

Article

Factors Influencing Site Selection for Higher Education Institutes: A Meta-Analysis

Yan Lou ¹ , Hossein Azadi ²  and Frank Witlox ^{1,3,4,*} 

¹ Department of Geography, Ghent University, 9000 Ghent, Belgium; yan.lou@ugent.be

² Department of Economics and Rural Development, Gembloux Agro-Bio Tech, University of Liège, 5030 Gembloux, Belgium; hossein.azadi@uliege.be

³ Department of Geography, University of Tartu, 51003 Tartu, Estonia

⁴ College of Civil Aviation, Nanjing University of Aeronautics and Astronautics, Nanjing 210016, China

* Correspondence: frank.witlox@ugent.be

Abstract: Higher education institutions can play an important role in improving society by training productive and committed people through providing knowledge, skills, and necessary values. Studying and conducting research in an optimal location in terms of institute accessibility, resilience against natural and external hazards, and environmental comfort is important for the maximum effectiveness of training. The current study explored which factors contribute to site selection for higher education institutes globally. To do so, a literature review and meta-analysis using secondary data from 1990 to 2024 were conducted to integrate findings from 37 original papers. The results showed that so-called socioeconomic health conditions, student considerations on institute accessibility, and transport services are very important. As such, the socioeconomic health scenarios that affect the improvement of institute location suitability should be given global attention. In addition, we recommend that attention be paid to increasing the level of awareness among individuals about economic features and making necessary interventions for educational infrastructure protection.

Keywords: institute accessibility; environmental comfort; site selection; higher education institute; access to education



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1. Introduction

Education is a basic right of individuals that has outstanding socioeconomic effects in any country [1–3]. Various researchers (such as Aman et al. [4], Wang et al. [5], Zhang et al. [6]) have highlighted the fundamental role of education in improving the quality of life and the economy. In this context, the education level has a significant role in well-being and health, even though various obstacles have been seen in some developing countries [7,8]. For example, epidemics have had adverse effects on educational conditions, leading to school dropouts in various regions, especially in South Asia [9,10]. In some countries, virtual learning systems face many educational issues that have caused dropouts from virtual classes [11,12]. The lack of sufficient facilities and low experience are the main problems in this field, and it is important for the educational system to adapt [13,14]. In addition, even the most basic facilities were not available in some areas during the pandemic, with poor internet coverage in various areas leading to worsening educational conditions [15,16]. High-quality education is recognized as one of the goals of sustainable development, and solving these educational issues is urgently needed at the global level [17,18]. Access to education is a long-term investment for the development of competent human resources; therefore, high-quality educational programs are necessary [19,20].

The young population has unique opportunities that they can arrive at by increasing the quality of resources [21,22]. Accordingly, increasing the educational system's performance is necessary to improve people's income [23,24]. In recent years, many countries, such as Indonesia, have increased the education budget, and their share of government

spending has increased [25–27]. Improving rural infrastructure, access to quality education, and labor market mobility affect the income of vulnerable households and fight inequality [28,29].

Alongside the accessibility and availability of infrastructure, which shape educational planning and the selection of sites for educational institutions, resilience to external factors such as natural disasters and environmental changes also plays a crucial role [30,31]. For example, areas with a high probability of volcanic activities, earthquakes, or floods are highly vulnerable to environmental conditions [32,33]. Witlox and Timmermans [34] call these factors “core site conditions”. In general, the assessment of land use for specific purposes is determined by natural conditions and socioeconomic needs [35], particularly factors such as geographical and geomorphological conditions, ownership status, existing transport infrastructure, and the utilities available at the locations. Core site conditions (when analyzed globally) also relate to the risk of natural disasters, e.g., landslides [36,37]. Natural disasters threaten the safety and security of educational continuity [38,39]. Considering the adverse global environmental conditions in recent years, such as air pollution, temperature, and noise, considering the aspect of comfort is necessary when planning educational facilities’ distribution [40,41]. Therefore, one of the approaches of planners in achieving sustainable development is to pay attention to optimizing the performance and environment of urban areas, especially in educational areas [42]. Air pollution can cause respiratory disorders [43,44], potentially interfering with educational activities and students’ learning ability [45,46]. Researchers (such as Baafi et al. [47]; Realyvásquez-Vargas et al. [2,48]; Wang et al. [49]) have claimed that class temperature and student performance have an inverse relationship. In addition, noise is an effective factor in the performance of students and teachers [50,51] which should be considered when determining the location of educational institutions. Finally, a comprehensive and multi-parameter approach is needed to determine the locations of educational institutions.

