be noticed, they need to be in SM as well as work with influencers and have social relationships with people [9]. Therefore, social media (SM) has an important role as an information and interaction tool, and is used to create brand awareness for regions, businesses, destinations and destinations. attractions as well as to build relationships with tourists before, during and after travel [7].

2.3. Opportunities and challenges of businesses in the tourism industry in Vietnam when implementing digital transformation

In recent years, the application of digital technology in the tourism industry has been implemented such as the Vietnam National Authority of Tourism has deployed software to update the database of national guides, information on travel businesses, accommodation business, tourist attractions in the area of the city, a list of eligible tourism service business establishments; application of digital technology in communication and tourism promotion activities [11]. The application of digital transformation in Vietnam's tourism industry presents some opportunities, but also faces some challenges. Here are the opportunities and challenges that Vietnam's tourism industry is facing:

❖ *Opportunities:*

- These businesses can take advantage of the government's support and policies promoting digital transformation;

- Quick and easy information exchange with stakeholders;

- The digital transformation not only creates added value in the form of enabling speed of access and use and enhancing the experience for tourists but also enables cost advantages for businesses operating in the tourism industry;

- Increases reach, expands international reach, can help enter new markets and internationalize operations;

- These businesses can maintain the competitiveness, achieves a long-term competitive advantage, provides strategic agility practices to respond to changes in the market.

❖ *Challenges:*

- The tourism sector consists mainly of micro and small enterprises with less than 50 employees, so these companies have a very low level of technology development;

- The cost of investment and application of technology is a challenge for small businesses with little capital;

- The transformation requires businesses to have the time, process, and strategic focus to develop database-oriented services.

2.4. Methods

The research was conducted to collect secondary information through the websites of departments under Vinh Long province, Vinh Long department of Planning and Investment, Vinh Long department of Culture, Sports and Tourism and Vietnam National Authority of Tourism. After collecting data, the study will conduct statistics and synthesize data from the Vinh Long department of Planning and Investment about the number of tourism businesses. Moreover, data on tourism revenue of Vinh Long province will be collected from the Vinh Long department of Culture, Sports and Tourism within 5 years (2018 - 2022) for analysis and comparison. In addition, reports on the current state of the tourism industry in Vinh Long province, collected from the websites of departments under Vinh Long province, Vinh Long department of Culture, Sports and Tourism and Vietnam National Authority of Tourism, will also be synthesized and analyzed to assess the digital transformation status of tourism businesses in Vinh Long.

3. The current situation of digital transformation in the tourism sector in Vinh Long province

According to statistics from the Vinh Long department of Planning and Investment in May 2021, Vinh Long has 112 accommodation establishments, 09 travel agencies, and 07 tourist attractions [19]. Based on the synthesis of statistics from the Vinh Long department of Culture, Sports and Tourism every year, the revenue of the entire tourism industry of Vinh Long province in the last 5 years is shown in Table 1 as follows:

Table 1: Total revenue from tourists of Vinh Long province for the period of 2018-2022

Unit: billion dong

Year	2018	2019	2020	2021	2022
Revenue	340	525	190	186	480

Source: The author synthesizes from the reports of the Vinh Long department of Culture, Sports and Tourism

In the period from 2020 to 2021, the epidemic is prolonged and complicated, so the number of visitors and revenue of Vinh Long tourism has decreased to the lowest level in the history of the industry. During these years, tourism businesses and cruise ships stopped operating. In 2022, after the period of covid 19 epidemic, revenue has shown signs of recovery, however, businesses in the tourism industry still face many difficulties and challenges. In the past time, in response to the decrease in tourist arrivals due to the impact of the COVID-19 pandemic, business establishments must diversify products, reduce prices, and commit to safety in service in order to achieve the goal of both business and safety in epidemic prevention. Therefore, according to the Vietnam National Authority of Tourism, by the end of 2021, many tourism establishments in the province have increased the application of information technology to promote information about their establishments [20]. In 2021, Vinh Long's tourism industry has focused on promoting digital transformation under the Project "application of information technology in tourism in the period of 2020 - 2025 in the province - approved by the Vinh Long department of Culture, Sports and Tourism" by operating Vinh Long Provincial Smart Tourism Portal (https://vinhlongtourist.vn/). Travelers inside and outside the province can download the application "Vinh Long Tourism" on CHPlay, AppStore or look it up on the Website. Here, the tourism information of the province is updated quite fully, creating favorable conditions for visitors to look up and search for tourism information of Vinh Long province in a quite convenient way. The provincial tourism portal also provides users with full and vivid images and videos about local tourist destinations and products, helping visitors get information about service prices of each time so that they can plan a reasonable travel program. In addition, tourists and travel agencies also know the information and events that take place, thereby arranging the appropriate travel schedule and time. A special feature of the Tourist Portal is that it can be linked to accommodation, food, attractions, shopping and travel facilities. Currently, 126 accounts have been granted to establishments on the Tourism Portal for these establishments to self-manage and regularly update information on advertising images, promotions, operating hours as well as receive direct booking of tours, rooms and dishes. In addition, the Department of Tourism Management also creates and effectively operates 03 travel Zalo groups (Accommodation, Travel, Technical support to update information on the Portal), thereby being able to provide and receive information in a timely manner to support business continuity. Some businesses have done well to promote products through social networking sites and tourism portals of the province such as: Ut Trinh Homestay, Cuu Long Tourism Joint Stock Company, Phuoc Thanh IV Hotel, Sala Tourist Area …thereby spreading the word in the tourism community in Vinh Long province.

Although the implementation of digital transformation for the tourism industry in Vinh Long province has had positive development, it still has certain difficulties as follows:

Although the implementation of digital transformation for the tourism industry in Vinh Long province has had positive development, it still has some limitations in implementation such as not taking full advantage of the applications and advances of science and technology because of certain difficulties as follows:

- Most of the tourism businesses in Vinh Long province are small businesses, so they have difficulty in capital.

- The next challenge that businesses face is that human resources are not sufficient to carry out the digital transformation because according to the annual report of the Mekong Delta (2020) shows that the Mekong Delta region has people with education is still low, labor quality is not high, trained workers tend to migrate to the Southeast region to find work. Due to the low quality of human resources, it is difficult to understand technology, internet, data security, information about digital standards.

4. Solutions to promote digital transformation for the tourism sector of Vinh Long province

For digital transformation to be highly effective, a combination of local leaders and businesses is required. Here are some solutions given to State management agencies and businesses:

4.1. For state management agencies

Government policy has significant impact to manage digitization and society. In addition, it can be suggested to improve increase awareness of digital transformation opportunities and benefits in enterprises. Therefore, provincial leaders need to step up propaganda and raise awareness of tourism businesses about digital transformation. Analysis is needed to identify challenges, risks or customer expectations to show them the need for digital transformation.

With the help of the Government, agencies and other stakeholders such as the Trade Association should create an environment of technical and financial support for tourism businesses to help businesses understand, implement initiatives and easier access to digital transformation.

Vinh Long province needs to have many policies to train high-quality human resources to meet the requirements of digital transformation and attract talents to work for the province to improve the level of human resources.

For Vinh Long department of Culture, Sports and Tourism, it is necessary to have a plan to apply digital transformation in the field of cultural heritage and tourism such as applying automatic interpretation of cultural heritages and tourist attractions according to 360-degree technology and applying virtual reality technology in the management, exploitation, promotion and promotion of heritage values.

4.2. For businesses in the tourism industry of Vinh Long province

Enterprises need to apply "learning culture", innovation to implement digital transformation. In addition, businesses need to define a simple roadmap for business or digital transformation goals such as designing a new digital strategy for the business, analyzing existing business models, customer requirements, etc. Moreover, hiring people with digital skills (information technology specialists and socio-economic support specialists) should be considered to enhance the capacity of the workforce.

5. Conclusions

Digital transformation is considered an effective support tool for tourists wishing to travel, increasing the adaptability of the travel experience and increasing visitor satisfaction, and plays an important role in better communication. Effective and innovative implementation of digital technologies can help businesses remain competitive, innovate and achieve long-term business goals. The main technologies in tourism 4.0 are artificial intelligence, big data analytics, Internet of things, blockchain, cloud computing, virtual and augmented reality, and these technologies will also evolve over time. Nowadays mobile technology and social media play an important role in tourism. Each digital technology, with its own devices and interfaces, provides tourists with useful solutions for processes, functionalities, operations and experiences. The digital transformation brings many opportunities for Vietnamese businesses in general and businesses in the tourism sector of Vinh Long province in particular, so businesses need to make efforts to reduce challenges and barriers such as promoting education and financial support for digital transformation businesses. It is essential to increase a common understanding of digitalization and digital transformation and the opportunities, benefits and costs for tourism businesses to transition to digital, as well as improve digital and e-marketing skills. In the future, there should be more in-depth studies on how these digital technologies are applied in tourism businesses, through interviews at businesses from which typical lessons are drawn.

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Improving Competitiveness through Collaboration and Information Sharing in the Supply Chain – A Case Study of Vietnam Pangasius Export Industry

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ABSTRACT

Pangasius is an advantageous product of Vietnam when over the past 20 years, it has penetrated major markets such as the EU, the United States, China and ASEAN. The business environment has changed due to the Covid-19 pandemic, especially consumer behavior toward health products and food safety. The pangasius industry should actively adapt to market trends, cooperate and share information within supply chain so that consumers can easily traceability and consume products with peace of mind. The information flows smoothly from the first supplier to the end consumer, supporting the supply chain flexibly adapt to the market and satisfy customer needs. Based on the 3C framework of relationship level between partnetship and information sharing in supply chain (Coordination - Cooperation - Collaboration) combined with industry data during 2010-2021, the authors analyse the level of cooperation and information sharing of the pangasius supply chain. On that basis, it is recommended that the pangasius industry apply blockchain technology for traceability and CPFR to cooperation between processors and retailers.

Keywords: colaboration; information sharing; pangasius; supply chain; Vietnam.

1. Introduction

Pangasius is the Vietnam's advantage product in the international market. Over the past 20 years, Vietnam's pangasius has been exported to more than 140 markets worldwide and achieved achieved many achievements: high export turnover of 1.5-2.4 billion USD/year (General Department of Fisheries, 2023); producing about 1.6 million tons of pangasius raw materials for export each year (Trung Chanh, 2022); demand for pangasius in the US, China & Hong Kong markets increased

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sharply (Department of Planning, Information and Communications, 2022); many processors are equipped with modern technology and automate some production stages (Dong et al., 2023).

However, the pangasius industry has to face many changes in the business environment, such as increasingly diverse consumer needs and the lack of links and cooperation in the chain (CBI, 2012); unstable export prices (Nguyen & Vo, 2014); macro-economic and product challenges (Nguyen & Jolly, 2017); lack of market information, technical barriers from importing countries increase (Dong et al., 2023) and links in the chain are still fragmentary, especially the link between processors and farmers (Nguyen Thanh Tung, 2020). To overcome these challenges, the Vietnamese pangasius industry should proactively collaborate and share information between partner in the supply chain to adapt to customer satisfaction. Because close collaboration between supply-chain partnership is an important way of sustaining companies' competitive advantages. Intensified competition is no longer between individual companies but between supply chains (Baihaqi & Beaumont, 2006). To survive in today's economy, supply chain partners need to improve their competitive advantages by information sharing. Information sharing as the heart of supply chain collaboration (Lotfi et al., 2013). Information sharing and coordination between the collaborative partnership of a supply chain are considered to be an effective strategy for improving its global performance (Nazifa & Ramachandran, 2019). This study aims to describe the supply chain structure and examine the level of cooperation and information sharing of partnership in the pangasius supply chain during 2010-2021. On that basis, the author recommends improving cooperation and information sharing for Vietnam's pangasius industry.

2. Theoretical framework and research overview

2.1. Supply chain collaboration

"Supply chain collaboration, a concept widely explored by researchers, encompasses various definitions. It is often described as the process of working together among independent firms (two or more companies) within a supply chain to deliver products to end customers, with the primary objective of optimizing long-term profitability for all chain members and gaining a competitive advantage (Simatupang & Sridharan, 2008). Collaboration within supply chains entails the coordination of activities among different actors involved in the flow of products and information, ranging from raw materials to the final consumer, with the aim of meeting customer needs within an integrated supply chain (Samuel & Spalanzani, 2009). Furthermore, supply chain collaboration refers to the formation of long-term relationships between two or more autonomous firms that closely collaborate to plan and execute supply chain operations, working towards shared goals and deriving greater benefits compared to acting independently (Doganay & Ergun, 2017)".

2.2. Information sharing in supply chain

2.2.1. Defining the information sharing

Information sharing in the supply chain is defined by many organizations and authors. The Global Logistics Research Team (1995) defines supply chain information sharing as "The willingness to exchange key technical, financial, operational and strategic data" (Deghedi, 2014). Calorie et al. (2012) suggested that information sharing is defined as the exchange of information between parties that allows one party to access information collected or maintained by another party. It involves providing the proper technical solutions including hardware and software, instituting formal agreements between organizations, adopting standards, and changing business processes to allow organizations to share data and information with many other organizations. Savolainen (2017) definite information sharing can be understood as "a set of activities by which information is provided to others, either proactively or upon request, such that the information has an impact on another person's (or persons') image of the world and creates a shared, or mutually compatible working, understanding of the world".

Information sharing is one of the main supply chain strategies for reducing uncertainty and is vital for supply chain efficiency (Thakur & Gunnlaugsson, 2018). Information sharing generally facilitates decision synchronization through providing relevant, timely, and accurate information required to take effective decisions about supply chain planning and execution (Simatupang & Sridharan, 2008).

Information sharing is a vital aspect of coordination amongst parties in a supply chain. Information sharing can increase supply chain efficiency by reducing inventories and smoothing production. Information sharing enables companies to make better decisions in their operation leading to better resource utilization and lower supply chain costs (Baihaqi & Beaumont, 2006).

2.2.2. Antecedents on Information Sharing

Operational and strategic information sharing allows firms to improve their supply chain performance. However, operational and strategic information sharing in supply chains varies as it is determined by different antecedents such as bargaining power, contract, trust, information management capabilities or supply chain knowledge (Engel, 2015).

(a) Bargaining Power

Bargaining power allows a firm to exert influence over a partner. Bargaining power impacts information sharing through activities such as investments, cooperative and non-cooperative behavior, and the usage of how contractual safeguards to minimize supply chain costs. Information is often tightly controlled as a resource of power resulting in a unilateral focus of firms on their own profits. The form of power – reward power, coercive power, expert power, referent power, and legitimate power – in relation to information sharing needs. Depending on the form of power, bargaining power has to be used for what reason, and how it contributes to information sharing.

(b) Contracts

The use of contracts enhances firms to guide partners´ activities towards aimed objectives. Formal and informal contracts create a safe relational basis for partners. A contract provides mechanisms such as reward or penalty systems to ensure collaboration acting as an incentive for involved supply chain members. Accordingly, a contract can safeguard supply chain-specific investments, ensure cooperative behavior, lower the risk of suffering from opportunistic behavior from the partner (either supplier or buyer) and lose strategic valuable information.

(c) Trust

Trust defines the willingness of a firm to be vulnerable to the actions of a partner, irrespective of the ability to control that action. While trust is based on fair behavior and a sense of reciprocity, this does not imply that economic outcomes will be equally divided. The importance of trust for information sharing in supply chains increases with the number of supply chain members. The importance amplifies in case decisions have to be made with incomplete information. In addition, trust can substitute contracts and increase the efficiency of problem-solving, realize better communication among the partners, and result in operational and strategic information sharing. Trustworthy relationships are characterized by the participation and involvement of partners in joint decision-making and setting mutual goals contributing to a successful partnership.

