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Quantitative Analysis of Logistics Center Development Factors in Vietnam's Southern Economic Region

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Abstract. This study investigated the factors influencing logistics center system development in Vietnam's South Key Economic Zone. Quantitative survey data was collected from 450 pharmaceutical company executives and business owners. The results of SEM analysis indicated that infrastructure, location, service quality, cost, provider capacity and competitiveness positively impacted system development, both directly as well as indirectly mediated through legal/policy systems. Key practical recommendations are provided for transportation associations and governmental agencies to improve regional infrastructure, policy, promotion and operations. Theoretical and practical contributions along with limitations are discussed. Further research can expand this framework to other locales and sectors.

Keywords: Legal and policy systems, infrastructure, location, service quality, cost reasonableness, logistics service provider capacity, competitiveness, structural equation modeling.

1. Introduction

Up to now, there have been many definitions of logistics given. But a widely used definition of logistics is summarized by Liu et al. (2012) as: "Logistics is the strategic management process of purchasing, moving and storing raw materials, spare parts and finished goods inventory (and related information flows) through the organization and its marketing channels in such a manner that future profits are maximized through cost-effective fulfillment of orders".

The purpose of logistics is to meet customers' final requirements through careful planning by controlling costs, raw materials, inventory and finished products by using relevant information from the original production site to target the consumer market (Sople, 2007). Logistics can be seen as an advanced organizational and management technology and is expected by many to be another important source of profit along with reducing material consumption and increasing labor productivity (Huong, 2022). Since then, logistics has played a key role in the local economy and social development.

Transportation is a core aspect of logistics. Accordingly, freight villages that facilitate multimodal transport are often used like a logistics center. A logistics center is essentially a multimodal terminal, a key component of the multimodal transport chain, forming a node - where the process of transporting goods from one mode to another takes place (Bowen et al., 2017). Logistics centers must be located near manufacturing, commercial centers, highways, railways, airports and, if possible, seaports (Erkayman et al., 2011 Andreoli et al., 2010). However, a logistics center is more than just a freight village or multimodal terminal as it provides many other logistics-related services.

Logistics centers play an important key role and are a bridge between suppliers at the beginning of the chain and customers at the end of the chain (Sun and Ni, 2012). The location of the logistics center and its overall arrangement are important factors, allowing for cost savings through economies of scale and the provision of efficient value-added services to customers. Rapid economic development increasingly makes logistics one of the important factors to measure the comprehensive competitiveness of a country or region. The latest research on logistics theory mainly emphasizes hard logistics infrastructure i.e. geographical conditions, logistics infrastructure and industry support, instead of soft infrastructure such as logistics policy or personnel training (Mihi, et al., 2011). This is why some logistics centers with excellent environments still need to be improved.

In summary, to further research the nature and assess the level of influence of factors affecting the development of the logistics center system in the southern key economic region; this study was conducted with the goal of basing on the previously proposed research model, performing quantitative analysis to determine the level of influence of factors in the model. The quantitative results are the basis for the authorsto propose implications for developing a logistics center system in the southern key economic region commensurate with its stature and in accordance with regional and national policies.

2. Literature Review and Research Gap

The results of a review of related research documents are presented in Table 1 as follows.

Table 1. Results of review of related research documents

Research	Policies	Infrastructure	Human resources	Cost	Supplier capacity	Location	Business environment	Quality of service	Information technology
Hoang and Linh (2018)	x		x						
Linh (2018)	x	X	x	x	x	x			
Dung and Quynh (2020)	x	X	x					x	
Hieu (2021)		X		x		x		x	
Melachrinoudis and Min (2000)	x	X		x					
Hesse (2004)				x	x				
Vinh and Devinder (2005)	x	x				x			
Pham et al (2017)				x		x	x		
Vy (2018)	x	x			x			x	x
Van et al (2018)	x	x							
Dang and Yeo (2018)	x	x		x		x		x	x
Önden (2018) and Bowen (2008)					x	x	x		
Nga (2019)	x				x		x		
Tuyen (2019)	x	x	x						
Khoang et al (2020)		x		x		x			
Nga (2021)	x	x	x			x			

The results of the literature review in Table 1 show that previous studies only considered and tested some of the factors and criteria considered most important in the industry that the researcher recommended. Although previous research authors have pointed out most of the concepts involved in the research model, there are still shortcomings that need to be explored such as:

(1) Regarding methods, most studies use qualitative methods to identify factors affecting the

development of logistics center systems.