If the core site conditions (relating to economic, social, and health factors) are not fully satisfactory, additional investments might offset this inadequacy. However, for sites deemed completely unsatisfactory, no amount of investment could compensate for this, leading to the sites’ rejection. “Investment considerations” include transport, utilities, real estate, and the extent of government intervention (taxes and subsidies). After evaluating both site conditions and investment considerations, it is also necessary to assess the “operating costs”. This assessment involves examining access to the site, mass economies, labor market conditions, and the cost of water and electricity [34].

Single-factor approaches have rarely been used to evaluate the site selection of educational institutions. Al-Sabbagh [52] investigated the role of spatial modeling and location analysis for better access to educational institutions in Egypt. The results showed that the demand points exceeded the distance of the optimal standard, and that policymakers can choose reliable location models for better access to institutions by using the proposed map of locations of educational institutions. Bulti et al. [53] examined the distribution of educational services and access to educational institutions in Ethiopia. Their results indicated a disparity in providing services among neighboring areas and cluster spatial distribution for educational institutions. In addition, some residents traveled more than twice the standard maximum distance to reach educational institutions, indicating inadequate service provision. This limitation was caused by population distribution, socioeconomic status, and a lack of regular monitoring and evaluation. Rekha et al. [54] investigated public access facilities to educational centers in India. Their results showed a lack of educational facilities based on the spatial access index. In this context, creating new educational institutions maximizes spatial access and improves the existing facilities in areas of scarcity.

A review of previous studies (e.g., Al-Sabbagh [52]; Bulti et al. [53]; Rekha et al., [54]) on the evaluation of the development of the education sector shows a lack of a comprehensive perusal of the factors affecting site selection for higher education institutions. Thus, the need for a comprehensive perusal of factors affecting site selection for higher education institutions is evident in education research. Considering the importance of the sensitivity

of the development of higher education through land suitability analysis, the purpose of this study is to provide an overview of site selection for educational institutions based on the so-called core site conditions: accessibility, infrastructure, resilience to external factors, and environmental comfort. A comprehensive review of the factors affecting site selection for institutes at the global level distinguishes this study from other studies. In general, the innovations of this study include the following: first, the variables used in this study (institute location suitability, institute accessibility, multi-natural hazard resilience, biohazard resilience, environmental comfort, socioeconomic health scenarios, student considerations, resident proximity, transport services, land price, and health utilities) differ from those used in previous studies. Second, the present study provides an interdisciplinary application of multi-criteria-based mathematical models to discover vital criteria related to site selection for higher education institutes. Third, one of the innovations of this research is to examine the impact of socioeconomic health scenarios on optimal site selection for higher education institutions, which has been less addressed in many similar articles. Meanwhile, a few studies (e.g., [10,27,31]) have been comprehensively conducted on the effect of social, economic, and health factors on choosing suitable sites for higher education institutes, and previous studies have been more focused on factors such as institute accessibility, biohazard resilience, and socioeconomic factors related to suitable site selection. In addition, using advanced econometric models to analyze these influences has been less common, which has led to a lack of accurate and reliable information in predicting the choice of suitable locations for higher education institutions. In addition, previous articles (for example, Sakti et al. [31] and Rekha et al. [54]) focus on regional and local analysis, while this article focuses more on the global perspective on the suitability of site selection for higher education institutes, which is an innovation. This study can serve as a foundation for other educational development strategies that are more comprehensive and sustainable, especially regarding the strategies of higher education institutions in different regions. The results of this study can contribute to policymakers and planners improving the provision of educational services. Two major research questions are raised, as follows:

- To what extent do the various factors affect site selection for higher educational institutions?
- What are the spatial–temporal patterns of site selection for educational institutions?

2. Materials and Methods

The current paper applies a meta-analysis model, which is a statistical tool for integrating the results of different studies [55]. In a meta-analysis, the proper mean and variance in population impact are assessed using investigations that answer the same questions. Generally, a meta-analysis aggregates studies from all sources and computes an overall effect size from the collected data points for the criteria measured or determined by researchers. However, this model depends on statistical methods such as meta-regression analysis for calculating the extent of changes in the results. It can also reveal possible reasons behind dissimilarities among findings by investigating other sources, as well as identifying variations that have taken place [11]. This study used three econometric models to evaluate the data. In the first model, only variables related to socioeconomic and health scenarios were considered. In the next, simulation variables were added, and in the final model, contextual factors were added to the model. The purpose of these models was to investigate heterogeneity and strengthen the explanatory power of meta-analysis. This is explained in the Econometric Model section.