(d) Information Management Capabilities

Information management capabilities represent the internal capabilities of firms emphasizing a firm´s ability to implement information technology-based resources. Information management capabilities, especially technical capabilities, play a significant role in connecting inter-organizational information systems; thereby contributing to supply chain performance. In addition, only technical information management capabilities are not sufficient to realize information sharing in supply chains, further information management capabilities are required. Information management capabilities and supply chain knowledge have different levels, and the way information is shared between companies will be different.

(e) Supply chain knowledge

Knowledge management is important to realize efficient collaboration among supply chain partners. Supply chain knowledge represents domain-specific knowledge that allows firms to integrate supply chain processes and improve supply chain collaboration by capturing, sharing, and contributing continuously to this specific supply chain knowledge base. Supply chains require inter-firm collaboration and the exchange of supply chain knowledge, so firms share specific knowledge to improve supply chain processes.

2.3. Information sharing and cooperation

Based on Son's (2004) research on managing a supply chain partnership, Kotzab et al. (2019) have positioned different levels of supply chain partnerships by the 3C model (Coordination - Cooperation - Collaboration). (1) The left vertical axis describes the level of information sharing from low to high. When information has a large quantity, good quality, and quick response, cooperation in the supply chain will achieve the highest goal (strategic goal). (2) The horizontal axis describes the cooperation in the supply chain (commitment of trust). A high level of commitment leads to share risks among supply chain partners (Figure 1). According to Son (2004), there are 4 levels of trust of partnership in the supply chain.

The lowest level is an Arm-length relationship: least shared information, open market negotiation, limited interaction, a short-term commitment, contract-based, price as the overriding factor.

The second level is Coordination: More complex and shared information flow, fewer suppliers, moderate cooperation and interdependence.

The third level is Cooperation: Higher information sharing, medium-term commitment and stronger linkages, emphasis on strategy, greater cooperation and interdependence, more shared coordination initiatives Vendor Managed Inventory (VMI).

The highest level is Collaboration: Uniform information, diversification of activities and more coordinated functions, long-term commitment, cooperation and highest interdependence, in addition to operational coordination production and logistics, and towards strategic alliances.

Relationship management between partners and asset management increases from the lowest level to the highest level, then the asymmetric information of partners will gradually decrease from the highest level to the lowest level.

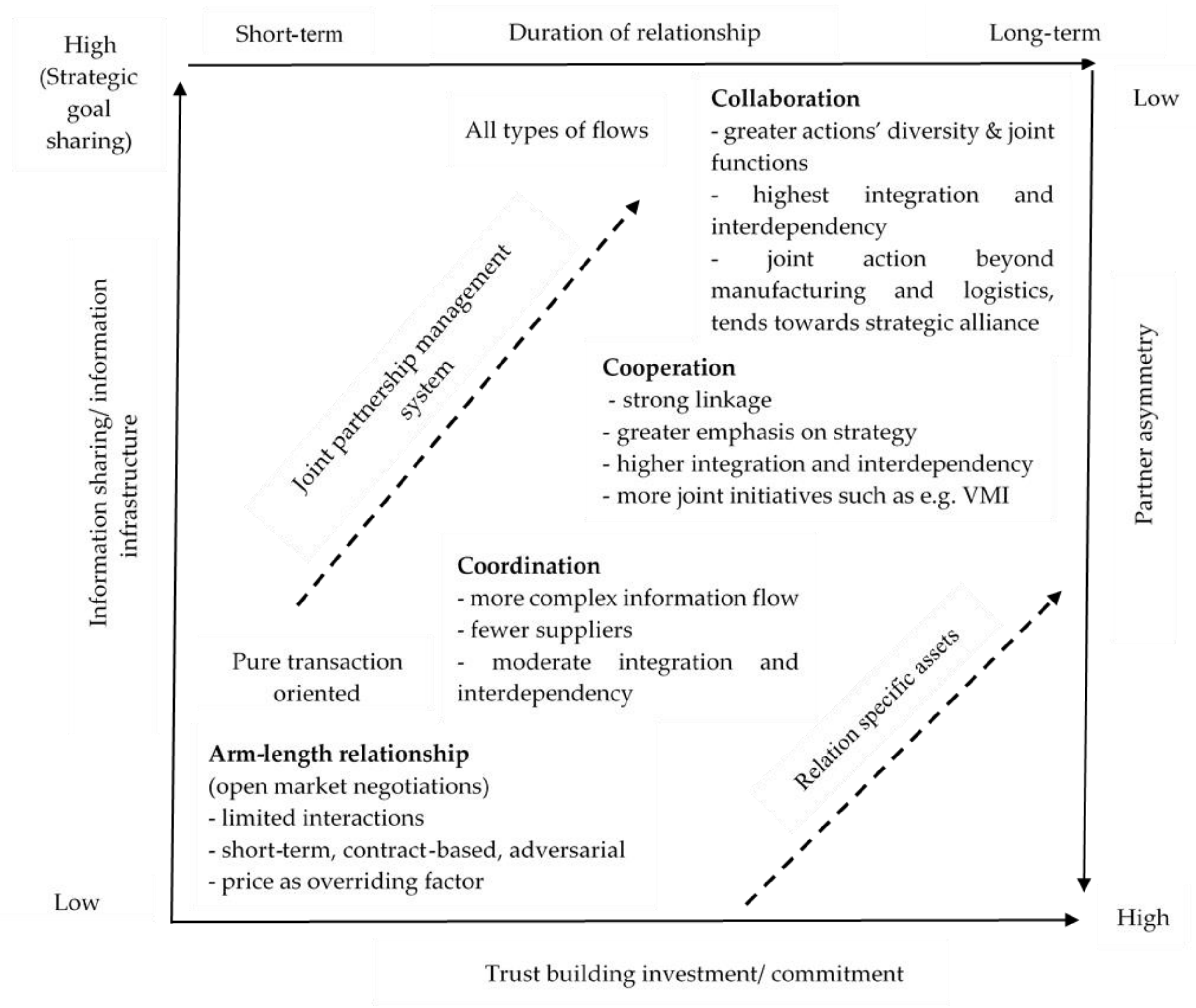

Fig. 1. CCC-model between firms

Source: Kotzab & et al., 2019

2.4. Applying information technology to improve competitiveness in supply chain

Blockchain can be described as a technology that increases trust and transparency in a system by storing all transactions. Everyone in the system can check those transactions and verify their accuracy (Cook, 2018). With blockchain technology, the supply chain in the aquaculture industry can go digital, which enables full traceability from farm to consumer and will connect global stakeholders together. Blockchain technology is able to safely and effectively collect, share and analyze huge data sets from different parts. This technology could greatly benefit the aquaculture industry by addressing issues related to food traceability costs, reducing transaction processing time, enhance the relationships of reliability and trust among the producers, retailers, consumers, governments and certification bodies (Yue & Shen, 2022).

Collaborative Planning Forecasting and Replenishment (CPFR) is an industry best practice that focuses on enhancing external collaboration between suppliers and retailers by adopting time-phased forecasting and multilevel inventory planning to generate integrated supply chain plans over some time (Parsa et al., 2020).

2.5. Supply chain partnerships in the fisheries sector

Son (2004) study on CPG (Consumer packaged goods) supply chain partnerships in Korea using cluster analysis, multiple regression analysis and MANOVA. The study classifies supply chain partnerships into four distinctive patterns by five performance determinants. There are four distinct patterns of supply chain partnerships: stagnated basic supply chain partnerships (Type I), developing basic supply chain partnerships (Type II), moderately collaborative supply chain partnerships (Type III) and highly collaborative supply chain partnerships (Type IV). The results of the analyses suggest that five factors: 1) level of information technology, 2) level of mutual trust, 3) degree of joint partnership management system, 4) existence of the relationship-specific assets and 5) degree of partner asymmetry, each have a positive influence on the performance of a supply chain partnership as individual factors. This study suggests that the performance of supply chain partnerships can be divided into three smaller performance dimensions, which are: 1) the extent of goal achievement, 2) the enhancement of a company's competitive position and 3) the contribution to supply chain management operational level. Thus, to improve a dimension of a supply chain partnership, participants must focus on improving the attributes of their partnership, susch as: well-established and functioning joint partnership management system, a strong mutual trust among partners, a sufficient level of investment dedicated to their partnerships, a high degree of internal and external information technology capacity, and information exchange.

Based on the study of Son (2004), Kotzab et al. (2019) locate different levels of supply chain cooperation using the 3C model of the supply chain based on five criteria: information sharing, trust, partnership management, relationship-specific asset and partner asymmetry. Then, based on the reference list of 278 articles on cooperation in the supply chain, logistics, and operations, the author performs a citation and co-citation analysis of the 47 most frequently cited papers in the International Journal of Production Economics during during 1998-2013. The results show a linkage between the four groups in the supply chain: (1) supply chain coordination by information sharing, (2) supply chain coordination through contractual agreements, (3) supply chain coordination with price policy and quantity discounts, and (4) buyer-vendor coordination by integrated inventory.

In the fisheries sector, Thakur et al. (2018) demonstrates that Information sharing is one of the main supply chain strategies for reducing uncertainty and is vital for supply chain efficiency in Iceland and Norway. The differences in the supply chain integration in the two countries affects the information sharing between the fishing vessels and processors that in turn has an impact on supply chain decision making. In Norway, companies face many difficulties in exchanging information due to a lack of vertical integration. In Iceland, companies are not making the most of the available information to market and personalize their products. By using the information on the quality of the catch, seafood companies in Iceland can improve their processing to increase economic benefits.

Although pangasius is an advantageous product of Vietnam and has penetrated the international market, there are still many limitations such as there is no close linkage between farmers and processors, leading to instability or excess of raw materials (Nguyen & Vo, 2014); vertical cooperation among pangasius processors serves as a means of internal control of grades and standards through farmer contracts (Trifkovic, 2014); changing consumer demand for processed, prepackaged, and home-sized products (CBI, 2021a); processors have not diversified value-added products, and the relationship between actors in the pangasius supply chain has not been linked sustainably and harmonized interests (Dong et al., 2023). In the long term, the pangasius industry needs to actively adapt to the challenges of the business environment through cooperation and information sharing in the supply chain. From secondary data, the authors identify the features of the Vietnamese pangasius supply chain, cooperation and information sharing during 2010-2021.

3. Methodology

In this study, the author uses secondary data from relevant scientific articles, specialized reports on pangasius from the Ministry of Agriculture and Rural Development (MARD), Vietnam Association of Seafood Exporters and Producers (VASEP), the Center for Import Promotion from Developing Countries (CBI), and the Food and Agriculture Organization of the United Nations (FAO) from 2010 to 2021. The author uses desk research to examine the status of pangasius industry (harvested output and farming areas, output and export turnovers, international market, the structure of products and exporting prices), supply chain structure of pangasius and how to collaborate and share information in the pangasius supply chain. From 2010 to now, the pangasius industry has been facing a lot of challenges from the business environment to evolve continuously. So, author examine the process of cooperation and information sharing in the pangasius supply chain. The remainder of the paper continues with the conclusion and policy recommendations.

4. Results and Discussion

4.1. The status of Vietnam's pangasius export industry

4.1.1. Pangasius harvested output and farming areas during 2010-2021

Pangasius farming is concentrated in 10 provinces of the Mekong Delta. Can Tho City, An Giang Province, and Dong Thap Province are the larger farming areas, accounting for more than 75% of the total pangasius production of the country (VASEP, 2022). Pangasius is mainly farmed and intensively cultured with a farm size ranging from 0,2 ha to 30 ha. The majority of small-scale farms are due to the limited financial resources of the farmers. The large-scale commercial farms are equipped with private enterprises. In 2021, farmed pangasius had an area of 5,856 ha and an output of 1.53 million tons. In 2017, the farming areas of pangasius decreased sharply, with a loss of 405 hectares (accounting for 7.7% of the total farming area) due to enteric septicemia of catfish (MARD, 2021a).

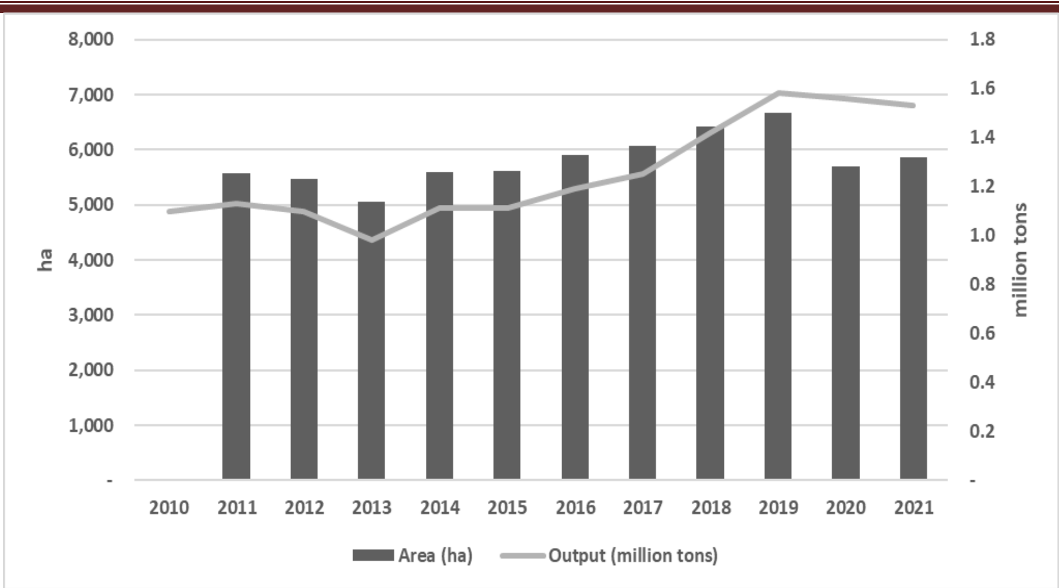

Fig. 2. The outputs and farming areas of Vietnamese pangasius during 2010-2021

Source: VASEP, 2010-2021

4.1.2. Pangasius output and export turnovers during 2010-2021

From 2010 to 2021, the total Vietnam pangasius output reached over 750 thousand tons, and an export turnover reached over 1.7 billion USD/year. Pangasius production was the lowest in 2015 due to strict technical and food safety standards from main markets (EU, US, ASEAN). Pangasius reached its highest export turnover in the year 2018 with more than 2.2 million USD due to an increase in export prices. During 2020-2021, because of the impact of the Covid-19 pandemic, farmers narrowed the farming area and limited the stocking of fingerlings. Export processing enterprises implement social distancing measures, producing "3 on the spot", so output and export turnover decreased sharply.

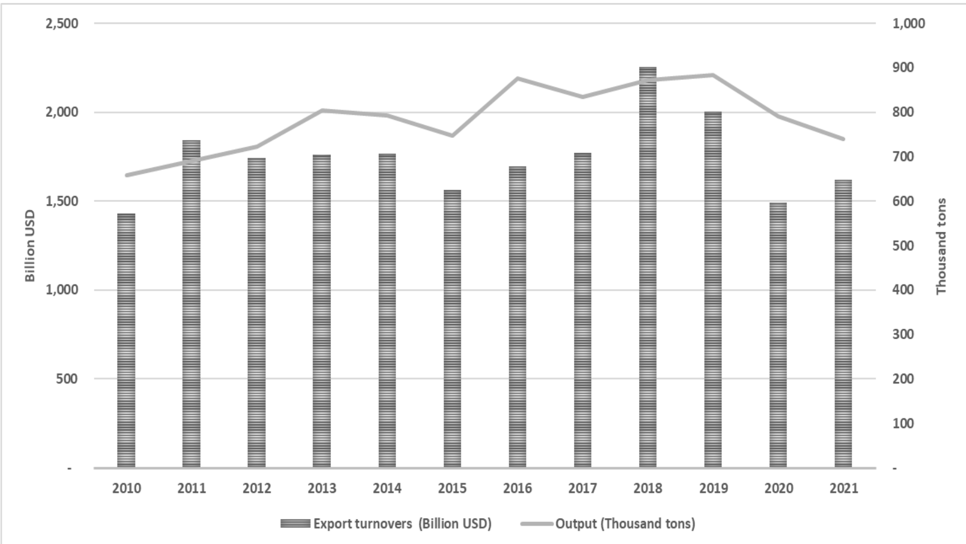

Fig. 3. Pangasius output and export turnovers during 2010-2021

Source: VASEP, 2010-2021

4.1.3. The international market, the structure of products and exporting prices

Vietnamese pangasius has conquered more than 140 markets around the world, including main markets such as China - Hong Kong, USA, ASEAN, EU, and Mexico (VASEP, 2022). In 2021, pangasius trade dropped significantly, with supply severely inhibited by a wide-ranging lockdown in Viet Nam. While there has been strong demand for pangasius in most markets, China saw its volume of imports falls by close to 50% (FAO, 2022).