(2) Regarding spatial scope, while most domestic studies are only interested in the logistics development of a locality.

(3) Regarding the model, studies only pay attention to the competitiveness of the logistics industry.

3. Research Methodology

First, the authors clearly state the urgency of research in the current context, along with that is the process of reviewing relevant documents on the relationship model between factors, implementation methods and practical results. Next, the article mentions the process and methods to conduct research, including the analytical framework and research contents. The research hypotheses serve as a premise for proposing a model to study the impact of factors on the development of the logistics center system in the southern key economic region. The research process is presented in Figure 1.

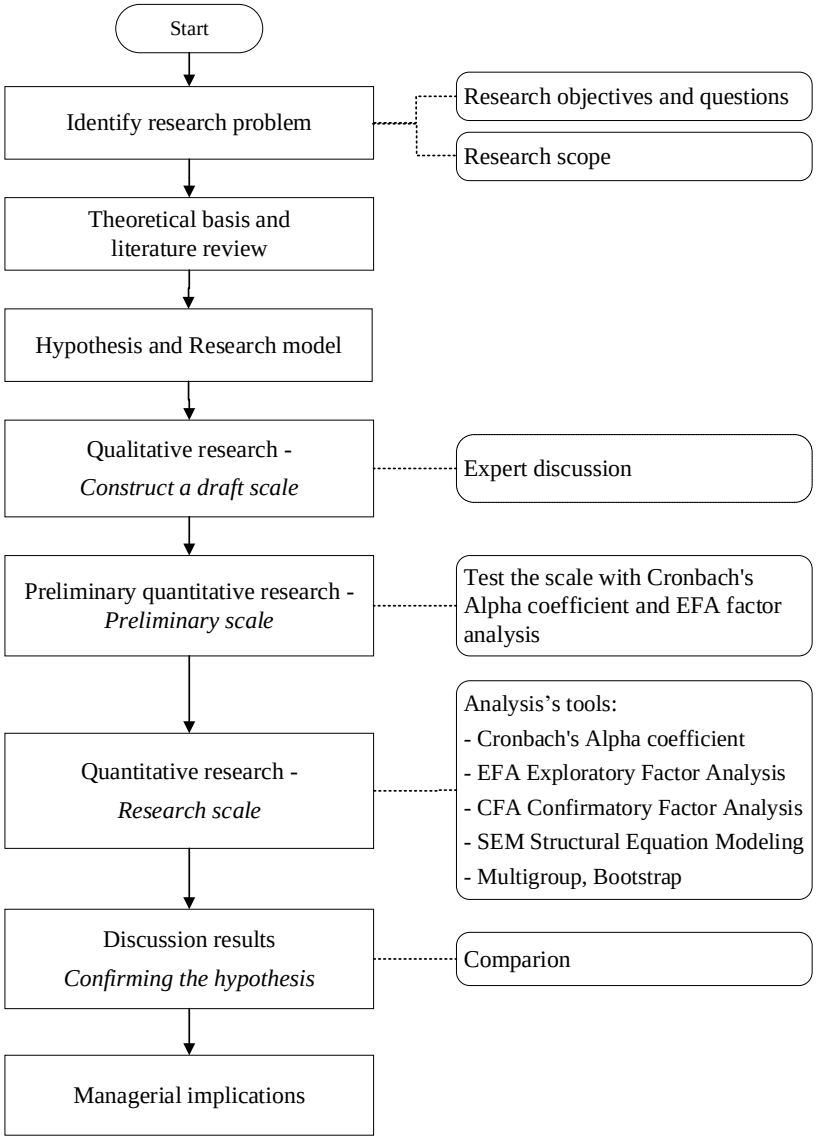


Fig. 1: Research process (Source: Suggested by author, 2023)

In the qualitative stage, by reviewing documents, the research has inheritance as well as proposed corresponding contents; From there, a draft scale is formed. This scale is the subject of in-depth discussion with highly specialized experts in the field of logistics service provision and shipper businesses. Interview experts include 8 experts: lecturers in the logistics industry, supply chain

management industry, transportation industry, directors, senior managers of businesses, logistics service providers, manufacturing enterprises,... The result is the formation of a preliminary scale to distinguish it from the draft scale proposed previously. The preliminary scale was deployed in print and online via Google Docs, targeting 70 executives and owners of logistics/manufacturing businesses, assessed by Cronbach's Alpha and EFA. The official study surveyed 450 similar subjects, combining face-to-face and online, testing the scale through Cronbach's Alpha, EFA, CFA, SEM, bootstrap, and multi-group analysis. Finally, draw conclusions and management recommendations from the research results. Figure 2 presents the analytical framework of the study.