The six subsections contained in this section are as follows: Data Assembly, Model Specifications, Location Suitability, Considered Scenarios, Contextual/Simulation Variables, and Econometric Model.

2.1. Data Assembly

The approach suggested by Tranfield et al. [56] was employed to systematically identify original articles on the impact of site selection factors on institute location suitability. Those steps ranged from (1) searching, (2) keyword specification, (3) assessment of search

outcomes, (4) refinement of inclusion/exclusion criteria, and (5) studying titles and abstracts to (6) article choice. The related studies were searched for in related English-language scholastic databases, e.g., Science Direct, Web of Science, and Scopus. The Google Scholar search engine was also applied in this work. Searches for primary studies were limited to papers published from 1990 to 2024. The first step was to admit keywords related to the study title, i.e., “social factors”, “economic factors”, and “health factors”. The second step was to consider other keywords, such as “institute location suitability”, to obtain the maximum number of papers. The keyword combinations regarding socioeconomic health factors and institute location suitability were applied consecutively as follows:

1. Social AND economic AND health AND factors;
2. Social AND economic AND health AND factors AND higher institute;
3. Social AND economic AND health AND factors AND higher institute AND location suitability.

As a result, 1374 papers from different databases and their references were examined. According to their abstracts, papers that did not report any reference to socioeconomic health factors or institute location suitability were ignored. In continuation, a total of 106 articles were considered for further investigation.

The inclusion criteria for considering original articles were specified as follows:

1. The effect of socioeconomic health factors on institute location suitability should be estimated based on a regression model.
2. Influential factors should be based on social, economic, and health factors.
3. Estimations must be shown as a percentage variation in site selection probability for influential factors (such as papers revealing the final institute location).

Applying these criteria resulted in 37 original articles that presented 148 effect sizes, i.e., the effects (as percentages) of influential factors on institute location suitability. A relatively small number of regression coefficients is not unusual in meta-analysis research. Still, an interchange should be performed between data homogeneity and the available data for meta-analysis. In addition, the comparative rarity of original articles on institute location suitability based on socioeconomic health factors shows that it is a field of study that needs more research.

In total, 13 articles are from America, 9 are from Asia, 8 are from Europe, 4 are from Africa, and 3 are from Oceania. Table 1 reports the characteristics of the original articles included in the current meta-analysis. In addition, the accuracy of estimating institute location suitability in the original articles is evaluated based on the sample size of each article [57].

Table 1. The characteristics of the institute location suitability studies included in this meta-analysis.

Authors (Year)	Location	Number of Observations
Al-Rasheed and El-Gamily [58]	Kuwait	1
Al-Sabbagh [52]	Egypt	1
Amram et al. [59]	Canada	4
Ansong et al. [60]	Ghana	1
Baltzopoulos and Broström [61]	Sweden	6
Bergmann et al. [62]	Europe	6
Bonilla-Mejía et al. [63]	the United States	4
Bukhari et al. [64]	Malaysia	1
Bulti et al. [53]	Ethiopia	1
Chin and Foong [65]	Singapore	2
Dahl and Sorenson [66]	Denmark	10
Du and Mulley [35]	London	1
Dyment [67]	Australia	5
Hayes and Taylor [68]	Dallas	6
Heblich and Slavtchev [69]	Germany	9
Heydari et al. [70]	Canada	1

Table 1. *Cont.*

Authors (Year)	Location	Number of Observations
Huang [71]	the United States	1
Kolympiris et al. [72]	the United States	5
Krabel [73]	Germany	6
Kweon et al. [74]	the United States	5
Larsson et al. [75]	Sweden	10
Liu and Kuo [76]	Taiwan	1
Mandic et al. [77]	New Zealand	10
Ogunyemi et al. [78]	Nigeria	1
Qiu and Wu [79]	the United States	1
Ramosacaj et al. [80]	Albania	2
Rekha et al. [54]	India	1
Rischard et al. [81]	NYC	1
Sakti et al. [31]	Indonesia	5
Srour et al. [82]	Texas	3
Tanveer et al. [83]	Pakistan	1
Wen et al. [84]	China	18
Wang et al. [85]	Wuhan	3
Wu and Batterman [86]	the United States	4
Yan and Burke [87]	Australia	1
Yu and Peng [88]	Texas	6
Zandbergen and Green [89]	the United States	4

Source: study findings.