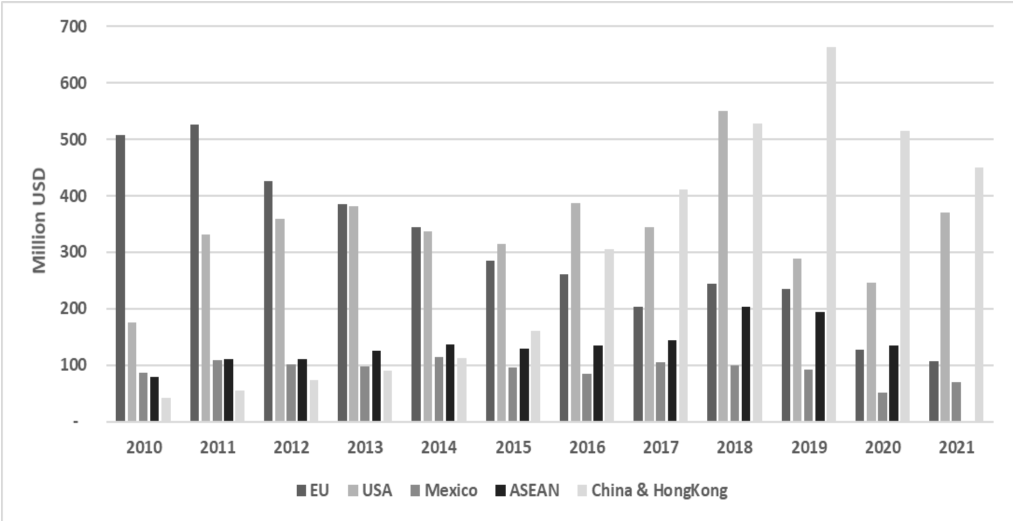

Fig. 4. Top 5 major export markets for pangasius during 2010-2021

Source: VASEP, 2010-2021

Vietnam's pangasius products during 2010-2021 were HS0304 (fish and other fillets) and HS16 (products processed from fish). Pangasius is mainly exported in the form of frozen fillets (HS03>96%) and the percentage of value-added pangasius products is very low (HS16<4%).

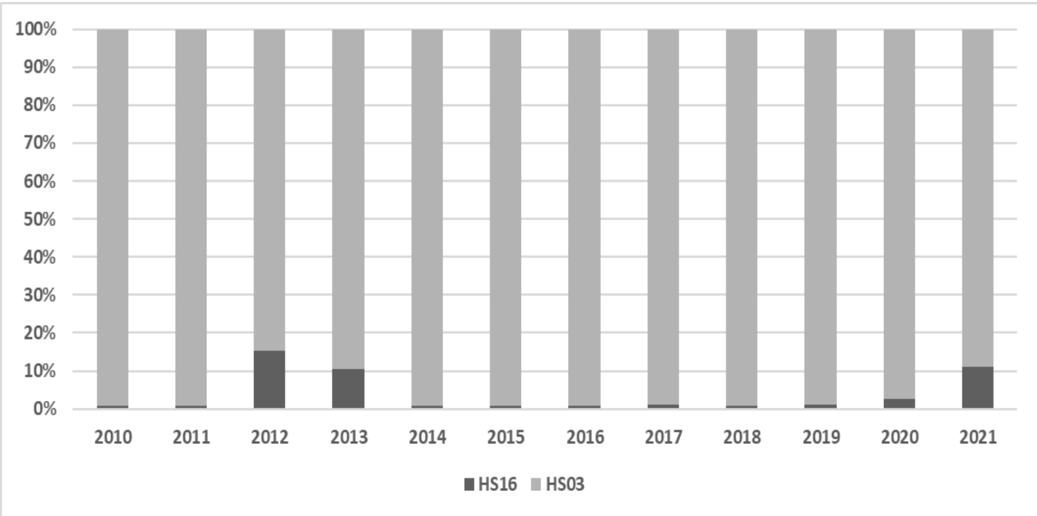

Fig. 5. The structure of exporting pangasius products during 2010-2021

Source: VASEP, 2010-2021

The price of frozen pangasius fillets exported to main markets was relatively stable during 2010-2021. The exporting prices in the US fluctuated around 3 USD/kg. The exporting prices in the US usually were higher than in other markets due to strict technical standards and anti-dumping duty compliance by processors. The exporting prices in the EU depended so much on the environment's standards, product quality, and competition with other white fish. Therefore, exporting prices in the EU were lower than in the US (average from 2 to 2.8 USD/kg). Exporting prices of pangasius in China market was from 1.7 to 2.4 USD/kg, which usually was lower by 30-40% compared with the US market and lower by 20-30% compared with the EU market due to lower transportation costs and less strict requirements on food hygiene.

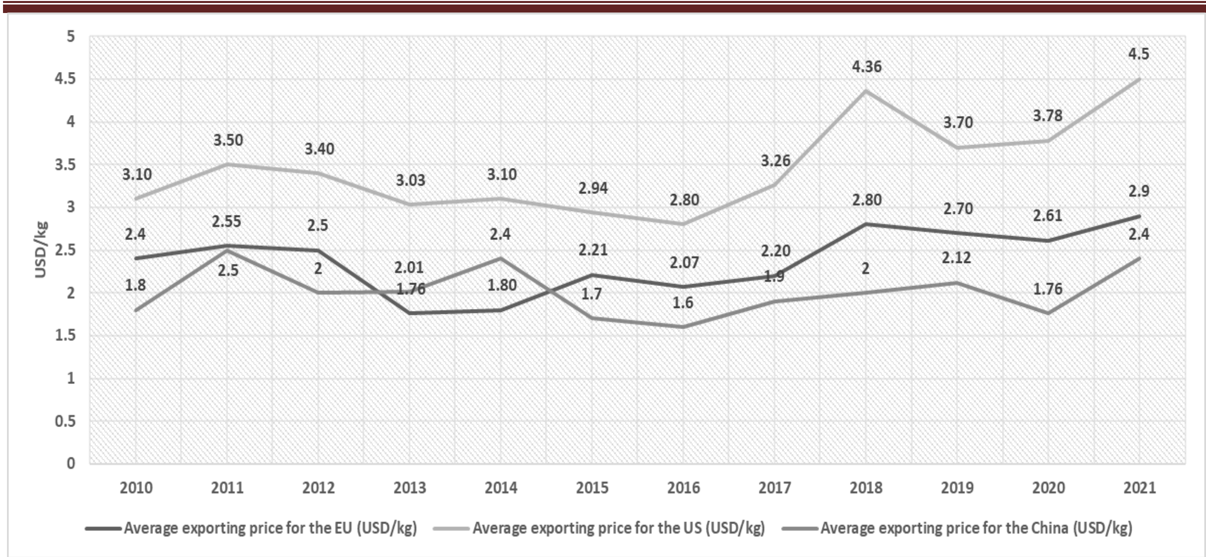

Fig. 6. Average exporting prices in main markets during 2010-2021

Source: VASEP, 2010-2021

4.1.4. Trends in the pangasius industry

Vietnam's pangasius industry has been exporting for more than 20 years. However, now and in the future, the main exported products are frozen pangasius fillets and frozen pangasius whole. Because the international market (USA, EU, China) prefers pangasius raw materials and convenient products to process into many pieces and different products. This product is provided to the restaurant. Besides, the consumer buys themselves for processing according to their demand. Raw materials bring significant to farmers and processing companies, so they are still favored by processors and exported (Trung Chanh, 2022).

The digital transformation applied to the pangasius industry is an interest to the government and is a goal for the industry's development. Because the pangasius supply chain has many limitations when market information has not been flowing from farmers to consumers. The demand for pangasius increased sharply, and farmers massively stocked. It makes increase excess output and the selling price decrease. Export prices fluctuate frequently, so farmers have many risks if they do not grasp market information. Information and digital transformation to manage the farming process and production resources increase output.

4.2. Cooperation and information sharing in the pangasius supply chain

4.2.1. Features of the Vietnam pangasius supply chain

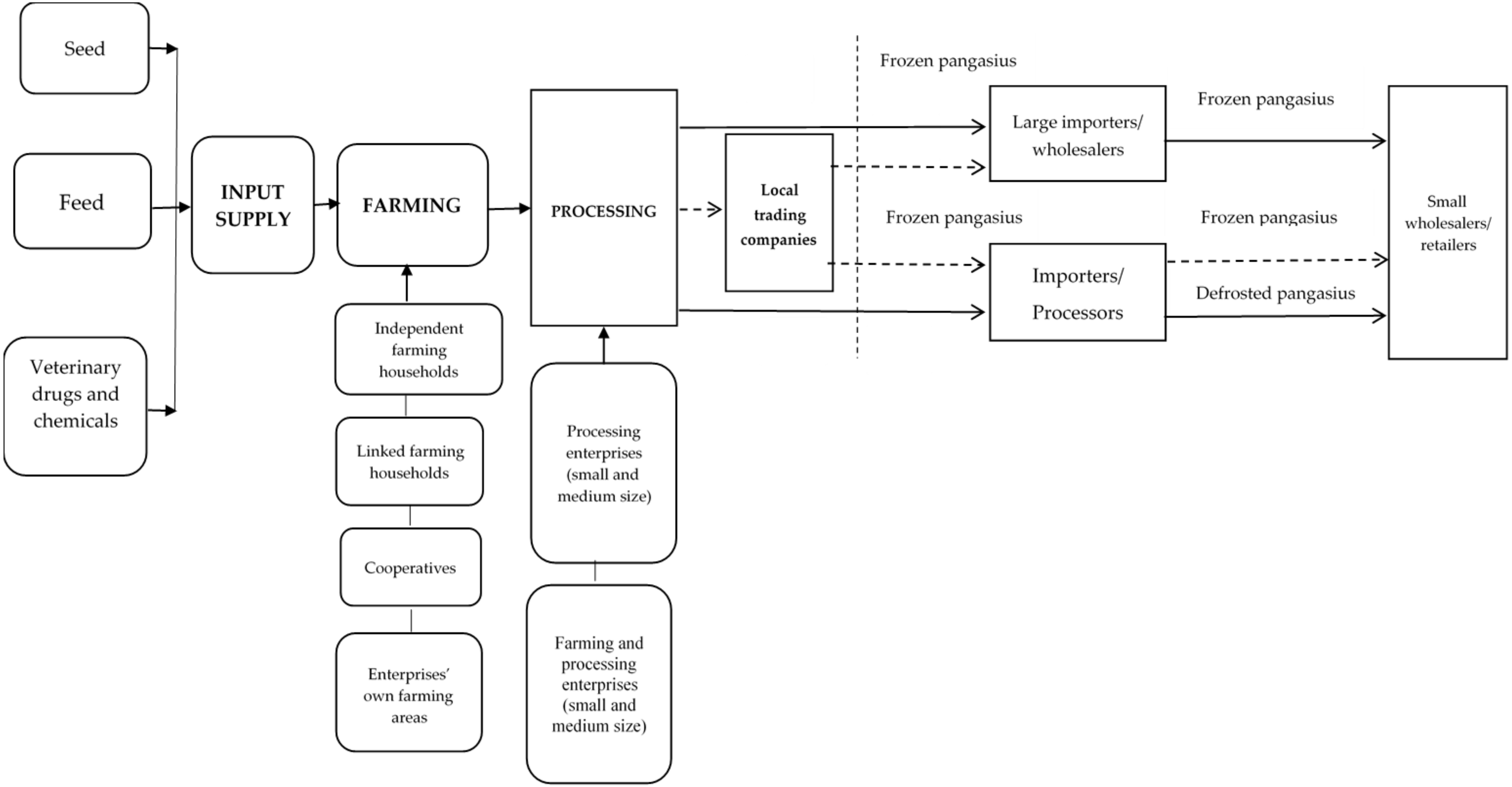

Fig. 7. Vietnam pangasius supply chain

Source: Author's simulation, 2023

4.2.2. Cooperation and information sharing in the pangasius supply chain

Table 1. Cooperation and information sharing in the pangasius supply chain

Level / Factor	**Cooperation and information sharing in the supply chain**			
	Arm-length relationships	**Coordination**	**Cooperation**	**Collaboration**
	Limited information sharing	Fewer information sharing	More information sharing	Highest information sharing
Input suppliers				
Seed	- Types of hatcheries in Vietnam range from state-owned firms, large and small-sized enterprises, private enterprises. Private small-scale hatcheries smaller than 1 hectare are very common. The state-owned hatcheries supply only 20% of the fingerlings for the Mekong River Delta. Small-scale farmers buy seeds from private hatcheries. The quality of seed produced by private hatcheries is often very low and the mortality rate is high (CBI, 2012). - Traditional farming households produce seed by themselves (16.1%), buy from reputable companies (0.02%) and buy freely (83.8%) (Nguyen et al., 2019).	- VietGAP farming households produce seed by itself (20.7%), buy from reputable companies (20.7%) and buy freely (58.6%) (Nguyen et al., 2019).	- The production and cooperation of high-quality 3-level pangasius in the Mekong Delta (Decision No. 987/QD-BNN-TCTS dated 20 March 2018) to produce high-quality fingerlings on a large scale, linking farming households and co-operative with enterprises, the government into a supply chain to traceability and sustainable development.	
Chemicals and medicines	- Farmers use Vitamin C, multivitamin, antibiotics, probiotics to prevention for diseases and use additional medicines to reduce the mortality rate of the fish. Some chemicals are used to maintain water quality. Farmers can easily buy these inputs from feed distributors and local pharmacies (CBI, 2012). - Traditional farming households had self-treatment fish disease (72.1%), drugs agents (23%), the	- VietGAP farming households had instructions of technicians (58.6%), drugs agents (20.7%) and self-treatment fish disease (20.7%) (Nguyen et al., 2019).		

	instructions of technicians (4.9%) (Nguyen et al., 2019).			
Feed	- In 2000 almost 90% of pangasius farmers were still using homemade feeds. In 2005, more than 50% of the farmers shifted to using commercial feeds and by 2011 it is estimated that even over 90% of the pangasius farmers use commercial feeds (CBI, 2012). - Traditional farming households use homemade feed (96.8%), do not environmental assessment (73.7%) and do not send samples for testing (92.7%) (Nguyen et al., 2019).	- VietGAP farming households uses 100% industrial feed, assesses the water environment (92.9%) and sends samples for testing (84%) (Nguyen et al., 2019).		
Farmers	- Most of the small-scale farms (under 1ha) are operated by individual households (CBI, 2012). - Traditional farming households sell directly to processors (95.1%) and collectors (4.9%) (Nguyen et al., 2019).	- VietGAP farming households sell to processors (93.1%), co-operative (3.5%) and collectors (3.4%) (Nguyen et al., 2019).		
Co-operative	- Many large companies engage in contract farming agreements with farmer's cooperatives to supplement their production. The inputs are supplied to farmers by the spot market (CBI, 2012).	- VietGAP farming household is associated with processing enterprises (34%), co-cooperative (21%), self-raising (45%) (Nguyen et al., 2019).		
Processors	- Most of the medium and large size exporters have their own farms with which they secure a minimal supply volume to keep their factories running. (CBI, 2012).	- Processors cooperate with farmers through market - specification contracts, resource supply contract, processing contract (Nguyen et al., 2019).	- Processors make farming areas (78%) and provide raw materials (80%) (Nguyen et al., 2019).	