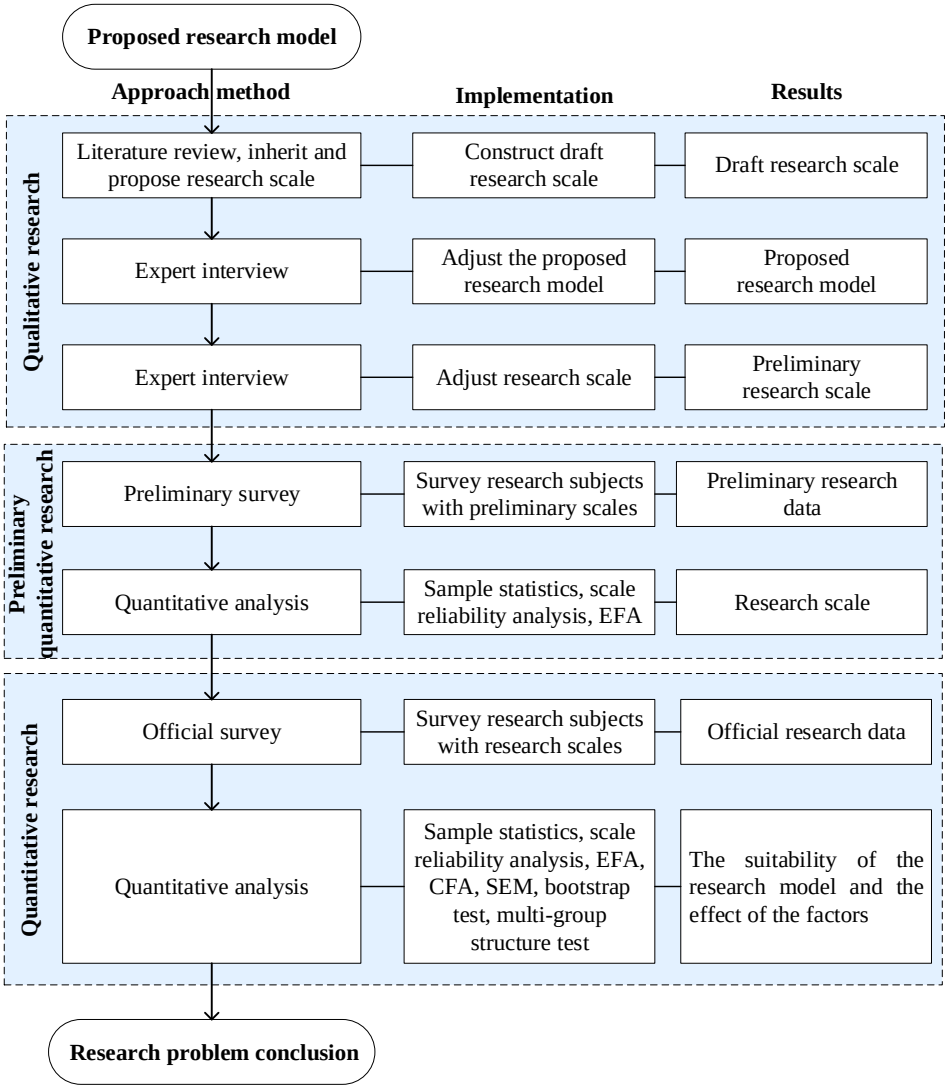


Fig. 2: Research analysis framework (Source: Suggested by Authors, 2023)

4. Hypothesis and Research Model

The author inherits the research model formed from the results of the topics and presents it in Figure 3 with the following hypotheses.