2.2. Model Specifications

Three categories of related factors, including socioeconomic health scenarios, contextual characteristics, and methodology factors, were included in this meta-analysis as meta-regressions to illustrate the heterogeneity in institute location suitability. Accordingly, the goodness of fit of the meta-analysis could be increased and extra data not contained in the primary studies could be extracted. The total formula of a meta-analysis model is shown in Equation (1):

$$M_{ij} = \alpha_0 + \sum \beta_k E_{ij,k} + \mu_j + \varepsilon_{ij} \quad (1)$$

where M_{ij} shows the dependent variable i of the estimate of institute location suitability obtained from a certain paper j , $E_{ij,k}$ is the independent variable k , β_k is the parameter related to variable k , which exerts its effect on the estimate of socioeconomic health factors, and α_0 , μ_j , and ε_{ij} are the constant, article-specific effect, and residual term, respectively.

2.3. Location Suitability

The dependent variable was determined as a measure of institute site selection probability, i.e., the probability of the selection of institute locations due to influential factors. The three manners to address the consistency are as follows: first, only regression estimations were considered, so articles that applied other evaluation methods such as correlation coefficients and cluster analysis were excluded. Second, regressions are commonly estimated based on two shapes, including linear and semi-log. To compare the presentations of institute location suitability following Beltrán et al. [90], the regression coefficients and related standard errors were taken out from the primary studies in the shape of a semi-logarithmic function, and the coefficients and related standard errors were divided by the average institute site selection probability in the shape of the linear regression. Third, the logarithm of the coefficient was applied to decrease heterogeneity.

2.4. Considered Scenarios

The main focus of this meta-analysis is what kind of factors can influence effect sizes (estimating institute site selection probability based on social, economic, and health factors). In this way, five scenario variables including student considerations, resident proximity, transport services, land price, and health utilities were determined (Table 2).

Table 2. Statistical explanation of the variables.

Variable	Description	Mean	Std. Dev	Min	Max
Institute location suitability					
Institute accessibility	The probability of institute site selection being associated with accessibility.	−0.019	0.576	−0.964	0.862
Multi-natural hazard resilience	The probability of institute site selection being associated with multi-natural hazard resilience.	−0.046	0.600	−0.967	0.986
Biohazard resilience	The probability of institute site selection being associated with biohazard resilience.	0.073	0.662	−0.963	0.980
Environmental comfort	The probability of institute site selection being associated with environmental comfort in terms of air, noise, and temperature.	−0.051	0.592	−0.963	0.963
Socioeconomic health scenarios					
Student considerations	Equal to one when student considerations for institute site selection are analyzed.	0.182	0.386	0	1
Resident proximity	Equal to one when resident proximity for institute site selection is analyzed.	0.662	0.473	0	1
Transport services	Equal to one when transport services for institute site selection is analyzed.	0.223	0.0416	0	1
Land price	Equal to one when land prices for institute site selection are analyzed.	0.696	0.460	0	1
Health utilities	Equal to one when health utilities for institute site selection are analyzed.	0.378	0.485	0	1
Contextual variable					
Africa	Equal to one when the study area is located in Africa.	0.392	0.488	0	1
Americas	Equal to one when the study area is located in the Americas.	0.392	0.488	0	1
Asia	Equal to one when the study area is located in Asia.	0.527	0.499	0	1
Europe	Equal to one when the study area is located in Europe.	0.284	0.451	0	1
Oceania	Equal to one when the study area is located in Oceania.	0.311	0.463	0	1
Simulation variable					
Year 2020	Equal to one when the article period is after 2020.	0.513	0.499	0	1
Significant	Equal to one when influential factors are significant.	0.784	0.412	0	1
Positive	Equal to one when positive impacts are reported.	0.466	0.499	0	1

Source: study findings.