Distributors	- During 2000-2009, the EU and the US were the most important markets for Vietnam pangasius. - International markets put lots of pressure on pangasius farmers to move towards more sustainable production methods. Large-scale commercial farms are quickly moving towards more sustainable production and certification of pangasius farms. (CBI, 2012). - Mainly food safety standards (HACCP, ISO) (Nguyen et al., 2019)	- Pangasius exported to 140 countries around the world. (VASEP, 2022) - Products comply with strict standards of distributors (ASC, HACCP, SQF GlobalGAP) in main markets (USA, EU). - Enterprises towards labor standards, environment, social responsibility SA8000, GlobalGAP, Nature land, ASC. (Nguyen et al., 2019).		
Retailers	- Processors export about 98% of their supply to international markets, while the remainder is distributed to the local market (middlemen, wholesalers, and retailers) (CBI, 2012).	- EU retailers lead the trend of sustainable seafood products, in which ASC is the certification that EU retailers commit to consumers (CBI, 2021a).	- Online retail and logistics to deliver products to consumers increased after the Covid-19 epidemic (CBI, 2021a).	
Consumers	- Nearly all pangasius is exported as frozen fillets; less than 1% of the export volume consists of added-value pangasius products (CBI, 2012).	- Frozen fillet products (96%) and value-added products (4%) (VASEP, 2010-2021).	- Consumers are attentive to their health. They prefer prepackaged products with the right size for home cooking, convenience for homemade, and traceability (CBI, 2021a).	

Source: Author's research, 2023

During 2000-2009, the import market only required food safety at the factory. The structure of the pangasius supply chain includes: Input suppliers (seed, feed, drugs, and chemicals, equipment) - Farmers (household and large-scale farms) - Collectors (small and large) - Processors/ exporters. Farmers are mainly small-scale, independent farmers. At the time of harvest, they will sell to processors (91.1%) and collectors (8.9%) (Khiem et al., 2010). More than 90% of farmers' products are supplied directly to processors. Processors export about 98% of the supply to the international market, while the rest distributes domestically. The role of the collectors is insignificant. Most farmers sell their produce directly to processors with the help of a company in harvesting and transportation (Khoi, 2011).

Partner’s behavior in the supply chain is independent, low interdependence, informal commitment and asymmetric information. This stage is characterized by limited information sharing and arm-length relationships. These inputs are sold through two channels: 1) directly from the supplier to large-scale commercial farmers or 2) indirectly from distributors or processors that also provide working capital and post harvest services. The transactions between farmers and processors performed in the spot market are based on informal agreements rather than corporations (Khiem et al., 2010). Majority farmers still operate on a spot market and do not have sustainable long-term relationships with processors. The fluctuation of raw material prices makes it difficult for farmers and processors to sign pre-harvest contracts. Pangasius exporters are confronted with a diversity of standards required by international buyers that supply to different countries and markets. The most common standards confronted at the moment are Aquaculture Certification Council (ACC) for the US retail market, Global Good Aquaculture Practices for the EU retail market, ASC for the EU retail market, and increasingly also bio standards such as Naturland and Kraft (CBI, 2012).

From 2010 to now, the international market requires control of the supply chain by import regulations and public and private standards. The structure of the pangasius supply chain includes Suppliers - Farmers (independent farming household, linked farming household, cooperatives, enterprises' own farming areas) - Processors - Importers - Retailers - Consumers. To implement the strategy of sustainable development of Vietnam's seafood industry, the government issued Decree 36/2014/ND-CP dated April 29, 2014 on raising, processing and exporting pangasius. According to the Decree by the end of December 31, 2015, commercial pangasius farming apply and be certified for Good Aquaculture Practices according to VietGAP or international certificates comply with Vietnamese legal system. Since then, farming households include traditional farming households (non-standard) and VietGAP farming households. Traditional farming households produce seed by themselves (16.1%), buy from reputable companies (0.02%), buy freely (83.8%), use homemade feed (96.8%), self-treatment fish disease (72.1%), drugs agents (23%) and instructions of technicians (4.9%). On the other hand, VietGAP farming households produce seed itself (20.7%), buy from reputable companies (20.7%), buy freely (58.6%), use 100% industrial feed, instructions of technical (58.6%), drugs agents (20.7%) and self-treatment fish (20.7%) (Nguyen et al., 2019).

This stage is characterized by interdependent on partner’s behavior in the supply chain. The transactions are mainly based on contracts and fewer information sharing. When the global seafood trade is increasing by public and private standards, the coorporation between the processor and the farmer has transfered relational form or captive form.

(1) Relational form:

Producers who have full capacity as facilities, financial, technical knowledge to practice good production standards, will get Market - specification contracts from processors under price level with accordingly required quality. In particular, the price is determined by supply-demand mechanism and quality is the most important factor in this type of contract. As a result, the producers are assured of the price and production yields by the processors, but remain in control until the time of delivery. However, this type may be detrimental to the producers when the market price is higher than the contract price and contract cancellation may occur.

(2) Captive form:

Processors will provide all inputs and control the entire farming process. In return producers provide land and labor only. This is a form of Resource supply contract. After deducting all the related costs, the processor will pay the producer at the time of harvest and delivery. In this form, the entire control belongs to the processor, who is subject to the risk of loss during farming and price fluctuations. Besides, if producers can provide inputs and processors provide only specific feeds and management support, this is the type of Production management contract. Under this contract, the processor only participates in the management, and agrees to buy the entire output at harvest, along with the bonus mechanism if the producer can save the feed while ensuring quality.

Up to now, processors tend to use market - specification contracts such as Sao Mai Group buying pangasius with farmers in An Giang provinces, Dong Thap provinces, Kien Giang province and Can Tho City at the price of 25,000 VND/kg (VASEP, 2020), Bien Dong Seafood Co., Ltd. buys raw pangasius at the price of 24,000 VND/kg (VASEP, 2018).

Frozen pangasius is imported by wholesalers for distribution to retailers, supermarkets, smaller traders or food service companies. Processors must be recognized as food safe. Commonly requested food safety certification schemes for seafood products are IFS, BRC and ASC. By being accredited with food safety, the processors demonstrate that the company implements the working procedures. They applied risk control measures. So the food safety hazard is prevented, eliminated or reduced. Raw materials and packaging are traceability products (CBI, 2021b).

In order to meet the demand for high-quality, branded, traceable pangasius seeds and required by domestic and international markets, the government has developed the project of linking production of high-quality 3-level pangasius seed in the Mekong Delta (Decision No. 987/QD-BNN-TCTS dated March 20, 2018). The project consists of 3 levels: (1) Level 1: The State orders domestic and foreign research institutes supply broodstock of pangasius selected for good traits. (2) Level 2: Aquaculture Breeding Center Level 1 and participating enterprises supply fry for hatcherie areas. (3) Level 3: Socializing (breeding centers, enterprises, nursery areas) provide commercial fingerlings (Fisheries Journal, 2020). Some large enterprises have invested in the infrastructure of hatcheries area with 1,102.3 hectares, including Viet Uc Pangasius Joint Stock Company, Nam Viet Binh Phu Aquaculture One Member Company Limited, Vinh Hoan Corp, Loc Kim Chi Development Company Limited (MARD, 2021b).

5. Conclusion and Recommendations

Based on the 3C framework, the level of commitment of partners in the Vietnamese pangasius supply chain is the level of coordination: information sharing based on contracts, manual tracebility, driven - buyers' supply chain, lack of demand forecasts and lack of consumer need information. The Industrial Revolution 4.0 và global competition has forced the Vietnamese pangasius industry to adopt information technology to meet consumer demands and maintain international market shares. In this study, the author recommends Vietnamese pangasius industry should apply blockchain for traceability and CPFR technique for cooperation between processors and retailers as long - term competitive strategies.

5.1. Using Blockchain to implement traceability

Applying blockchain to the Vietnamese pangasius supply chain helps traceability from farm to fork. All stakeholders in the pangasius supply chain (farmers, processing enterprises, distributors, logistics, retailers, consumers and relevant authorities) have easily accessed and known the origin information of the product. Blockchain is a stored ledger, transparency and distributed information with the participants in the supply chain. As a result, contaminated products are detected and reduced commercial fraud. Through traceability, consumers and stakeholders in the supply chain will feel more secure when all product information is transparent from farm to fork. Investing and applying of blockchain technology in the pangasius supply chain will increase costs, but changing modern technology have price competition is a path to order to affirms the trademark and improves the Vietnamese pangasius competitiveness.

5.2. Using CPFR to cooperation between processors (processing and exporting enterprises) and retailers

CPFR is a collaborative technique between processors and retailers, which have planned activities in the supply chain such as the production, procurement, and delivery to consumers. CPFR consists of 3 parts: (1) Collaboration in planning (processors and retailers will agree to cooperate, determine responsibilities and build plan to meet market supply-demand); (2) Collaboration in forecasting (forecasting revenue for retailers and processors) and (3) Complementary (Forecasting orders, planning production, delivering products and meeting customer needs).

Processors and retailers participate in the CPFR technique, share information publicly to plan turnover and forecast output. The POS (points of sale) system will provide information about real-time turnover based on the POS from the stores. Therefore, the business process will be updated and customer’s transactions will be controlled at the stores. Then, the retailers will process the data, forecast turnover, establish production and share the information with the processors. The processors receive information on forecasting, procurement, and production and send this information back to the retailers about the supply output. Based on transparent and timely information shared between processors and retailers, products are made to meet customer demand, reducing inventory and decreasing transportation costs, flexibly respond to customer needs, and improve customer service quality. Information sharing and cooperation between processors and retailers in the supply chain are formed from planning to replenishment. Therefore, supply chain members will recognize an overview of the supply chain and resolve exceptions for efficiency in the operation.

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Environmental Sustainable Study at Coastal Area in Kim Son District, Ninh Binh Province

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ABSTRACT

The coastal area of Kim Son district is home to a variety of resources such as biological resources, land resources, water resources, energy resources... Currently, this area is facing many unsustainable risks. Due to the influence of natural factors as well as socio-economic development activities. The set of criteria for assessing environmental sustainability in the coastal area of Kim Son district is built with 7 criteria and 15 criteria. The evaluation criteria include sustainability of land resources, water resources, aquatic resources, energy resources, the degree of protection of coastal ecosystems, coastal water quality, wastewater treatment capacity, waste. The results of the quantitative assessment of environmental sustainability in the coastal area of Kim Son district have shown the level of sustainability in this area from less sustainable to quite sustainable. According to the scale, the indicators are quite sustainable including aquatic resources (0.615), coastal sea water quality (0.78). The average sustainability indicators include water resources (0.47), energy resources (0.535), degree of protection of ecosystems (0.595), capacity to treat wastewater and waste (0.56), land resources (0.225) are rated as less sustainable in the sustainability rating scale. The composite environmental sustainability index in the coastal area of Kim Son district is assessed at medium sustainability (0.52). On the basis of environmental sustainability analysis, the study makes some recommendations for rational use of resources and environment in the study area.

Keywords: Coastal area; Environmental protection; Sustainability; Kim Son district

1. Introduction

The increasing world population and the exploitation of natural resources for economic development has made these resources become scarce. In addition, people have not paid enough attention to environmental protection leading to ecosystem degradation and destruction of the

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living environment. Therefore, the issue of management and exploitation, access to and distribution of benefits for resources with high risk of conflicts and conflicts among stakeholders should be concerned and studied.

Sustainability is often used in interdisciplinary approaches and research to assess the ability to maintain and develop a certain system or to integrate systems. According to the US Environmental Protection Agency's framework for assessing sustainability, sustainability has an interdependence between human society and the natural environment (Fiksel, J., 2012). They emphasized that socio-economic development has been putting a lot of pressure on natural resources and the environment, which can threaten human health and the well-being of society.

Sustainability is also determined based on the degree of change in the development process, which is the ability of a system to maintain development to ensure development at a level close to or greater than the average level of the previous period (Lynam, J.K., and Herdt, R.W., 1989). According to the Australian Government's Measurement Program, sustainability is the comprehensive development of society, which is the combination of the livability of the community with the stability and assurance of environmental quality, development. sustained economic growth over time (Australian Government, 2012).

In Japan, sustainability is understood as resource extraction activities and the environment must be within the tolerance and recovery limits of natural ecosystems. Areas of interest include: climate, biodiversity, agriculture, fisheries, forestry, energy and resources, economic development, health and culture (Kaijikawa, Y., 2008). Thus, it can be seen that the concept of sustainability is closely related to sustainable development. However, sustainable development emphasizes on harmonious development of the link between the three pillars of economy - society - environment; while sustainability approaches towards long-term maintenance of core functions and values of natural resources and environment for humans.

In Vietnam, the Prime Minister issued Decision No. 2157/QD-TTg on 11/11/2013 about a set of indicators for monitoring and evaluating local sustainable development for the period 2013-2020 including 9 indicators related to the field of natural resources and environment. At the local level, scientists used Delphi method to select 37 comprehensive sustainability assessment indicators in Quang Tri province, including 12 indicators on environmental aspects (Le Trinh Hai, 2009); survey the ecological sustainability of farming models at the household level in the Mekong Delta (Le Thanh Phong et al., 2011). In addition, there are a number of studies evaluating the vulnerability of geological resources in key bays such as Tien Yen Bay (Nguyen Thi Minh Ngoc et al., 2008); Ganh Rai Bay (Mai Trong Nhuan et al., 2009) and coastal areas (Mai Trong Nhuan et al., 2016). Thus, studies on sustainability assessment have been carried out at different levels from central to local. However, in each different region, there are different characteristics of natural, socio-economic conditions, so the sets of indicators for assessing sustainability need to be adjusted accordingly.

In the coastal areas of Vietnam, resources and ecosystems play an extremely important role in the livelihoods of local people. Kim Son is a coastal district located in the southeast of Ninh Binh province. The coastal alluvial ground of Kim Son district is about 18 km long, from the mouth of the Day River in the east of the district to the mouth of the Can River in the southwest. This is the widest alluvial area in the North of Vietnam, at low tide the width is up to 6 ÷ 7 km. Especially, this area, with its diverse ecosystems, is an important part of the buffer zone, the transition zone of the World

Biosphere Reserve, the inter-provincial coastal wetlands of the Red River Delta. Currently, Kim Son area is facing many unsustainable risks due to the influence of natural factors as well as socio-economic development activities. The study focuses on determining environmental sustainability in the coastal area of Kim Son district, Ninh Binh province in order to serve as a basis for rational use of resources and environmental protection in the study area.

2. Subjects and methods

2.1. Research subjects

The coastal area of Kim Son district is determined to include administrative units located in Binh Minh 1 dike Binh Minh 2 (Kim Dong, Kim Trung, Kim Hai communes, land area unit 1080 and unit 279) and area from Binh Minh 2 dike to Con Noi island, Kim Son district with a total natural area of 9,035.1 ha.

The study area is sandwiched between the Day and Can rivers, stretching over a coastline of 18.34 km, but distributed in many coastal and riverine ecosystems. The wetland ecosystems in this area are mainly mangrove ecosystems and aquaculture ecosystems. With high biodiversity, this area has been recognized by UNESCO as a world biosphere reserve.

Fig 1. Map of coastal area in Kim Son district, Ninh Binh province

Source: Thanh Nguyen Duc et al., 2019

The marine economy is the main economic sector of the Kim Son coastal area, with strong development fields such as shrimp, tiger, and blue crab farming. The economic structure of aquaculture in 2021 in coastal communes is as follows: in Kim Hai commune, aquaculture accounts for 48.2% of the structure of economic sectors, 54.1% in Kim Dong. In commune Kim Trung, agriculture - forestry - fishery accounts for 49.17%.