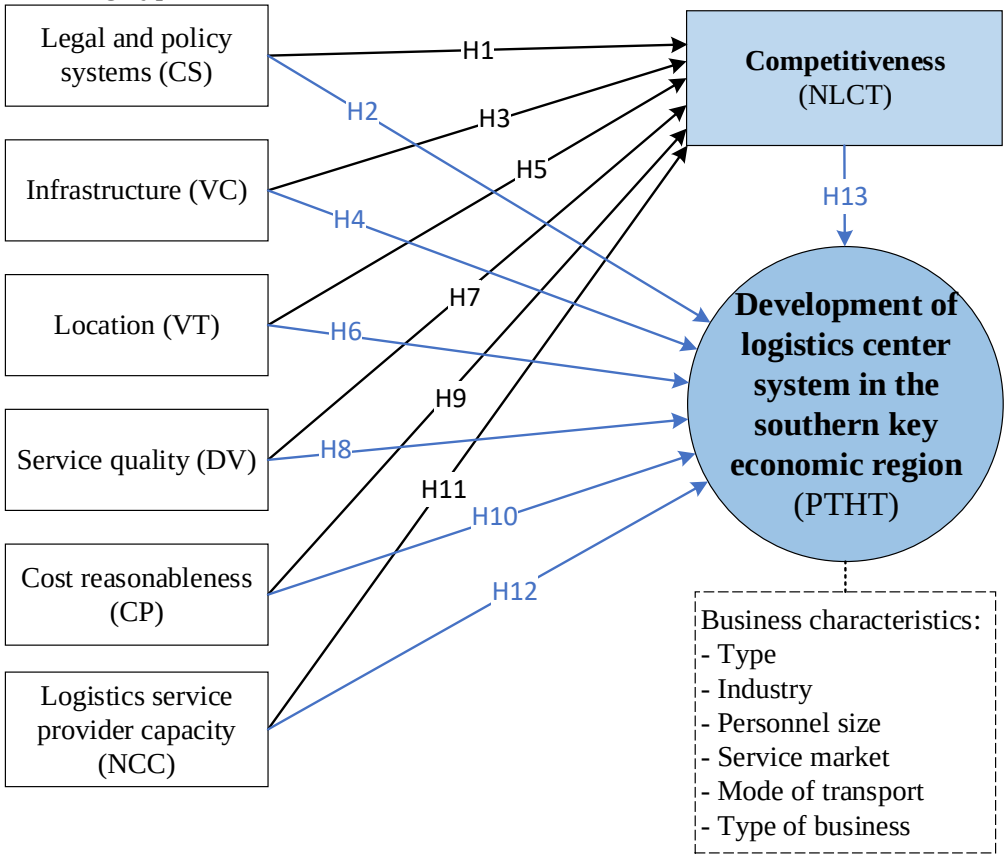


Fig. 3: Proposed research model (Source: Proposed by authors, 2023)

- Hypothesis H1: The legal and policy system has a positive impact on the competitiveness of the logistics center system in the Southern Key Economic Region.
- Hypothesis H2: The legal and policy system has a positive impact on the development of the logistics center system in the Southern Key Economic Region.
- Hypothesis H3: Infrastructure has a positive impact on the competitiveness of the logistics center system in the Southern Key Economic Region.
- Hypothesis H4: Infrastructure has a positive impact on the development of logistics center system in the Southern Key Economic Region.
- Hypothesis H5: Location has a positive impact on the competitiveness of the logistics center system in the Southern Key Economic Region.
- Hypothesis H6: Location has a positive impact on the development of logistics center system in the Southern Key Economic Region.
- Hypothesis H7: Service quality has a positive impact on the competitiveness of the logistics center system in the Southern Key Economic Region.
- Hypothesis H8: Service quality has a positive impact on the development of logistics center system in the Southern Key Economic Region.
- Hypothesis H9: Cost reasonableness has a positive impact on the competitiveness of the logistics center system in the Southern Key Economic Region.
- Hypothesis H10: Cost reasonableness has a positive impact on the development of the logistics center system in the Southern Key Economic Region.

- Hypothesis H11: Logistics service provider capacity has a positive impact on the competitiveness of the logistics center system in the Southern Key Economic Region.
- Hypothesis H12: Logistics service provider capacity has a positive impact on the development of logistics center system in the Southern Key Economic Region.
- Hypothesis H13: Competitiveness has a positive impact on the development of logistics center system in the Southern key economic region.

5. Research Results

5.1. Sample statistics

The survey subjects of the study are executives, logistics business owners and manufacturing enterprises/shippers. In total, the authorssent out 600 surveys, resulting in 514 surveys (86% recovery rate). After processing and cleaning the data, the official sample number was 450. Descriptive statistics of the research sample are presented in Table 1.