2.5. Contextual/Simulation Variables

Contextual variables were included to capture the impact on coefficient change, including the probability of institute site selection in the study area and the geographic region of the primary study (Africa, America, Asia, Oceania, and Europe). The spatial effects in primary studies can influence estimates of socioeconomic health factors. In addition, several simulation variables were considered to capture the effects of the model. The first is temporal variables, which indicate that the study year was after 2020. This variable can contribute to investigating whether recent projects focusing on social, economic, and health factors have affected the achievement of institute site selection and, therefore, have led to changes in educational estimation. The second variable is “significant” and describes whether influential factors’ estimates are significant, as the experimental degree assumes that papers are biased toward significant estimates [91]. Likewise, the third simulation variable is defined as “positive”, indicating whether the effects are positive or not.

This study did not consider the sample size as the dependent variable was weighted with a standard error that is a function of it. This means that the sample size is taken into account implicitly.

2.6. Econometric Model

Three meta-analysis models were considered. First, a meta-analysis was established based on a simple regression including only the socioeconomic health scenario variables. Then, the simulation variables were considered in the second regression. In the third regression, contextual variables were aggregated. In the end, the regression with the most significant coefficients was chosen. In this regard, the consistency of socioeconomic health variables, the effects of contextual/simulation variables, and the goodness of fit of the regressions were investigated. Appendix A shows the input data for the biohazard resilience model.

3. Results

The meta-regression results for the three models of institute location suitability, i.e., institute accessibility, resilience to external factors, and environmental comfort, are shown in Table 3. In this way, integrated information is obtained from the heterogeneity of the reported estimates in the context of socioeconomic health factors. The goodness of fit criterion (R^2) for the institute accessibility model is 86.76, which means that about 87% of the variation in educational institute accessibility is explained by socioeconomic health factors and contextual/simulation variables. The coefficient of determination for the multi-natural hazard resilience model is 93.98, which shows that the explanatory power of natural hazard resilience by socioeconomic health scenarios, extensive contextual factors, and study characteristics is about 94%. In addition, the explanatory power of the biohazard resilience model is close to 82%, which shows very consistent results for the scenario variables and contextual/simulation variables, as well as the robustness of the meta-analysis in total. Finally, the R^2 for the environmental comfort model is 97.68, which indicates that about 98% of the variation in environmental comfort is explained by socioeconomic health factors and contextual/simulation variables. Other criteria of these regressions are Wald χ^2 and log-likelihood. In this way, the environmental comfort model is statistically outperformed based on all criteria.

Table 3. Meta-regression results.

Variable	Institute Location Suitability							
	Institute Accessibility		Multi-Natural Hazard Resilience		Biohazard Resilience		Environmental Comfort	
	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error	Coefficient	Standard Error
Constant	−0.370	0.446	−0.256	0.372	−0.543	0.841	−0.680 **	0.308
Socioeconomic health scenarios								
Student considerations	0.326 *	0.188	0.140	0.097	0.151	0.370	0.278	0.227
Resident proximity	−0.388	0.264	−0.265 **	0.134	0.077	0.469	−0.034	0.215
Transport services	0.149	0.163	0.233 *	0.124	0.242	0.369	0.156	0.214
Land price	0.049	0.089	−0.094	0.079	−0.180	0.260	0.420 **	0.194
Health utilities	0.124	0.103	−0.025	0.065	−0.409	0.330	0.387 **	0.177
Contextual variable								
Africa	0.093	0.109	0.061	0.082	0.068	0.257	0.405 *	0.221
Americas	−0.086	0.114	0.005	0.079	−0.169	0.241	−0.070	0.233
Asia	0.305	0.328	0.195	0.139	−0.093	0.266	0.030	0.139
Europe	−0.036	0.115	−0.261 *	0.151	0.176	0.666	−0.296	0.250
Oceania	0.036	0.086	0.208	0.145	0.611	1.224	0.125	0.235
Simulation variable								
Year 2020	−0.214 **	0.096	−0.155 **	0.074	0.257	0.328	−0.186	0.119
Significant	0.003	0.435	0.046	0.371	0.232	0.617	−0.190	0.252
Positive	0.760 ***	0.165	0.725 ***	0.088	1.194 ***	0.339	0.889 ***	0.169
R^2		86.76		93.98		81.63		97.68
Wald χ^2		116.18		125.84		50.48		116.99
Log-likelihood		1.63		1.22		1.83		1.14

* < 0.10. ** < 0.05. *** < 0.01. Source: study findings.