2.2. Reseach Methods

2.2.1. Methods of information collection

The main method used in the study is the method of collecting and processing information, researching secondary documents. The documents used in the study include documents on natural - socio-economic conditions, current status of exploitation and use of coastal alluvial deposits in Kim Son district.

In addition, the study also used the survey method by semi-structured questionnaire on 60 farmer households living in the coastal area of Kim Son district with convenient sampling method. The survey was conducted in November 2022, the information collected included the current status of exploitation, resource use and environmental protection in the study area.

2.2.2. Methods of assessing environmental sustainability by a set of criteria

Developing a set of criteria for assessing the sustainability of coastal areas is a core content in assessing the sustainability of systems. The set of criteria is built with a hierarchical structure including: criteria and targets to identify and analyze natural, social and human components.

Based on a set of criteria for assessing the sustainability of Vietnam's coastal areas, which has been tested and evaluated by the project "Research to establish a set of criteria for assessing the sustainability of coastal areas in Vietnam, testing its application for a typical areas and propose solutions to replicate", thereby building a shortened set of criteria for the coastal area of Kim Son district, including 7 criteria and 15 targets for evaluation.

Table 1. Criteria for assessing environmental sustainability in coastal areas Kim Son district, Ninh Binh province

	Criteria		Targets	Unit
1	Sustainable land resources	1	Proportion of land area reserved for the future	%
		2	Percentage of agricultural land with high productivity and sustainability	%
2	Sustainable water resources	3	Percentage of people with access to clean water	%
		4	Changes in the area of salt and brackish aquaculture	Ha
		5	Annual area of coastal mangrove plantation	Ha
3	Sustainable energy resources	6	Percentage of population using electricity from the national grid	%
		7	Potential to exploit renewable energy	%
4	Sustainable aquatic resources	8	Output of salt and brackish aquatic products	Tons
		9	Output of salt and brackish aquaculture	Tons

5	Protecting coastal ecosystems	10	Area of coastal mangrove forest	Ha
		11	Diversity of coastal wetland ecosystems	%
6	Environmental quality of coastal sea water	12	Percentage of parameters that meet the allowable standards	%
7	The ability to treat waste water and waste	13	Ratio of solid waste treated/total waste generated	%
		14	Ratio of plastic waste treated/total waste generated	%
		15	Percentage of aquaculture households that treat wastewater before discharging it into the environment	%

Source: Author's compilation

The specific calculation of indicators in this study is determined through the following steps:

Step 1: Identify the main factors and the secondary factors

Step 2: Normalize the data

Step 3: Determine the weights for the key factors

Step 4: Calculate the key factors

Step 5: Calculate Sustainability Index

a) **Step 1: Identify major and minor factors**

Based on a set of criteria for assessing the sustainability of coastal areas, which is a core content in assessing the sustainability of systems, the study has identified 7 main factors, 15 sub-factors as shown in Table 2.

Table 2. Key factors and sub-factors in environmental sustainability assessment of Kim Son district coastal area

	Key factors	Sub-factors
1	Sustainable land resources	Proportion of land area reserved for the future
		Percentage of agricultural land with high productivity and sustainability
2	Sustainable water resources	Percentage of people with access to clean water
		Changes in the area of salt and brackish aquaculture
		Annual area of coastal mangrove plantation
3	Sustainable energy resources	Percentage of population using electricity from the national grid
		Potential to exploit renewable energy
4	Sustainable aquatic resources	Output of salt and brackish aquatic products

		Output of salt and brackish aquaculture
5	Protecting coastal ecosystems	Area of coastal mangrove forest
		Diversity of coastal wetland ecosystems
6	Environmental quality of coastal sea water	Percentage of parameters that meet the allowable standards
7	The ability to treat waste water and waste	Ratio of solid waste treated/total waste generated
		Ratio of plastic waste treated/total waste generated
		Percentage of aquaculture households that treat wastewater before discharging it into the environment

Source: Author's compilation

b) **Step 2: Normalize the sub-factors**

The measurement criteria include both quantitative and qualitative criteria, which have different units. Therefore, when processing data, it is necessary to convert the values to about 0 to 1, where the value 1 represents a high degree of stability; The value 0 is the degree of unsustainability. Therefore, the criteria after quantification will be calculated according to the following method: (i) Normalize according to min-max for criteria with quantitative values (Equations 3 and 4) (Han et al., 2012). ; UNDP, 2006) and (ii) converted on a scale of 0 – 1 for criteria with semi-quantitative value.

For criteria that have a positive correlation with sustainability, equation (1) is applied. $x_{ij} = \frac{X_{ij} - Min\mathrm{X}_{ij}}{MaxX_{ij} - Min\mathrm{X}_{ij}}$ (1)

In contrast, for criteria that are negatively correlated with sustainability, equation (2) is applied. $x_{ij} = \frac{MaxX_{ij} - \mathrm{X}_{ij}}{MaxX_{ij} - Min\mathrm{X}_{ij}}$ (2)

In which: x_{ij} is the normalized value of criterion I; Min and Max are the minimum and maximum values for each criterion.

c) **Step 3: Determine the weights for the key factors**

The author uses the same weighting method for the key factors. This method considers the value of factors contributing to the vulnerability index to be the same, so the weight of each factor will be equal to 1. The weighting method by this method is just taking average value of factors contributing to the vulnerability index.

d) **Step 4: Calculate the key factors**

Once normalized, the values of the major factors will be the average of the normalized values of the minor factors and are calculated based on formula (3) below:

$$Md = \frac{\sum_{i=1}^{n} x_{ij}}{n} \quad (3)$$

In which: Md is the primary factor index for the community d, x_{ij} represents the normalized sub-factor index i, and n is the number of minor factor indexes in the main factor index relationship.

e) **Step 5: Calculation of environmental sustainability index for coastal areas of Kim Son district**

* *Environmental sustainability index of Kim Son coastal area (SI) :* The average value of the main factors is calculated according to the formula (1.4):

$$SI = \frac{\sum_{i=1}^{n} W_{M_i} M_{\mathrm{d}i}}{\sum_{i=1}^{n} W_{M_i}} \quad (4)$$

In which: Mdi is the ith principal factor value of community d; and W_{M_i} is the number of sub-factors of the i major factor or weight of the major factor.

The SI value ranges from 0 (smallest degree of stability) to 1 (highest degree of persistence).

Based on the assessment results of each component, the sustainability of the coastal area will be calculated using the average method and evaluated according to Table 3.

Table 3. Scale for assessing environmental sustainability in coastal areas of Kim Son district

Point ladder	0 ~ 20%	21 ~ 40%	41 ~ 60%	61 ~ 80%	81 ~ 100%
	0 ~ 0.20	0.21 ~ 0.40	0.41 ~ 0.60	0.61 ~ 0.80	0.81 ~ 1.00
Sustainability Rating	Unsustainable	Less sustainable	Medium sustainability	Quite sustainable	Sustainable

Source: Author's compilation

3. Reseach results and discussion

3.1. Sustainable land resources

Sustainability index of land resources in the coastal area of Kim Son district is calculated through two sub-indices, namely the area of land reserved for the future and the rate of agricultural land with high productivity and sustainability.

Table 4. Coastal area of Kim Son district classified by uses

Unit: Ha

Administrative units	Total area	In which					
		Land for agriculture production	Forestryland	Land for aquaculture	Specialized land	Landscape	Unused land
Kim Hai	575.5	39.6	11.9	336.5	119.9	15.8	51.8
Kim Trung	446.8	36.1	0	298.1	88.9	12.8	10.96
Kim Đong	652.7	26.9	0	435.8	153.7	30.5	5.65

The area is managed by Kim Son district	7,360.1	13.5	710.0	5,070.1	446.3	9.9	1,110.2
Total	9,035.1	116.2	721.9	6,140.5	808.8	69.1	1,178.61

Source: Kim Son District Statistical Yearbook 2020

According to Table 4, the unused land area in the coastal area of Kim Son district is 1178.61 ha, equivalent to 13.04%. So the ratio of land area reserved for the future is 13.04 %.

In the coastal area of Kim Son district, there are soil groups including Soil with salt tiger, parrot, cork; High salinity soil, Medium salinity soil, low salinity soil, alkaline soil and alluvial soil. In which, the total area of salinity land, parrots, mangroves and highly saline soil is 6183 ha (724 ha of saline land for tigers, parrots, mangroves and 5459 ha of highly saline land). The area of salty soil is suitable for many types of mangroves. Therefore, the optimal solution for saline soils, black tigers and cork parrots is to zone off or replant them to form protective forest belts. The places where ecological conditions permit can be improved for aquaculture. High salinity soil has limited high salinity, however, currently most of the district's highly saline soil is used for aquaculture. The remaining area of the district is about 2852.1 hectares (accounting for 31.56% of the natural area) including the area of medium saline soil, low saline soil, alkaline soil, alluvial soil used for agricultural purposes. with high productivity with proper attention to technical measures.

So the proportion of area used for agricultural purposes with high productivity is 31.56% of the natural area of the coastal area of Kim Son district. From there, we have a table of minor factors and normalized values for the main factor, which is Sustainability of land resources.

Table 5. Land resource sustainability index

	Normalized value	**Real value**	**Min value**	**Max value**
Proportion of land area reserved for the future (%)	0.13	13.04	0	100
Percentage of agricultural land with high productivity and sustainability (%)	0.32	31.56	0	100
Value of M1	0.225			

Source: Author's calculation

3.2. Sustainable water resources

Water is one of the most important non-renewable resources for socio-economic development and especially for people. In the context of climate change and saltwater intrusion are becoming more and more serious and difficult to control. Clean water is one of the determining factors for people's satisfaction with the level of social security of an area. Especially for the coastal area, water plays a very important and necessary role for the sustainable development of the region.

Surface water resources: the study area is bordered on the east and west by the Day and Can rivers. Within the study area, apart from a few unbranched tidal creeks, is a dense system of artificial irrigation canals and a well-developed system of ponds and lakes for aquaculture. These systems are the result of excavation, embankment, and water diversion for production and intra-regional transportation.

Day River and Can River are two rivers of great significance to the formation and development of alluvium here. These are the two main channels leading materials to accretion here. Not only that, the two rivers are also the main source of fresh water supply in the region to improve and turn the salty land into the rich rice fields, gardens, and villages today.

Groundwater resources: Groundwater in the Day river basin is quite rich and the exploitation level is quite high; mainly for urban areas, towns, urban and rural populations, some for industry and services.

According to Statistical Yearbook 2021 of Kim Son district, the rate of households using clean water in 2021 of Kim Son district is 95.2%, the rate of households using clean water in 2021 of Kim Hai commune is 85%, of Kim Trung commune. is 100%.

To calculate the change in wetland area over time of the coastal area of Kim Son district, we consider the area of brackish aquaculture and the area of coastal mangrove plantation in the period 2016-2021.

Table 6. Changes in wetland area in the period 2016-2021 of the coastal area of Kim Son district

	2016	**2017**	**2018**	**2019**	**2020**	**2021**	**Everage**
Changes in the area of brackish salt aquaculture (ha)	3,146	3,316	3,460	3,753	3,901	3,349.4	3,487.5
Annual area of coastal mangrove plantation (ha)	24.49	20	25	25	20	40	25.7

Source: Author's calculation

Thus, we determine the secondary factors and the normalized value of the water resource sustainability index according to Table 7.

Table 7. Sustainability index of water resources in coastal areas of Kim Son district

	Normalized value	**Real value**	**Min value**	**Max value**
Percentage of people with access to clean water (%)	0.68	95.2	85	100
Changes in the area of salt and brackish aquaculture (Ha)	0.45	3,487.5	3,146	3,901
Annual area of coastal mangrove plantation (Ha)	0.285	25.7	20	40
Value of M2	0.47			

Source: Author's calculation

3.3. Sustainable energy resources

Sustainable energy resources is the rational use of non-renewable energy resources and efficient exploitation of renewable resources (wind power, solar power, geothermal biomass or small hydroelectricity).

Today, fossil energy sources such as coal, oil and gas are accounting for a large proportion of electricity generation in the country, but they are gradually becoming scarce. Therefore, the development of renewable energy sources, especially wind and solar energy, is an inevitable trend of Vietnam in general and Ninh Binh in particular. Renewable energy sources currently contribute 24% of global electricity, expected to account for 30% by 2030, 50% by 2050...

Ninh Binh is a province with high heat radiation, average sunshine time, so Ninh Binh solar power is selected as the most effective solution. According to experts, the use of grid-connected solar power with households and businesses will help save electricity, increase production efficiency, and at the same time protect the environment and combat climate change. Kim Son area, Ninh Binh has potential for solar energy, wind energy, but currently these energy sources have not been interested in exploiting. Out of 60 households interviewed in-depth in this area, only 4 (6.67%) of households have exploited solar energy for cooking and water heating.

Summarizing the available data, the sustainability of energy resources in Kim Son area, Ninh Binh is shown in Table 8**.**

Table 8. Sustainability index of energy resources in coastal areas of Kim Son district

	Normalized value	**Real value**	**Min value**	**Max value**
Percentage of population using electricity from the national grid (%)	1	100	0	100
Potential to exploit renewable energy (%)	0.07	6.67	0	100
Value of M3	0.535			

Source: Author's calculation

3.4. Sustainable aquatic resources

The flora and fauna here are typical of the tropical coastal biota with many different ecological groups, especially in terms of species composition but few in number of species with biological characteristics of being broad and wide. salt. Depending on ecological conditions, the distribution of organisms varies in space and time.

The composition of fish seed sources in the coastal intertidal zone of Ninh Binh province, the surveys in 2015 identified 30 groups and families. Most are coastal and estuarine fish families. There are many families that are economic fish such as flounder, sea bream, mullet, sea bass, etc., creating the main aquatic resources for coastal estuarine waters. The species composition of the rainy season is more diverse than that of the dry season. Density of fish eggs, fry, seasonal and tidal fluctuations. Density tends to be high in the dry season when the water is high and in the rainy season when the water is low. The spawning ground of fish resources is located far from the shore to about 15 m of water. The breeding grounds are areas bordering floating dunes, tidal flats and mangroves

The floating seed source of shrimp and crab identified 15 taxon units to the family, of which some came from genus to species. The bottom seed source identified 17 species, of which many species have economic value such as shrimp, white shrimp, blue crab.. The density of shrimp and crab seed stock tends to be high in the dry season and at high water and low water. . Crayfish spawning grounds are identified in offshore areas, where salinity is high, stable, and clear. Breeding ground is an area of tidal flats and mangroves where there is an abundant food source.

Sources of molluscs in the coastal alluvial area of Ninh Binh province have identified 44 species. The species of economic value belong to the clam family, class bivalve. The gastropods are mainly species of little economic value, even harmful. The spawning grounds of molluscs of economic value are identified in alluvial areas, floating dunes, far from the estuary where salinity is stable during the breeding season. Breeding grounds are tidal flats, mangroves and high floating dunes, where there is a suitable substrate for each growing object with diverse and rich sources of nutrients.

The number of benthic organisms in Ninh Binh waters is medium and high, the average density is 907 individuals/ m^2, the average weight is 78,760.26 mg/ m^2. In the dry season, the average density of benthic animals is 711 heads/m^2, the average weight is 109,192.2 mg/ m^2. In the rainy season, the average density of benthic animals is 1103 animals/m2, the average weight is 48,323.3 mg/ m^2.

Table 9. Production of fishery caught and cultivated in the coastal area of Kim Son district in the period 2016-2020

Unit: Tons

	2016	**2017**	**2018**	**2019**	**2020**	**Everage**
Output of salt and brackish aquatic products	4,292	4,420	4,532	4,238	2,109	3,918.2
Output of salt and brackish aquaculture	15,563	17,326	19,223	20,801	22,672	19,117

Source: Kim Son District Statistical Yearbook 2020

The quantitative assessment of the sustainability index of aquatic resources in the study area is assessed through the average productivity of aquaculture and fishing in the area. From the survey and collected data on aquatic resources, it has been possible to quantitatively evaluate the sustainability index of aquatic resources in the coastal area of Kim Son district through the values of the average productivity of fishing - farming. aquaculture of the region.