Table 2. Survey sample structure

Characteristics of business classification		**Frequency**	**Proportion**	**Accumulation**
Type of business	Private and limited liability companies	119	26.4	26.4
	Government company	139	30.9	57.3
	Joint stock company	81	18.0	75.3
	Joint venture	67	14.9	90.2
	Foreign company	44	9.8	100.0
	Total	450	100.0	
Industry	Transportation company/direct delivery/courier	78	17.3	17.3
	Delivery company	80	17.8	35.1
	ICD/warehouse/distribution center	37	8.2	43.3
	Logistics company	44	9.8	53.1
	Manufacturing enterprises	211	46.9	100.0
	Total	450	100.0	
Personnel size	Less than 10 people	184	40.9	40.9
	11 - 100 people	140	31.1	72.0
	101 - 200 people	81	18.0	90.0
	Over 200 people	45	10.0	100.0
	Total	450	100.0	
Service market	Inland	107	23.8	23.8
	Export	207	46.0	69.8
	Import	136	30.2	100.0

Characteristics of business classification		Frequency	Proportion	Accumulation
	Total	450	100.0	
Mode of transport	Road	221	49.1	49.1
	Waterways	101	22.4	71.6
	Sea	61	13.6	85.1
	Other (rail, air, multimodal)	67	14.9	100.0
	Total	450	100.0	
Businesses use the service	Logistics enterprise	239	53.1	53.1
	Manufacturing enterprises	211	46.9	100.0
	Total	450	100.0	

(Source: Author's compilation, 2023)

5.2. Preliminary scale reliability analysis result

The research scale presented in the Table 2.

Table 3. Research scale

Coded	Research scales	Number of scales	Role
CS	Legal and policy systems	6	Independent variables
VC	Infrastructure	5	
VT	Location	7	
DV	Service quality	4	
CP	Cost reasonableness	4	
NCC	Logistics service provider capacity	4	
NLCT	Competitiveness	4	Being both an independent variable and a dependent variable
PTHT	Development of logistics system	4	Dependent variable
Total		**38**	

(Source: Author's compilation, 2023)

The results of preliminary scale reliability analysis are presented in Table 3. All Cronbach's Alpha coefficients of the scale are greater than 0.6 and the total variable correlation coefficients of each component scale are greater than 0.3. Therefore, all scales were retained for subsequent exploratory factor analysis.

Table 4. Results of preliminary scale reliability analysis

Variable	Variable correlation coefficient	Cronbach's Alpha to eliminate	Variable	Variable correlation coefficient	Cronbach's Alpha to eliminate
Cronbach's Alpha scale of Legal system and policy: 0.876			Cronbach's Alpha of the Infrastructure scale: 0.939		

Variable	Variable correlation coefficient	Cronbach's Alpha to eliminate	Variable	Variable correlation coefficient	Cronbach's Alpha to eliminate
CS1	.813	.882	VC1	.834	.926
CS2	.808	.883	VC2	.809	.930
CS3	.763	.893	VC3	.833	.926
CS4	.712	.903	VC4	.787	.935
CS5	.769	.891	VC5	.923	.909
Cronbach's Alpha Location scale: 0.934			Cronbach's Alpha Service quality scale: 0.911		
VT1	.753	.928	DV1	.879	.859
VT2	.797	.923	DV2	.793	.888
VT3	.795	.924	DV3	.795	.886
VT4	.809	.922	DV4	.736	.907
VT5	.716	.931			
VT6	.837	.920			
VT7	.808	.922			
Cronbach's Alpha Cost reasonableness scale: 0.920			Cronbach's Alpha Service provider capacity scale: 0.870		
CP1	.850	.885	NCC1	.762	.820
CP2	.822	.894	NCC2	.726	.833
CP3	.761	.915	NCC3	.724	.834
CP4	.832	.891	NCC4	.684	.850
Cronbach's Alpha Competitiveness scale: 0.842			Cronbach's Alpha scale for Development of logistics center system: 0.928		
NLCT1	.795	.744	PTHT1	.835	.905
NLCT2	.697	.790	PTHT2	.838	.904
NLCT3	.423	.898	PTHT3	.829	.907
NLCT4	.817	.735	PTHT4	.824	.909

(Source: Author compiled from software, 2023)

5.3. Exploratory factor analysis result

The author performed exploratory factor analysis (EFA) using the Principals axis factoring method combined with the Promax rotation method on SPSS20, the results are as shown in Table 4 below. The KMO coefficient reaches 0.880 (greater than 0.5) and the Sig. value of Barlett's test reaches 0.000 (less than 0.05), showing that the data is suitable for EFA factor analysis; There were 8 factors extracted with a total variance extracted of 72% (greater than 50%; Factor loadings of all variables were greater than 0.500 (satisfactory) with the composition of the variables unchanged.