The findings of the institute site selection models are offered in three separate subsections, which are as follows: Impacts of Socioeconomic and Health Scenarios, Impacts of Contextual Variables, and Impacts of Simulation Variables.

3.1. Impacts of Socioeconomic and Health Scenarios

According to socioeconomic and health scenarios, the effects of student considerations, resident proximity, transport services, land price, and health utilities were evaluated separately. The results in Table 3 show that student considerations can significantly affect the estimation of percentage change in institute accessibility. In addition, resident proximity can significantly affect institute location suitability by increasing the percentage of multi-natural hazard resilience, and transport services can significantly affect institute location suitability by increasing the percentage of multi-natural hazard resilience. Compared to social factors, which have received the most attention in previous studies, the economic factor (i.e., land price) has a more significant impact on institute location suitability. In this context, resident proximity and transport services have only minor effects on multi-natural hazard resilience. This result reflects the empirical evidence that “social factors have lower importance” but “see themselves as chief”. Furthermore, land prices can significantly increase the percentage of environmental comfort, and health utilities can significantly increase the percentage of environmental comfort.

The results of the institute accessibility model show that student considerations ($\beta = 0.326$; $p < 0.10$) significantly affect institute accessibility. Hence, the provision of student requirements can improve institute accessibility by 33%. Although resident proximity ($\beta = -0.265$; $p < 0.05$) leads to increased levels of multi-natural hazards, transport services ($\beta = 0.233$; $p < 0.10$) improve multi-natural hazard resilience through a positive impact. Socioeconomic health scenarios do not significantly affect institute location suitability in terms of biohazard resilience. The meta-regression results of the environmental comfort model show that land price ($\beta = 0.420$; $p < 0.05$) and health utilities ($\beta = 0.387$; $p < 0.05$) significantly increase the percentage of environmental comfort. Increases in land price and health utilities lead to increases in environmental comfort of 42% and 39%, respectively. Therefore, unilateral attention to social factors cannot lead to institute location suitability, and in this context, it is necessary to focus on economic health scenarios. Thus, economic health factors can affect institute location suitability more than social factors. Most of the primary articles focused on social factors. At the same time, the results of this meta-analysis show that other aspects of economic health scenarios, i.e., land price and health utilities, have more significant effects on institute location suitability. The results of this meta-analysis show that different aspects of economic health scenarios should be included in institute location suitability models to adequately capture the dimension of environmental comfort.

3.2. Impacts of Contextual Variables

The group of contextual variables refers to geographic locations, in continental terms, where primary articles assessing institute location suitability based on socioeconomic health factors are not directly available. The results show that institute location suitability in terms of socioeconomic health factors for America, Asia, and Oceania is not significantly different in primary articles. This may mean that different countries in the continents of America, Asia, and Oceania have very similar institute location suitability in terms of socioeconomic health factors. However, based on the results, the percentage of environmental comfort due to socioeconomic health factors is significant in Africa. This means that environmental comfort in Africa is increased by nearly 50% due to socioeconomic health factors. The significant and positive coefficient of average institute location suitability caused by socioeconomic health scenarios in African countries shows that socioeconomic health factors in Africa are an important determinant of environmental comfort: geographical location in Africa increases the effect of socioeconomic health factors on environmental comfort. This result indicates that the African continent demonstrates a greater suitability for institutional locations based on influential factors, including environmental comfort from the students' perspective, proximity to residential areas, transport accessibility, land prices, and health utilities, which are considered normal goods.

3.3. Impacts of Simulation Variables

In the group of simulation variables, the variable “Year2020” is statistically negatively significant, while the other simulation variable “Positive” is statistically positively significant. The significance of the variable Year2020 on institute accessibility ($\beta = -0.214$; $p < 0.05$) and multi-natural hazard resilience ($\beta = -0.155$; $p < 0.05$) shows that socioeconomic health factors tend to have a lower effect on institute location suitability (institute accessibility and multi-natural hazard resilience) after 2020. A viable explanation of this outcome can be that global socioeconomic health factors have reduced institute location suitability changes caused by environmental comfort, mainly since the end of the 20th century, and this can increase individuals’ perception of the importance and value of socioeconomic health factors (i.e., student considerations, resident proximity, transport services, land price, and health utilities) for educational institutions.