Table 10. Sustainability index of aquatic resources in Kim Son coastal area

	Normalized value	Real value	Min value	Max value
Output of salt and brackish aquatic products (Tons)	0.74	3,918.2	2,109	4,532
Output of salt and brackish aquaculture (Tons)	0.49	19,117	15,563	22,672
Value of M4	0.615			

Source: Author's calculation

3.5. Ecosystem protection level

Vietnam's marine ecosystem is quite diverse and plays a very important role in regulating climate and nutrition in the sea through biogeochemical cycles. At the same time, these ecosystems bring great values and benefits in terms of economy and society, with about 28 million people directly and indirectly affected in life. Therefore, it is very important to protect and restore marine and coastal ecosystems and ensure the sustainable use of marine resources and ecosystems. The sustainability of the marine ecosystem is assessed through a number of criteria: Area of coastal mangrove forests and Diversity of wetland types.

According to the results of the current status quo in 2022, afforestation land is 1,588.9 ha, of which the forested area is 633.25 ha, and the bare land is 955.65 ha. The forest area is distributed in the coastal alluvial area of the district, combined with the sea dike system that has been and is being built to help protect the entire production area in the dike of Kim Son district.

The coastal area of Kim Son district has a diversity of coastal ecosystems such as aquaculture ecosystems, coastal estuarine ecosystems, mangrove ecosystems, seagrass beds, and marine ecosystems. alluvial and intertidal ecosystems, dune ecosystems, and shallow coastal ecosystems. However, based on the size of the ecosystems, this study considers the following ecosystems: aquaculture ecosystems, mangrove ecosystems, shallow coastal marine ecosystems, Con Noi ecosystem.

Table 11. Area of coastal wetland types in Kim Son district

	Coastal wetland type	Area (ha)
1	Aquaculture	3,349.4
2	Mangroves	1,588.9
3	The coastal shallow sea	6,000
4	Con Noi Ecosystem	1,000

Source: Ninh Binh Provincial People's Committee.,2021

The coastal area, alluvial ground and floating dunes of Ninh Binh province is sandwiched between the Day and Can rivers, stretching over a coastline of 18.34 km, but distributing many ecosystems in the coastal and riverside. With high biodiversity, this area has been recognized by UNESCO as a world biosphere reserve. Coastal wetland ecosystem services in Kim Son district have played an important role in creating livelihoods, improving people's living standards and promoting local socio-economic development. The article aims to identify ecosystem services of coastal wetland ecosystems in Kim Son district, Ninh Binh province. Assessing the diversity of coastal wetland ecosystems in Kim Son district, 48/60 (80%) households said that Kim Son district has a high level of diversity of coastal wetland ecosystems.

Table 12. Protection level of coastal ecosystems in Kim Son coastal area

	Normalized value	Real value	Min value	Max value
Area of coastal mangrove forest (Ha)	0.39	633.25	0	1,588.9
Diversity of coastal wetland ecosystems (%)	0.8	80	0	100
Value of M5	0.595			

Source: Author's calculation

3.6. Coastal sea water quality

Human activities (tourism, aquaculture, etc.) have been affecting the ecological environment and natural landscape of the coastal area. Environmental pollution will return if not controlled and handled appropriately. This criterion is evaluated through the following criteria: Coastal sea water quality meets environmental standards. This indicator has been used by the EU in the set of sustainability assessment criteria for coastal areas. This is also an important indicator to assess whether the sea water quality of the region is suitable for sustainable tourism. This indicator will be considered based on secondary documents on coastal marine environment in Kim Son area, Ninh Binh

According to the final report of the project: Developing a report on the current status of management and database of resources in the coastal area of Ninh Binh, the water in Ninh Binh's sea area is polluted by 5/22 parameters, namely TSS, COD, ammonium, 4.4' – DDD and As. Water is at risk of being contaminated by 4/22 parameters which are deficiency of dissolved oxygen, nitrite, chlorphyll a and Cu. That is, the ratio of parameters within the allowable limit for water quality in coastal waters is 17/22 parameters (78%).

Among the substances that are contaminated or at risk of pollution in Ninh Binh waters, it is necessary to pay attention to organic substances, ammonium indicators, 4,4' - DDD, Cu and As. The control of domestic, industrial and agricultural waste sources is very important to improve the quality of Ninh Binh sea water.

Table 13. Sustainability index of coastal environment quality in Kim Son coastal area

	Normalized value	Real value	Min value	Max value
Percentage of parameters that meet the allowable standards (M6) (%)	0.78	78	0	100

Source: Author's calculation

According to available data, it is possible to evaluate the value of a secondary factor on coastal water quality equivalent to a hazard coefficient of the whole coastal area of 0.78 – the water is still safe for aquatic life.

3.7. Waste water and waste treatment

Coastal seawater environment is directly affected by socio-economic development activities such as seaport and tourism activities, concentrated tourism development, and industrial park activities. The source of waste and garbage dumped into the sea has a great impact on the coastal ecosystem, affecting the health of people around. To evaluate this waste criterion, the study has selected a number of criteria, which are: the rate of treated wastewater; rate of waste being treated.

In aquaculture, wastes are generated including: decomposed rotten food, chemicals and antibiotics, sulfur deposition, toxic substances in alkaline soil; especially the sludge layer formed during the process of cleaning and dredging ponds, in an anaerobic state, forms toxic decomposition products such as H2S, NH3, CH4... which adversely affects the surrounding environment, affect the quality of farmed fish.

Aquaculture wastewater contains high levels of organic substances, nutrients, and suspended solids, polluted water not only increases the source of diseases for aquatic products but also directly affects human health. According to the results of in-depth interviews, only 41/60 households (accounting for 68.3% of households) have settling ponds for treatment before discharging into the environment, the remaining 19/60 households (31.7% of households) discharge directly. wastewater to the common sewer.

Table 14. Indicators of wastewater and waste treatment

	Normalized value	**Real value**	**Min value**	**Max value**
Rate of wastewater treated (%)	0.32	31.7	0	100
Rate of waste treated (%)	0.8	80	0	100
Percentage of plastic waste treated (%)	0.55	55	0	100
Value of M7	0.56			

Source: Author's calculation

3.8. General assessment of environmental sustainability in the coastal area of Kim Son district, Ninh Binh province

General assessment of environmental sustainability in the coastal area of Kim Son district, Ninh Binh province according to table 15.

Table 15. Summary of environmental sustainability index in the coastal area of Kim Son district

	Key factors	Normalized value	Weight (number of sub-factors)
1	Sustainable land resources	0.225	2
2	Sustainable water resources	0.47	3
3	Sustainable energy resources	0.535	2
4	Sustainable aquatic resources	0.615	2
5	Degree of protection of ecosystems	0.595	2
6	Coastal sea water quality	0.78	1
7	The ability to treat waste water and waste	0.56	3
	SI (Environmental Sustainability Index)	0.52	15

Source: Author's compilation

Thus, it can be seen that, according to the scale, the indicators are quite sustainable including aquatic resources (0.615), coastal sea water quality (0.78). The average sustainability indicators include water resources (0.47), energy resources (0.535), degree of protection of ecosystems (0.595), capacity to treat wastewater and waste (0. 56), land resources (0.225) are rated as less sustainable in the sustainability rating scale. The composite index of environmental sustainability in the coastal area of Kim Son district (0.52) is assessed at medium sustainability. We have a general chart of environmental sustainability in Kim Son coastal area as follows:

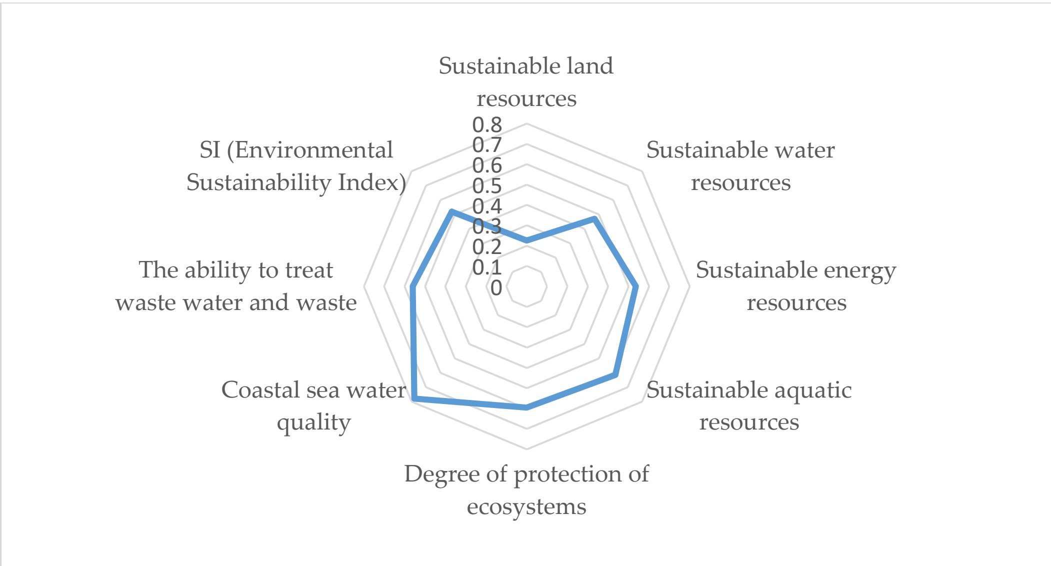

Fig 2. Summary of environmental sustainability in the coastal area of Kim Son district

4. Conclusion

The coastal area of Kim Son district is home to a variety of natural resources such as biological resources (diversity of species, ecosystems), land resources, water resources, energy resources, and natural resources. position… Human activities are increasingly moving towards the sea, increasing pressure on the coastal area. The study focuses on analyzing environmental sustainability in the coastal area of Kim Son district to serve as a basis for rational use of resources and environmental protection.

The set of criteria for assessing environmental sustainability in the coastal area of Kim Son district includes 7 criteria and 15 evaluation criteria. The evaluation criteria include sustainability of land resources, sustainability of water resources, aquatic resources, energy resources, degree of protection of coastal ecosystems, coastal water quality, water treatment capacity. waste, garbage.

The results of quantitative assessment of environmental sustainability criteria and indicators in the coastal area of Kim Son district have shown the level of environmental sustainability in this area from less sustainable to quite sustainable. Some solutions to improve environmental sustainability are proposed as follows:

- Improve land use efficiency

Due to the relatively low index of sustainability of land resources in the region (0.225), it is classified as less sustainable. In which the land is reserved for the future, that is, the unused land area is small, this result shows the true situation of the study area when the area is used for aquaculture a lot. At the same time, the area of agricultural land with high and sustainable productivity only accounts for 31.56% of the natural area of the study area. Therefore, it is necessary to improve the efficiency of land use in the areas that have been converted to use for agriculture and aquaculture.

The improvement of land use efficiency should be directed by Kim Son District People's Committee and under the direction of Ninh Binh Provincial People's Committee. The district's agricultural extension officers play the role of guiding people in farming techniques to improve productivity on the converted land while still ensuring environmental protection.

- Propaganda to raise people's awareness about environmental protection

Continue to propagate for people living in coastal areas to be conscious and responsible in protecting mangrove ecosystems in particular and other ecosystems in the study area. At the same time, it is necessary to treat aquaculture waste before discharging to the outside environment because if not handled well, the waste will affect the environment and return to affect the aquaculture lagoon, thereby reducing productivity and livestock production. The People's Committee of Kim Son district should continue to uphold measures to protect the environment and limit waste into the marine environment.

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Applying The DPSIR Model in Analysis of Factors Affecting Aquaculture in Kim Son District, Ninh Binh Province

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ABSTRACT

The paper uses the DPSIR model to analyze the factors affecting aquaculture in Kim Son district, Ninh Binh province. The Driving forces (D) include population growth and favorable natural conditions for aquaculture; Pressure factors (P) include wastes in the production and daily life of the community as well as climate change. For the State (S), the study focuses on the environmental pollution situation in this area and the impacts on aquaculture (I) and finally the responses from the people as well as local authorities to the above issues (R).

Keywords: aquaculture; climate change; DPSIR model; Kim Sơn district

1. Introduction

Fisheries is one of the key economic sectors of Vietnam, accounting for 4-5% of GDP; 9-10% of the country's total export turnover and ranked 5th in terms of export value (Vietnam Association of Seafood Exporters and producers, 2022). In which, coastal aquaculture is Vietnam's strength, due to its coastline stretching 3,260 km, with 112 estuaries and creeks capable of rich brackish and salt water aquaculture.

Kim Son is a coastal district located in the southeast of Ninh Binh province. The coastal alluvial ground of Kim Son district is about 18 km long, from the mouth of the Day River in the east of the district to the mouth of the Can River in the southwest. This is the largest alluvial area in the North of Vietnam, at low tide the width is up to 6 ÷ 7 km (Ninh Binh Provincial People's Committees, 2021). Especially, this area, with its diverse ecosystems, is an important part of the buffer zone, the transition zone of the World Biosphere Reserve, the inter-provincial coastal wetlands of the Red River Delta.

Aquaculture is a strength and also an important economic sector of Kim Son district in general and the alluvial area in particular. In the period of 2020-2025, Kim Son district determines that

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aquaculture and seafood development in association with environmental protection, strict management and effective exploitation of economic potential in coastal areas is a key program. in the local economic development strategy.

The survey shows that, at present, coastal aquaculture in Kim Son district faces many difficulties and challenges due to the influence of natural activities and socio-economic development. In particular, the production of the people has many unsustainable risks when using a lot of chemicals to disinfect water as well as kill fungi and diseases. Chemicals such as copper sulfate ($CuSO_4$), potassium permanganate ($KMnO_4$), ... Besides, waste in aquaculture after chemical treatment was discharged directly into the sewer while the culverts Water intake and discharge in this area are used for the same purpose, the risk of environmental pollution is great.

The DPSIR model describes the interrelationship between motivations (socio-economic development), pressures (direct sources of pollution and environmental degradation), status quo (environmental quality), impact (impact of environmental pollution on public health, socio-economic development activities and ecological environment), response (state policies to protect the environment). In Vietnam since 2001, environmental status reports at national and provincial/city levels have been made according to the 3-component model Pressure (P) - Status quo (S) - Response (R). In 2005, the Department of Environmental Protection under the Ministry of Natural Resources and Environment developed the "Guidelines for the development of environmental status reports" at the central level. Central Government and Province/City under the 5-component model (DPSIR). In 2010, the Ministry of Natural Resources and Environment issued Circular No. 08/2010/TT-BTNMT on March 18, stipulating that the preparation of the provincial environmental status report must follow the DPSIR model, in order to assess status and trends of environmental quality change, serving environmental management.

There have been many projects and scientific research projects using the DPSIR model to assess the overall environment in the study area. The researchers have developed a methodology for the development of an environmental indicator set based on the DPSIR model, the formation process and guidelines for the development of an environmental indicator set (CanThac Le, 2005); Develop environmental directives for air pollution (Dang Ngoc Pham, 2005); environmental management of the Saigon-Dong Nai River basin (Ly Dinh Che, 2006) according to the DPSIR model. In addition, there are many studies applying DPSIR model in assessing the current state of surface water environment in Cu Khe commune, Hanoi (Ha Thi Thu Pham et al., 2015); climate change research in the Hmong - Ha Giang area (Ha Thi Thu Nguyen et al., 2016); domestic solid waste management in the Mekong Delta (XuanThi Dan Huynh, 2021). The DPSIR model is capable of providing full information on origins, trends, pressures, environmental characteristics and environmental protection solutions, serving well for leaders and local people in the awareness and action to protect the environment.

Within the scope of the article, the study examines the factors affecting aquaculture in Kim Son district, Ninh Binh province based on the DPSIR model, which synthesizes the factors affecting the research problem, contributing to the foundation of the study science and practice in economic development in the study area.

