

University of Liège

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# **EXPLORATION OF FACTORS INFLUENCING THE MODEL SHIFT TOWARD PUBLIC TRANSPORT CHOICE BEHAVIOR OF VIETNAMESE MOTORCYCLISTS**

Doctoral Dissertation

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# Abstract

Previous studies on factors influencing public transport use are mainly focused on car user and conducted in the Western world. In contrast, there are very few studies on modal choice in motorcycle dominant countries like Vietnam. Also, previous studies used different frameworks and models to study commuter mode choice in general and public transport mode choice in particular. Most of these frameworks simply divide boundaries between different levels such as utility function, social–ecological system, socio–demographics and psychology. These frameworks also list objective factors or hard factors (gender, age, ethnicity, gender, age, etc) and subjective factors or psychological factors (attitudes, subjective norms, perceived behavioral control, etc) within each level but rarely provide the interactions among these psychological factors and hard factors. Therefore, there is a need to indicate how the interaction of these factors may change in public transport travel behavior, especially motorcyclists. By understanding these travel behavior, policy makers can enact concordant strategies to increase public transport use, especially in developing countries like Vietnam, a Southeast asian country.

The main goal of this dissertation is the exploration of factors influencing choice behaviors of public transport use, motorcycle use, and modal shift toward public transport. From that, this dissertation develops a model linking objective factors and subjective factors in understanding the public transport behaviour of Vietnamese commuters especially people in Danang, a rapidly urbanizing city in central Vietnam. A quantitative method including exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) will serve as the main methodology for quantifying this interaction. The key factors influencing the shift towards public transport mode choice of Vietnamese commuters in this study can be a good reference for the Vietnamese government and Southeast Asian countries in implementing public transport plans and policies as well as implementing concordant strategies and building up a good public transport service to enhance public transport use.

# Dedication

I am dedicating this dissertation work to Vietnamese governments, organizations, and individuals who care about public transport and sustainable transport at their hearts. I also devote this dissertation work to my family. I could not have done this without you. Thank you for all of your supports along the way.

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# Table of Contents

<b>Jury Members .....</b>	<b>i</b>
<b>Abstract.....</b>	<b>ii</b>
<b>Dedication .....</b>	<b>iii</b>
<b>Acknowledement.....</b>	<b>iv</b>
<b>Table of Contents .....</b>	<b>v</b>
<b>List of Figures.....</b>	<b>vii</b>
<b>List of Tables .....</b>	<b>viii</b>
<b>List of Abbreviations .....</b>	<b>ix</b>
<b>Statement of Original Authorship.....</b>	<b>xi</b>
<b>Chapter 1: Introduction .....</b>	<b>1</b>
1.1 The Urgency of The Dissertation Topic .....	1
1.2 Study Context .....	3
1.3 Dissertation Objectives and Questions .....	12
1.4 Dissertation Outline .....	12
1.5 References .....	14
<b>Chapter 2: A Systematic Review of The Literature on Modal Changes to Develop a Framework for Modelling The Shift from Motorcycle to Public Transport Use in Southeast Asia.....</b>	<b>19</b>
2.1 Introduction .....	19
2.2 Methodology.....	22
2.3 Results .....	23
2.4 A DAG to Describe The Causal Structure.....	37
2.5 Discussion and Comprehensive Theoretical Framework for Modal Shift from Motorcycle to Public Transport Use in Southeast Asia .....	40
2.6 Conclusions .....	44
2.7 References .....	45

<b>Chapter 3: Psychological Factors Affecting Intention to Use Public Transport Among Vietnamese Motorcyclists .....</b>	<b>59</b>
3.1 Introduction.....	59
3.2 Literature Review.....	61
3.3 Methodology and Study Design.....	64
3.4 Results.....	67
3.5 Discussion and Conclusion .....	73
3.6 References.....	77
<b>Chapter 4: Applying a Bayesian Network for Modelling The Shift from Motorcycle to Public Transport Use in Vietnam .....</b>	<b>83</b>
4.1 Introduction.....	83
4.2 Literature Review.....	86
4.3 Data .....	89
4.4 Methods.....	92
4.5 Results.....	95
4.6 Discussion and Concluding Remarks.....	104
4.7 References.....	106
<b>Chapter 5: Conclusion and Perspectives.....</b>	<b>115</b>
5.1 General Conclusions .....	115
5.2 Implications and Policy Recommendations .....	117
5.3 Perspectives.....	119
<b>Appendices .....</b>	<b>121</b>
Appendix A : Electronic Search Terms.....	121
Appendix B : The Summary of Studies’ Objectives and Respondents .....	122
Appendix C : Survey Questionnaires .....	126
Appendix D : Curriculum Vitae .....	135