For the significance variable (which determines whether institute location suitability due to socioeconomic health factors is significant in original articles), the result indicates insignificant effect sizes in all aspects of institute location suitability.

Another simulation variable, the significance of the positive variable on institute accessibility ($\beta = 0.760$, $p < 0.01$), multi-natural hazard resilience ($\beta = 0.725$, $p < 0.01$), biohazard resilience ($\beta = 1.194$, $p < 0.01$), and environmental comfort ($\beta = 0.889$, $p < 0.01$), reveals that socioeconomic health factors have a more significant influence on institute accessibility, multi-natural hazard resilience, biohazard resilience, and environmental comfort. This result corroborates previous findings (significant main effect of student considerations, resident proximity, transport services, land price, and health utilities) that socioeconomic health factors have played more of a role in institute location suitability in all aspects.

In sum, as the findings of this study show, all aspects of socioeconomic health factors significantly affect institute location suitability. Including student considerations has contributed to institute site selection in terms of institution accessibility. In addition, resident proximity and transport services affect institute site selection in terms of multi-natural hazard resilience. Moreover, economic/health scenarios (i.e., land price and health utilities) increase institute site selection in terms of environmental comfort. In terms of spatiotemporal effects, temporal effects negatively affect institute accessibility and multi-natural hazard resilience. The main impacts of institute site selection in a continent can be clarified, in that African countries show the most spatial effects on institute site selection in terms of environmental comfort.

The results indicated that the synthesized effect of socioeconomic health scenarios on institute location suitability is positive. Therefore, socioeconomic health factors can improve institute site selection. In this regard, the positive effect of influential factors on institute accessibility, resilience to external factors (multi-natural hazard and biohazard), and environmental comfort variations in primary articles are, respectively, 76%, 72%, 119%, and 89% greater than the similar negative effect. In addition, based on the median effect results, institute accessibility, multi-natural hazard resilience, and biohazard resilience have not been significantly affected by socioeconomic health factors in different continents.

3.4. Spatial–Temporal Patterns of Site Selection for Educational Institutions

In terms of temporal patterns, after 2020, the effect of socioeconomic factors on the availability of institutions and their resistance to natural hazards has declined. However, the advantages outweigh the disadvantages of these factors in general. Regarding spatial patterns, socioeconomic factors have a comparable influence on site selection for educational institutions across continents.

4. Discussion

This study has addressed the importance of socioeconomic factors in site selection for higher education institutes. Accordingly, the results of this study are consistent with other studies. For example, Ajayi [92] investigated how socioeconomic factors (e.g., facilities,

gender, distance, etc.) influence location selection for educational institutions. In addition, according to Ghosh [37], the importance of socioeconomic factors in the choice of an educational site has been highlighted. One of the crucial factors in the development process is education. Education has a wide-ranging impact on the overall progress of society by improving the development of the country, individual growth, and socioeconomic conditions of society. Hence, education is a necessary factor for the development of a country [93]. In addition, site selection for higher education institutes has a direct impact on land use, urban and rural development, as well as the provision of related infrastructure. For example, choosing the optimal location of these institutions in terms of transportation infrastructure, student considerations, and the need for green and recreational spaces affects urban or rural development and the allocation of land. Choosing an optimal site for higher education institutions affects better access to educational services and increases the quality of urban life. Moreover, optimal site selection for higher education institutes attracts the population and provides new opportunities for infrastructure development, public transport, and urban services. As a result, the findings of this study provide effective strategies to improve urban planning patterns and land use in urban planning [94]. Therefore, site selection for education institutes is a vitally important element of educational planning. In this study, institute location suitability, institute accessibility, multi-natural hazard resilience, biohazard resilience, environmental comfort, socioeconomic health scenarios, student considerations, resident proximity, transport services, land price, and health utilities have been used as variables which influence education institutes' site selection. Based on the results, one of the important factors influencing site selection for higher education institutes is institute accessibility and transport services. In this regard, the results of this study align with those of other studies, such as Ross et al. [95], which identifies institute accessibility as one of the key criteria for students when selecting sites for higher education institutions. In addition, Kilicoglu et al. [96] investigated factors influencing site selection by using a multi-criterion technique and found that connectivity and communication issues are key factors for students when choosing an institution for higher education. According to another study conducted by Baser [93], quantitative factors (such as accessibility and size of the area) and qualitative criteria (such as safety and environmental conditions) have a greater impact on location selection for higher education institutes than other factors. Zaheer et al. [94] examined site influence as a factor in location selection and found that it was the most critical factor in determining the optimal location for schools.