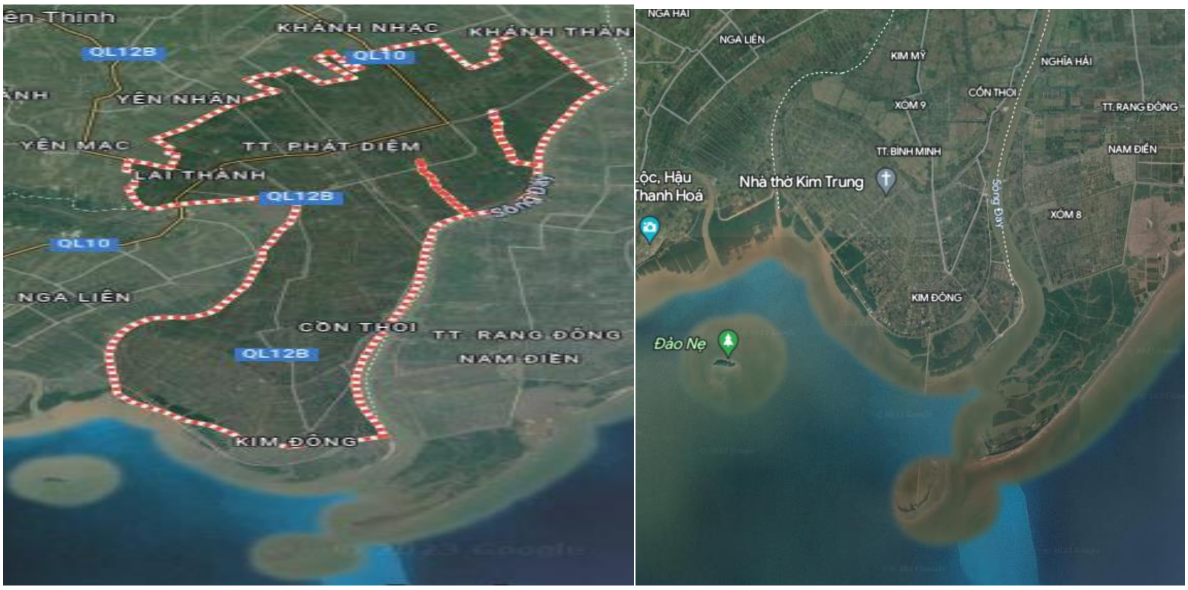
2. Study area and methods

2.1. Description of the study area

The coastal zone of Kim Son district stretches for more than 18 km of coastline, located between two large river mouths, Day and Can rivers, and is located in the Red River Delta Biosphere Reserve recognized by UNESCO on December 2, 2004. This is a coastal wetland biosphere reserve in the three Red River Delta provinces of Thai Binh, Nam Dinh and Ninh Binh, containing geological tectonic activities and biodiversity of outstanding global value.

Study area is determined to include administrative units located in Binh Minh 1 dike Binh Minh 2 (Kim Dong, Kim Trung, Kim Hai communes, land area unit 1080 and unit 279) and area land area from Binh Minh 2 dike to Con Noi island, Kim Son district with a total natural area of 9,035.07 ha (Ninh Binh Provincial People's Committees, 2021). Kim Son coast has high sedimentation characteristics, the rate of encroachment into the sea is from 80 to 100m per year. The total coastal area of Kim Son district is about 11,000 ha and about 6 km from the coast there is an alluvial flat called Con Noi with an area of about 700 ha. These are considered as potentials as well as strengths of the district in aquaculture and fishing.

The marine economy is the main economic sector of the Kim Son coastal area, with strong development fields such as shrimp, tiger, and blue crab farming. The economic structure of aquaculture in 2021 in Kim Hai accounted for 48.2%, in Kim Dong accounted for 54.1%, in Kim Trung agriculture - forestry - fishery accounted for 49.17% (Ha Thi Thu Nguyen, 2022).



a. Map of Kim Son district b. Alluvial area of Kim Son district

Fig 1. Map of reseach area

Source: Google map, 2023

2.2. Reseach Methods

*Methods of information collection

The main method used in the study is the method of collecting and processing information, researching secondary documents. The documents used in the project include documents on natural - socio-economic conditions, current status of exploitation and protection of coastal alluvial deposits in Kim Son district.

In addition, the study also used the survey method by semi-structured questionnaire on 60 farmer households living in the coastal area of Kim Son district with convenient sampling method. The survey was conducted in November 2022, the information collected includes the current status of aquaculture, factors affecting aquaculture as well as environmental issues arising in the operation. coastal aquaculture in Kim Son district, Ninh Binh province.

*Data analysis method using DPSIR model

The origin of the DPSIR model comes from the Stress - Response model developed by Statistics Canada in the late 1970s (Rapport, 1979). This model was later developed by the Organization for Economic Co-operation and Development (OCED) (1991, 1993) and the United Nations (1996, 1999, 2001) (Xuan Thi Dan Huynh et al, 2021).

The DPSIR model was first applied in two studies of the European Environment Agency (EEA) (Stanners & Bourdeau, 1995; HoltenAndersen et al., 1995). The structure of the model consists of five parts such as presenting the causes (Driving forces) related to economic, social and environmental development leading to pressures, thereby, making the status quo (State)) of the changed environment. This causes Impacts that can elicit social responses to causes, pressures, status quo, and effects.

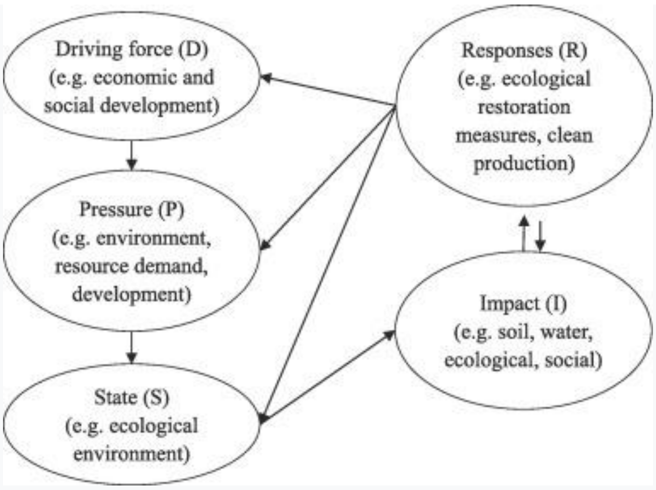


Fig 2. DPSIR model structure and logical relationships

Source: Smeets & Weterings, 1999

3. Research results and discussion

Through field survey, the DPSIR model to evaluate the synthesis of factors affecting coastal aquaculture in Kim Son district is shown as follows (Fig.3).

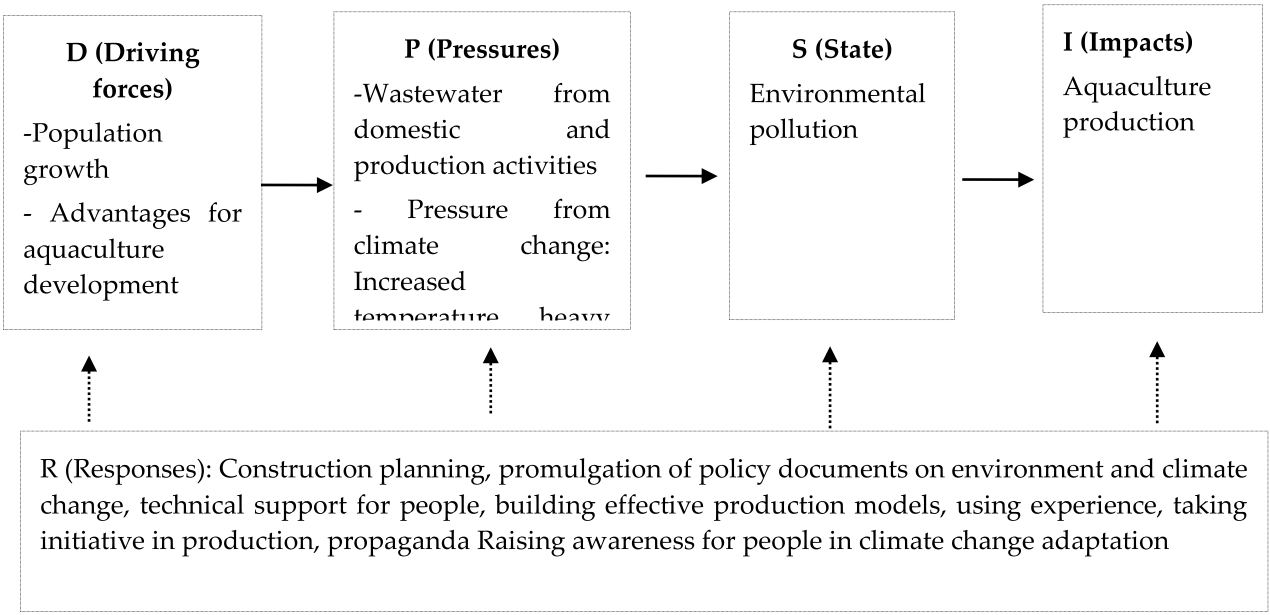


Fig.3. DPSIR model of factors affecting coastal aquaculture in Kim Son district

3.1. Driving forces

3.1.1. Population growth

Population is both the goal and the driving force of development. Population growth in Kim Son coastal area is an important driving force for aquaculture development in this area. In 2020, the population of coastal communes of Kim Son district will reach 13,683 people, population density is 151.4 people/km^2.

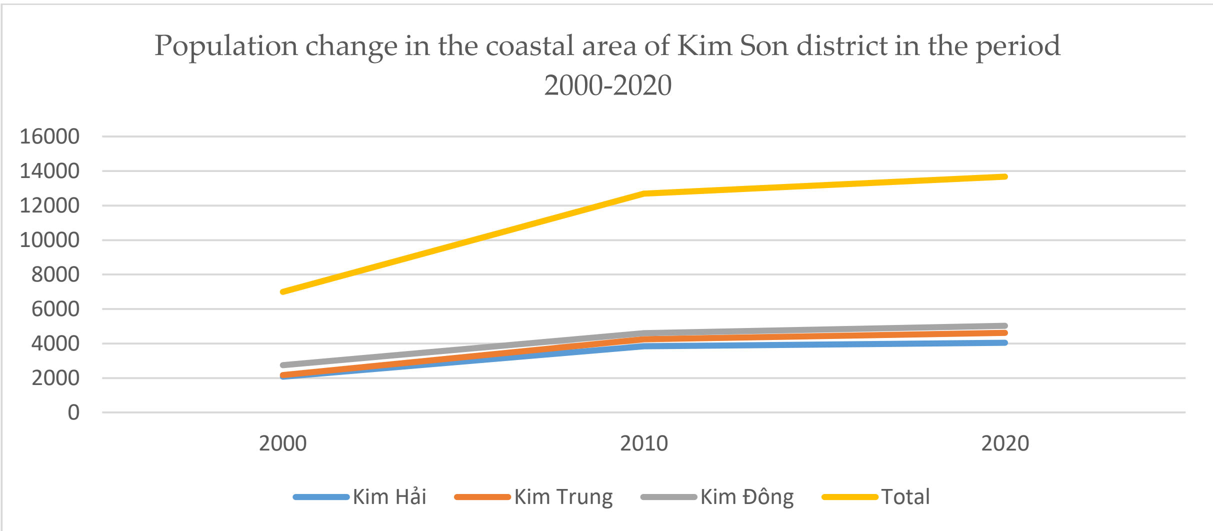


Fig.4. Population change in the coastal area of Kim Son district in the period 2000-2020

Source: Ninh Binh Statistical Office, 2021

In the period of 2000-2020, the population of coastal communes of Kim Son district tends to be fast, the average population growth rate in the whole period reaches 8.16%/year, 7.77 times higher than the speed. The average population growth in the period 2000-2020 of Ninh Binh province is only 1.05%/year, 7.09 times higher than the average population growth rate in the 2000-2020 period of the Red River Delta with 1.15%/year.

3.1.2. Advantages for aquaculture development

The Kim Son coastal area has salt marshes, mudflats, estuaries... about 18km long, which is the convergence of more than 500 species of aquatic plants and animals, more than 50 species of mangroves on the alluvial estuaries... (Ninh Binh Provincial People's Committee, 2021)

On the basis of exploiting the region's potential and strengths, since 2000, aquaculture activities of the region have been interested in building and developing strongly. The brackish and saltwater aquaculture has changed from being a side-product, self-sufficient, to a concentrated commodity production industry with advanced technology. As a result, the area of brackish salt aquaculture in Kim Son district in the period 2000-2020 increased from 756ha (in 2000) to 3,349.4 ha (in 2021), the total production increased from 245 tons (in 2000) to 20.259 tons (in 2021).

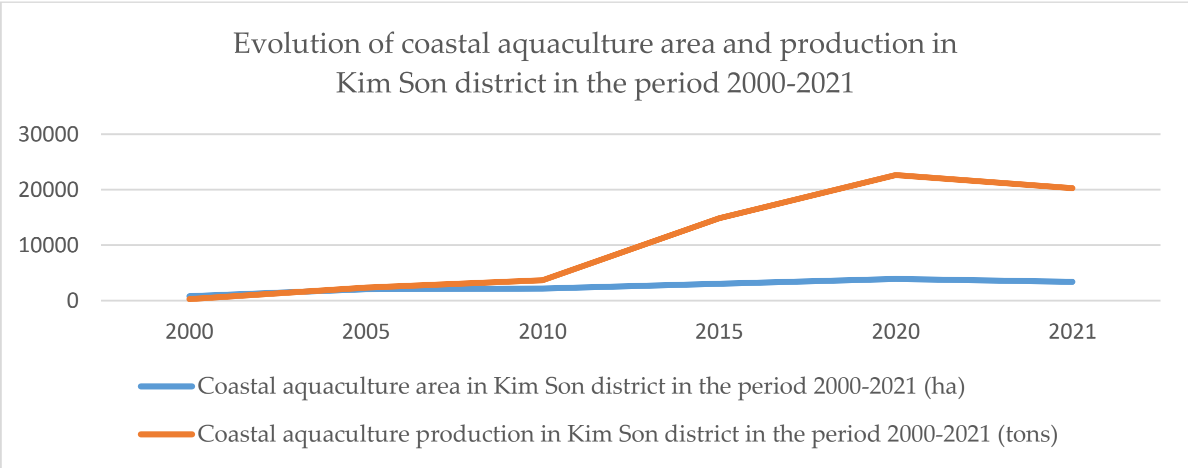


Fig.5. Evolution of coastal aquaculture area and production in Kim Son district in the period 2000-2021

Source: Ninh Binh Statistical Office, 2021

Currently, in the district, there are 15 models of shrimp farming in tarpaulin houses with high yield of 15 tons/ha; Outstanding and highly competitive products such as oyster seed, clam seed, commercial clam, black tiger shrimp, white shrimp, curtain crab ... currently have over 100 models of oyster seed production with high income from 500 - 2000 million VND (Ninh Binh Provincial People's Committee, 2021).

3.2. Pressures

3.2.1. Domestic wastewater

The larger the population, the greater the problem of generating domestic solid waste and domestic wastewater. Most of the domestic wastewater in Ninh Binh province has only been preliminarily treated and dumped into the environment. Characteristic of domestic wastewater is the high content of BOD5 and nitrogenous organic compounds, which contains many coliforms, bacteria and pathogens. Four groups of pathogens in secretions are viruses, bacteria, protozoa, and helminths. Moreover, the excreta is also an environment for disease-carrying organisms such as flies, mosquitoes, rats, cockroaches, and causing bad odors. One gram of feces can contain 109 pathogenic viruses, with an estimated 105 bacteria/l (Ninh Binh Provincial People's Committee, 2021).