# List of Figures

<b>Figure 1.1:</b> The map of regions of Vietnam.....	4
<b>Figure 1.2:</b> Total motorcycle registered over 1000 people .....	7
<b>Figure 1.3.</b> Map of eight districts of Danang city .....	9
<b>Figure 1.4:</b> Danang bus route map.....	11
<b>Figure 2.1:</b> Flow chart of the article selection process .....	23
<b>Figure 2.2:</b> Influence of psychological factors.....	28
<b>Figure 2.3:</b> DAGs illustrating the hypothesized causal pathway toward public transport mode usage. ....	39
<b>Figure 2.4:</b> Proposed theoretical framework for public transport modal shift in Southeast Asian countries.....	44
<b>Figure 3.1:</b> Conceptual model for intention toward public transport mode.....	64
<b>Figure 3.2:</b> Final CFA model that represents factors influencing public transport mode choices .....	70
<b>Figure 3.3:</b> Final SEM model that represents factors influencing public transport mode choices .....	72
<b>Figure 4.1:</b> DAGs illustrating the hypothesised causal pathway from .....	89
<b>Figure 4.2:</b> The Bayesian network model after PC structure learning algorithm ...	103

# List of Tables

<b>Table 1.1:</b> Vietnam population from 2000 – 2020 .....	5
<b>Table 1.2:</b> Total motorcycle registered from 2000 – 2020.....	6
<b>Table 1.3:</b> Danang in-city bus system performance .....	11
<b>Table 2.1:</b> Factors Influencing Motorcycle and Public Transport Mode Choice.....	26
<b>Table 3.1:</b> Observed items for measuring psychological factors .....	65
<b>Table 3.2:</b> Descriptive Characteristics of the Respondents .....	67
<b>Table 3.3:</b> Summarized results of the exploratory factor analysis (EFA) .....	69
<b>Table 3.4:</b> The CFA model fitting indices.....	70
<b>Table 3.5:</b> The CFA model estimates .....	71
<b>Table 3.6:</b> The SEM model fitting indices .....	72
<b>Table 3.7:</b> The SEM model estimates .....	73
<b>Table 4.1:</b> Items for measuring psychological factors influencing intention to use PT .....	90
<b>Table 4.2:</b> Variables used in the Bayesian–networks analysis.....	94
<b>Table 4.3:</b> Descriptive statistics of Danang motorcyclecyclists .....	96
<b>Table 4.4:</b> Gender propotion of total population in Danang city .....	96
<b>Table 4.5:</b> Results comparison .....	97
<b>Table 4.6:</b> The Cronbach’s Alpha reliability analysis for each scale .....	99
<b>Table 4.7:</b> The results of K–fold cross–validation and strength of influences.....	101
<b>Table 4.8:</b> The results of (a–priori) probability of evidence when Vietnamese motorcyclists have both intention and decision to use PT .....	102
<b>Table 4.9:</b> Psychological differences between demographic groups .....	103

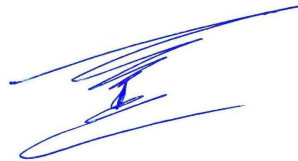
# List of Abbreviations

<b>Acronyms</b>	<b>Meaning</b>
AI	Instrumental attitude
AO	Social orderliness attitude
ASA	Symbolic/Affective attitude
BSD	Bus station distance
BTS	Bartlett's Test of Sphere
CFA	Confirmatory Factor Analysis
CS	Car status
DAG	Directed acyclic graph
DCM	Discrete choice modeling
DEC	Decision to use public transport
EFA	Exploratory factor analysis
ENV	Environment
KMO	The Kaiser–Meyer–Olkin
GDP	Gross Domestic Product
GSO	General Statistics Office of Vietnam
INT	Intention to use public transport
MS	Marriage status
NDM	Normative decision–making
PBC	Perceived behavioural control
PC	The prototypical constraint–based algorithm
PDI	Power differential
PE	Physical effort
PN	Personal norms
PT	Public transport
RS	Road safety
SEM	Structural equation modeling
SES	Socio–economic status
SSBC	Stage Model of Self-regulated behavioral Change

TPB	Theory of planned behavior
TRA	Theory of reasoned action
TTM	The transtheoretical model
WHO	World Health Organization
UN	United Nations

# Statement of Original Authorship

The work contained in this dissertation has not been previously submitted to meet requirements for an award at this or any other higher education institution. To the best of my knowledge and belief, the dissertation contains no material previously published or written by another person except where due reference is made.



Signature: \_\_\_\_\_ Son-Tung Nguyen \_\_\_\_\_

Date: \_\_\_\_\_ April 3<sup>rd</sup>, 2023 \_\_\_\_\_