This work's limitation is that there is no set description of socioeconomic health scenarios. Original articles used various social, economic, and health features to recognize influential factors. In this respect, the solution used in this review paper has been to apply a set of dummy variables (i.e., scenario variables that have considered social, economic, and health factors). Therefore, this study has emphasized social (i.e., student considerations, resident proximity, and transport services), economic (e.g., land price), and health (i.e., health utilities) features. Hence, other features of influential factors, like environmental features, have been ignored.

5. Conclusions

This study of original papers indicates that the role of social factors in institute accessibility is valuable. Resilience improves when transport services increase, compared to resident proximity. This shows that if the influential factors are resident proximity features, they cannot raise natural hazard resilience. Social factors in terms of transport services can increase resilience to natural hazards. They are defined as the movement of people in the face of one or more significant obstacles, including extreme weather events, major accidents, and the failure of equipment or infrastructure to function normally. Moreover, this analysis of original papers shows that economic factors (e.g., land price and health scenarios, such as health utilities) help to expand environmental comfort. Therefore, land prices lead to an improvement in educational conditions. In this regard, it is necessary

to raise individuals' level of awareness about economic health features and to make the necessary interventions for the protection of educational infrastructures.

In addition to the clear route by which economic health factors may ensure environmental comfort, there is also an indirect path. Environmental comfort resulting from land price and health utilities can also be considered through the indirect path of student considerations. Thus, student considerations that are improved by environmental comfort can in turn improve institute accessibility and institute location suitability. Given the significant positive influence on institute location suitability, it is clear that socioeconomic health scenarios have become more useful in institute site selection. Hence, from a policy point of view, focusing on requirements and inputs, including capital, will lead to better health utilities. Second, financial support should be targeted at transport services and increasing accessibility and access to education. Finally, to support education in the long term, student considerations must be taken into account.

Focusing on future research, it is necessary to improve the social status of students and recover the environmental conditions of educational infrastructures, and their effective drivers must be considered. Effective ways to increase the institute location suitability of separate continents need to be investigated to increase institute accessibility, resilience against natural and external hazards, and environmental comfort.

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Appendix A

Table A1. Input data for the biohazard resilience model.

Effect Size	Standard Error	Student Considerations	Resident Proximity	Transport Services	Land Price	Health Utilities	Africa	Americas	Asia	Oceania	Europe	Year2020	Significant	Positive
−0.236	0.079	0	1	0	1	0	0	0	1	0	0	1	1	0
−0.963	0.321	0	1	0	1	1	0	1	1	0	0	1	1	0
−0.743	0.248	0	1	0	1	0	0	1	1	0	0	0	1	0
0.476	0.876	1	1	0	1	0	0	0	1	0	0	0	0	1
0.831	0.277	0	0	0	1	0	1	1	0	0	0	1	1	1
0.961	0.320	0	0	1	0	1	1	0	0	0	1	0	1	1
−0.129	0.973	0	1	0	1	0	0	0	1	1	0	0	0	0
−0.246	0.082	1	1	0	1	0	0	0	1	0	0	0	1	0
−0.641	0.214	0	1	0	1	1	0	0	0	0	0	1	1	0
0.974	1.391	0	1	1	0	0	1	0	0	0	0	0	0	1
0.685	0.228	0	0	0	1	0	1	0	0	0	0	0	1	1
0.943	0.314	0	0	0	0	0	0	0	1	0	0	0	1	1
0.214	0.071	0	1	0	1	1	0	0	1	0	0	1	1	1
−0.621	0.207	0	1	0	1	1	0	1	0	0	0	1	1	0
−0.321	0.107	0	1	1	1	1	0	0	0	0	0	1	1	0
−0.374	0.125	0	1	0	0	0	0	1	0	0	0	0	1	0
−0.203	0.068	1	1	0	0	0	1	0	1	0	0	0	1	0
0.960	0.320	0	1	0	1	1	1	0	1	0	0	1	1	1
0.980	0.327	0	1	0	1	1	0	0	1	0	0	1	1	1
−0.641	0.971	0	1	0	1	1	1	0	0	0	0	1	0	0
−0.371	1.852	0	1	0	0	1	1	1	0	0	0	1	0	0

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