Table 5. Exploratory factor analysis result

Variable	Factor							
	1	2	3	4	5	6	7	8
VT6	.868							
VT1	.858							
VT3	.832							
VT2	.822							
VT7	.816							
VT4	.815							
VT5	.716							
VC5		.998						
VC1		.866						
VC3		.858						
VC2		.834						
VC4		.789						
CS2			.878					
CS1			.863					
CS5			.837					
CS3			.761					
CS4			.723					
CP1				.923				
CP4				.889				
CP2				.858				
CP3				.779				
DV1					.982			
DV3					.854			
DV2					.811			
DV4					.756			
PTHT4						.896		
PTHT2						.881		
PTHT1						.844		
PTHT3						.843		
NCC1							.845	
NCC2							.802	
NCC3							.794	
NCC4							.721	
NLCT4								.987
NLCT1								.944
NLCT2								.652
Phương sai trích %	26.8	37.4	45.6	52.7	59.6	64.6	68.7	72.0
KMO	0.880							
Sig. (Bartlett)	0.000							

(Source: Compiled from research results, 2023)

Thus, the official scale (initially with 38 variables after eliminating 2 variables CS6 and NLCT3, leaving 36 variables) reaches the necessary level of reliability and convergence, and will be retained for subsequent quantitative analysis.

5.4. Confirmatory factor analysis results

The results of the fit analysis of the CFA confirmatory factor model are presented in Figure 4. Fit assessment based on the criteria presented in the next section is as follows.