The World Health Organization (WHO, 1993) change and sea level rise (Ninh Binh Provincial People's Committee, 2021) has estimated the average load of major water pollutants introduced into the environment by one person in a day and that is the basis for calculating the total load. pollutants generated by the inhabitants of a residential or urban area. According to the WHO pollutant load estimate, we can estimate the pollutant load of Kim Son coastal area, Ninh Binh province as follows:

Table 1. Estimated pollutant load in coastal areas of Kim Son district, Ninh Binh province in 2020

	Pollutant	**Average pollutant load norm according to WHO estimates (g/person/day.night)**	**Load of pollutants in the coastal area of Kim Son district (calculated for the population in 2020: 13,683 people) (kg/day and night)**
1	BOD_5	50	684.15
2	COD	94	1,286.202
3	Floating solids	107	1,464
4	Non-mineral grease	15	205.24
5	Total nitrogen	9	123,147
6	Organic nitrogen	3,6	49.26
7	Amôni	3,6	49.26
8	Total phosphorus	2,4	32.83
9	Total Coliform	108(MPN/100ml)	14.77

The above analysis shows that: domestic wastewater discharge contains many types of viruses, bacteria, helminths, etc. If it is not treated thoroughly, then when discharged into the receiving water bodies of domestic wastewater generated in the locality. Kim Son district will affect water quality, aquaculture and people's health.

3.2.2. Waste from aquaculture

In aquaculture, wastes are generated including: decomposed rotten food, chemicals and antibiotics, sulfur deposition, toxic substances in alkaline soil; especially the sludge layer formed in the process of cleaning and dredging ponds, in an anaerobic state, forms toxic decomposition products such as H_2S , NH_3, CH_4... which adversely affects the surrounding environment, affect the quality of farmed fish.

Aquaculture wastewater contains high levels of organic substances, nutrients, and suspended solids, polluted water not only increases the source of diseases for aquatic products but also directly affects human health. According to the results of in-depth interviews, only 41/60 households (accounting for 68.3% of households) have a settling pond for treatment before discharging into the environment, the remaining 19/60 households (31.7% of households) discharge directly. wastewater to the common sewer.

3.2.3. Climate Change

- Trend of temperature change

The increase in temperature has adversely affected aquaculture. Temperature play an important role in the growth and development of the species aquaculture. On the other hand, temperature change is also a condition for the emergence of many species. Diseases occurred in the cultured species. Rising temperatures make the health of the species culture is deteriorated, which are favorable conditions for the growth of harmful microorganisms. Trend of temperature change: The average annual temperature in Ninh Binh in recent years has a slight increase of about 0.7^{0}C compared to the average temperature in the period 1961-2011 (Ninh Binh Provincial People's Committee, 2021).

- Trend of rainfall change

Heavy and erratic rainfall adversely affects aquaculture. Heavy rainfall causes the salt concentration to decrease in a short time, leading to brackish and coastal aquatic organisms, especially bivalve molluscs died mass due to inability to withstand the changing salt concentration. Tropical fish low value increases, high economic value subtropical fish species are reduced or lost sure. In the 21st century, annual rainfall in Ninh Binh is generally dominated by an increasing trend. The decrease was just under 4%, the highest increase was 28.8% (Ninh Binh Provincial People's Committee, 2021).

- Sea level rise

Sea level rise is also having a significant impact on aquaculture in the coastal estuary area. When the sea level rises, it will change the structure of the ecosystem Thailand, shrimp and crab farming areas along mangroves, intertidal clam farming areas will be taxed narrow.

Table 2. Area of coastal aquaculture land in Kim Son district affected by sea level rise

	Flooded 50cm	**Flooded 100 cm**
Area affected	35,740 ha	708,400ha
Percentage of area affected	2.01%	39.94%

Source: Ninh Binh Provincial People's Committee, 2021

It can be seen that, under the impact of sea level rise, the area of aquaculture land in Kim Son district is affected relatively large for each flood level such as a flood level of 50 cm affecting about 36,000 ha, for a flood level of 100 cm in the district. Kim Son damaged more than 700,000 ha (Ninh Binh Provincial People's Committee, 2021).

- Salinization

The phenomenon of sea level rise and increased saltwater intrusion has caused loss of habitat suitable for some freshwater aquatic species, thereby reducing the capacity of aquaculture land products. The changes in salinity during the year can be divided into two distinct seasons, the salty season coincides with the dry season and the sweet season coincides with the flood season. The highest salinity is concentrated in the months I, II, and III. The phenomenon of saline intrusion in the coastal alluvial area of Kim Son has deeply encroached to the estuaries from 20 ÷ 25km on the Day river and 10 ÷ 15km on the Vac river (Ninh Binh Provincial People's Committee, 2021).

3.3. States (S)

Currently, among the environmental components of the study area, surface water quality and coastal sea quality are local pollution in some criteria; groundwater quality (pH, PO43--, Fe, As, CaCO3) is still within the allowable limits of QCVN 09:2008/BTNMT, and the quality of soil environment (Cu, Pb, Zn) over the years is within permissible limits of QCVN 03-MT:2015/BTNMT (agricultural land) – National technical regulation on permissible limits of heavy metal doors in soil (Ninh Binh Provincial People's Committee, 2021).

3.3.1. Surface water quality

The water quality of the Day River last year was locally polluted. The reason is that the daily activities of the population and waterway traffic are increasing; at the same time, Ninh Binh is also the downstream of the Nhue - Day river basin, so it has to bear all the pollutants from the upstream of the river basin. In Thuong Kiem commune, Kim Son district: Coliform content exceeds about 1.12 times to 1.44 times the regulation (Ninh Binh Provincial People's Committee, 2021).

3.3.2. Environmental quality in coastal waters

Sea water quality over the years at the measurement points of Day and Can mouth areas, measured parameters DO, pH, SS are all within the allowable limits of QCVN10-MT:2015 /BTNMT (Aquaculture, aquatic conservation area) born).

The coastal area of Kim Son, Ninh Binh province, where the influence of the sea and rivers from the mainland, along with the impacts of humans, has created a sedimentary environment subject to the interaction of rivers and sea with the role of humans. The elements of the sedimentary environment exhibiting that interaction vary seasonally and spatially. The coastal marine environment of Kim Son district is strongly affected by the Day river water flowing into the sea through Day estuary, and also by aquaculture activities in the Kim Son coastal alluvial area.

According to the final report of the project: Developing a report on the current status of management and database of resources in the coastal area of Ninh Binh, the water in Ninh Binh's sea area is polluted by 5/22 parameters, namely TSS, COD, ammonium, 4.4' – DDD and As. Water is at risk of being contaminated by 4/22 parameters which are DO, nitrite, chlorphyll a and Cu. The hazard coefficient of the intertidal area is 0.87 - the water is at risk of being polluted; The hazard factor for the whole region is 0.66 - the water is still safe for aquatic life (Ninh Binh Provincial People's Committee, 2021).

Among the substances that are contaminated or at risk of pollution in Ninh Binh waters, it is necessary to pay attention to organic substances, ammonium indicators, 4,4' - DDD, Cu and As. The control of domestic, industrial and agricultural waste sources is very important to improve Ninh Binh sea water quality (Ninh Binh Provincial People's Committee, 2021).

For the sedimentary environment: The content of nutrients Nts, Pts Chc and Sts in coastal surface sediments is generally low. Pollutants such as cyanide, grease, persistent organic matter, and heavy metals are present in coastal sediments, some of which have exceeded ISQG and QCVN 43 thresholds. Heavy metals in Kim Son coastal sediments with high concentrations of Cu, Pb and As metals, exceeding the ISQG threshold but lower than the QCVN 43 threshold and they tend to increase in recent times observed in the sedimentary borehole column in the intertidal zone. The environmental quality of Kim Son coastal sediments is on the way of deterioration, which manifests with time pollutants such as some heavy metals, PAHs, PCBs and grease, chlorine-based plant protection chemicals, some among pollutants has increased in recent times.

3.4. Impacts (I)

According to the actual survey, at present, coastal aquaculture in Kim Son district faces many difficulties due to the influence of environmental pollution, complicated weather changes, erratic rain, natural disasters, floods and droughts. due to saline intrusion causing many diseases for livestock. There are many households suffering from loss of 2-3 consecutive crops due to the above reasons.

From 2015-2019, in the province, there were about 3,000 households with infected farming areas with a total area of 1,092.72 hectares.

Table 3. Statistics of aquatic diseases in Ninh Binh province in the period 2015-2019

<table>
<tr><th>Shrimp disease</th><th>Unit</th><th>2015</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th><td rowspan="5">2019
Clam died from sea worm in 10 households with 30 ha</td></tr>
<tr><td>Number of households with epidemic</td><td></td><td>0</td><td>1,044</td><td></td><td>160</td><td>0</td></tr>
<tr><td>Fish disease</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>Number of households with epidemic</td><td></td><td>0</td><td>15</td><td>0</td><td>1</td><td>0</td></tr>
<tr><td>Area</td><td>ha</td><td>0</td><td>17.5</td><td>0</td><td>3</td><td>0</td></tr>
</table>

Source: Ninh Binh Provincial People's Committee, 2021

Meanwhile, the infrastructure of the farming area has not met the demand for farming, only about 68.3% of the households have waste treatment before discharging it into the environment and the sewer system takes water from the sea and discharges water from the area. The rearing in the sea has not been separated, leading to the phenomenon of chemical residues, sludge returning to the farming area and causing diseases to the cultured subjects.

3.5. Response (R)

3.5.1. Response to driver forces

With the advantage of brackish salt aquaculture in Kim Son coastal alluvium, the policy from the local government is also oriented towards aquaculture development for this area. Most recently, in the construction planning of Kim Son district, Ninh Binh province to 2030, with a vision to 2050 on December 30, 2022, the coastal area of Kim Son district is oriented for multi-purpose development including the combining mangrove conservation with ecotourism exploitation and aquaculture development applying high technology. As a result, local people feel secure and boldly invest in production and create effective models to improve productivity and product quality.

3.5.2. Responsive to pressure

Recently, Ninh Binh province has issued a number of documents on climate change, specifically as follows:

Document 47/UBND-VP3 dated February 13, 2018 of the Provincial People's Committee on the implementation of the Target Program to respond to climate change and green growth (non-business capital) in Ninh Binh province.

Plan 80/KH-UBND dated 11/7/2017 of the Provincial People's Committee to implement the Paris Agreement on climate change.

Decision 767/QD-UBND dated June 27, 2019 of Ninh Binh Provincial People's Committee on approval of outline and cost estimate Task "Develop and update action plan to respond to climate change in Ninh Binh province" , period 2021-2030, vision to 2050".

Decision 07/2020/QD-UBND dated March 4, 2020 on promulgating the Regulation on coordination in state management of meteorology, hydrology and climate change in Ninh Binh province.

Ninh Binh has invested in upgrading and perfecting the sea dike system, especially the Binh Minh 4 dike route as well as key works for natural disaster prevention; building community storm shelters. A number of urgent projects to implement the target program to respond to climate change and green growth have been invested and are being implemented:

Projects under the Climate Change Component include “Building a system of sluices to control saltwater intrusion and upgrading Duong Diem dike combined with upgrading to a road for rescue and rescue against saltwater intrusion and for the prevention of inter-related floods and storms. Yen Khanh-Kim Son district" and "Upgrading and expanding flood drainage routes and embankments to prevent landslides on the left and right banks of Hoang Long river, planting bamboo to break waves from Truong Yen bridge to Cau Gian"

The project of the Green Growth Component “Survey and urgent handling of embankments from K22+800 to K27+000 in Kim Chinh commune; planting mangroves in combination with walls and breakwaters of Binh Minh III sea dike”;

Local authorities have also propagated and mobilized people to prepare on-site capital to build works in high tide conditions that can adapt to the complex changes of weather and climate change.

3.5.3. Responding to the state

Local authorities have regularly monitored environmental components in order to detect and promptly handle environmental problems in the study area. Control activities of marine and island environmental pollution in Ninh Binh province in 2021 will be carried out with a frequency of 02 times/year.

The work of planting and restoring mangroves is focused. Mangroves provide many benefits to people, organisms, and surrounding ecosystems, including aquaculture. In addition to the role of providing food, preventing natural disasters, creating a source of livelihood for people, preventing soil erosion, protecting sea dykes, mangroves also help filter out eutrophication, sediment and pollutants contamination from oceans and rivers.

In the Kim Son coastal area, mangrove afforestation is implemented through two projects, which are project 327 and project funded by the Japanese Red Cross. As of December 31, 2020, the total area of forestry land in the district is 1,449.47 ha, of which: The area of planted forest is 614.34 ha; bare land area is 835.13 ha. In the period 2016-2020, the average area of protection forest is about

20-25 ha/year, the contracted area for protection forest is about 260 ha/year (Ninh Binh Provincial People's Committee, 2021)

3.5.4. Response to impact

In order to help shrimp farmers master techniques, improve productivity and product quality, at the beginning of the year, the Fisheries Sub-Department (Department of Agriculture and Rural Development of Ninh Binh) together with Kim Son District People's Committee issued a plan. on aquaculture production and aquaculture in the district for each year. At the same time, appoint staff to guide farmers to renovate ponds and lagoons, sprinkle with lime powder to avoid harmful bacteria causing fungal diseases for shrimp.

According to the actual survey, periodically the Agricultural Extension Center (Department of Agriculture and Rural Development of Ninh Binh) comes to take samples for analysis in the farming ponds, however, because the number of samples taken is too small compared to the number of farming ponds and only concentrated in large-scale farming ponds. Therefore, there are many lagoon owners who have never received technical support from the government in the process of aquaculture. The solution of the people is to actively monitor, through the experience of observing water color, algae color, and animal health to diagnose the disease. When pets are sick, they will ask the pet drug dealer to advise how to overcome this situation.

In addition, there are now a number of models and solutions to adapt and respond to climate change that have been applied in practice such as: Model of high-tech shrimp farming with canvas bottom covered by Mr. Dang Thanh's family. Tan - Block 8, Binh Minh town has limited the risks of disease and climate change in seafood production, initially bringing high economic efficiency with an income of over 1,5 billion VND/year.

4. Solutions to minimize negative impacts on coastal aquaculture in Kim Son district

Through the integrated analysis of factors affecting coastal aquaculture in Kim Son district, some solutions are given as follows:

Planning is the first and most important solution in the development of aquaculture activities, including the following contents: pond planning, salt water and freshwater resource planning, feed infrastructure planning and breeding stock, planning of processing and consumption facilities

The planning of water supply and drainage systems for aquaculture activities in the coastal alluvial area of Kim Son district is very necessary because this system is not suitable for production needs at present. The use of canals for both irrigation and drainage for aquaculture activities can cause water pollution in the ponds and disease for aquaculture products.

Continue to propagate and raise awareness for people in order to comply with regulations and processes on waste treatment before discharging into the environment. Develop capital and technical support plans to gradually remove obstacles in production in order to improve production efficiency while minimizing impact on the environment.

Promote research and propose high-tech production models, apply knowledge and experience of the community in accordance with the actual conditions of the locality in the direction of being environmentally friendly and adapting to climate change.

5. Conclusion

The coastal area of Kim Son, Ninh Binh has many advantages for aquaculture such as favorable natural conditions with 18km of coastline, rapid population growth as a driving force for production, and at the same time the policy of the government to orient the development of aquaculture. economic development in the direction of high-tech aquaculture in association with ecological environment protection. However, at present, this livelihood is facing a lot of pressures and impacts from environmental pollution, climate change, difficulties in infrastructure, planning of farming areas, etc. Local authorities have made many activities to support people in the process of economic development, however, there are still many problems that need to be solved synchronously.

In order for aquaculture in the area to develop sustainably, in addition to the acumen and proactiveness of farmers, it is also necessary for the active participation of authorities at all levels in the transfer of technology, perfecting the production process. At the same time, well implementing the planning for aquaculture development in the direction of centralized goods, building value chains, in order to open up an effective, sustainable direction for the people.

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