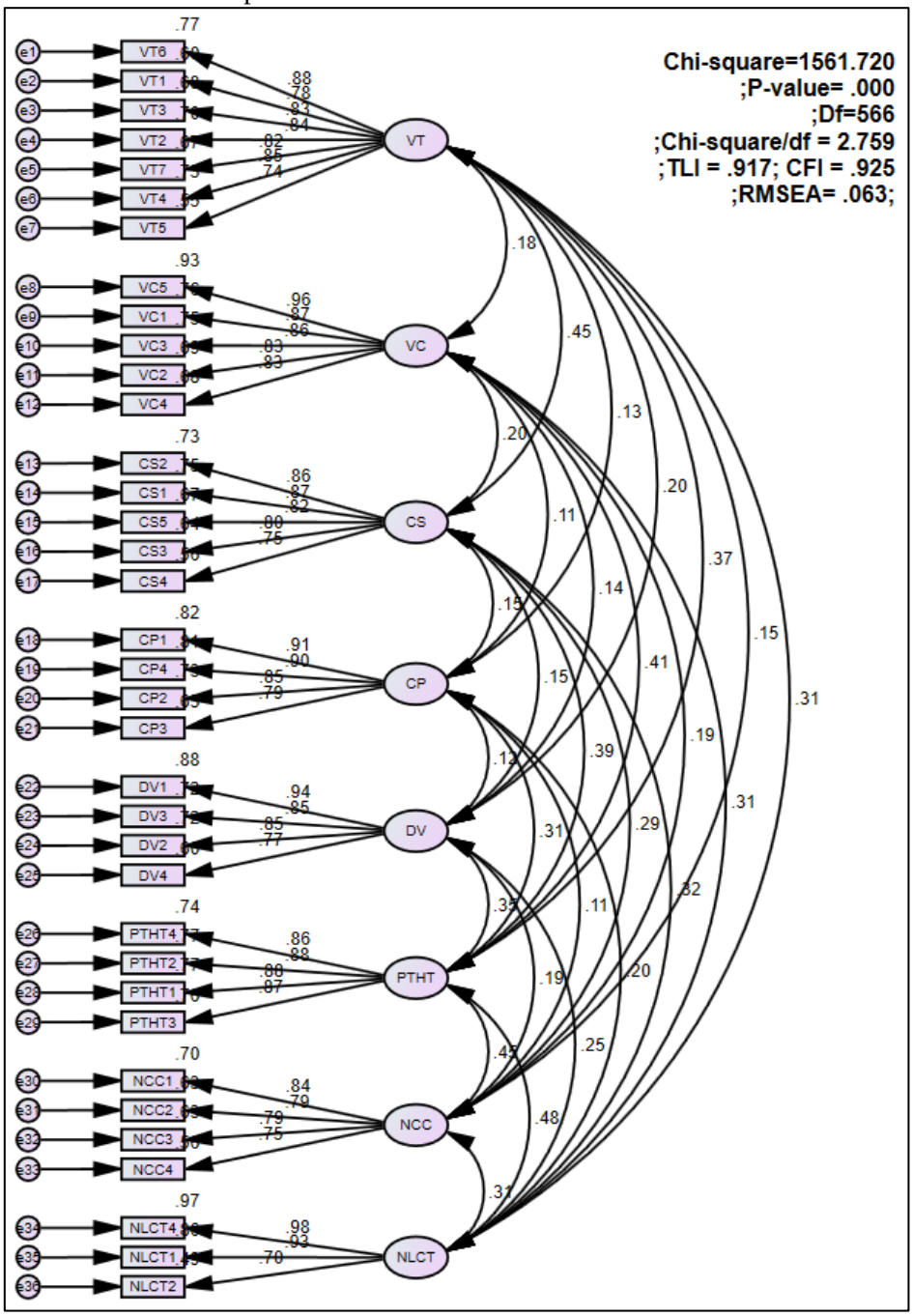


Fig. 4: Confirmatory factor analysis results (standardized estimates) (Source: Compiled by the authors, 2023)

- Overall fit level: Model with Chi-square value (Chi-square) = 1561.720, degrees of freedom df = 566, p-value = 0.000 < 0.05: unsatisfactory (possibly due to inadequate sample size) Chi-

square value adjusted for degrees of freedom (Chi-square/df) = 2,759 < 3: satisfactory; TLI index = 0.917 > 0.9: satisfactory, CFI index = 0.925 > 0.9: satisfactory; and RMSEA index = 0.063 < 0.08: satisfactory. Conclusion: The model achieves the necessary unidirectionality.

- Reliability: The composite reliability coefficient pc of the measurement scales is presented in Table 5, accordingly, all scales have a p_c value greater than 0. Conclusion: the measurement reaches the necessary level of reliability

Table 6. Composite reliability coefficient and total variance extracted

Factors	Composite reliability coefficient p_c	Total variance extracted p_{vc}
VT	0.935	0.673
VC	0.941	0.761
CS	0.911	0.673
CP	0.921	0.745
DV	0.915	0.730
PTHT	0.928	0.763
NCC	0.872	0.630
NLCT	0.909	0.772

(Source: Compiled by the author, 2023)

- Convergent validity: The standardized weights of the scales (Figure 4) are all greater than 0.5 and statistically significant and the total variance extracted PVC (Table 5) is all greater than 0.5. Conclusion: The model achieves convergent validity.. Conclusion: The model achieves convergent validity.
- Discriminant value: The results of testing the correlation coefficient between concepts on the overall scale are presented in Table 6. The p-value values are all less than 0.05 so they are all statistically significant, showing that the correlation between concepts is different from 1. Conclusion: The model achieves discriminant value.

Table 7. Results of testing the discriminant validity of the scale in the critical model

Relationship	Correlation coefficients	SE	CR	p-value
VT <--> VC	0.185	0.046	17.553	0.000
VT <--> CS	0.452	0.042	13.003	0.000
VT <--> CP	0.127	0.047	18.629	0.000
VT <--> DV	0.205	0.046	17.192	0.000
VT <--> PTHT	0.372	0.044	14.320	0.000
VT <--> NCC	0.155	0.047	18.104	0.000
VT <--> NLCT	0.309	0.045	15.378	0.000
VC <--> CS	0.197	0.046	17.336	0.000
VC <--> CP	0.109	0.047	18.972	0.000
VC <--> DV	0.143	0.047	18.328	0.000
VC <--> PTHT	0.415	0.043	13.609	0.000
VC <--> NCC	0.191	0.046	17.444	0.000
VC <--> NLCT	0.307	0.045	15.412	0.000

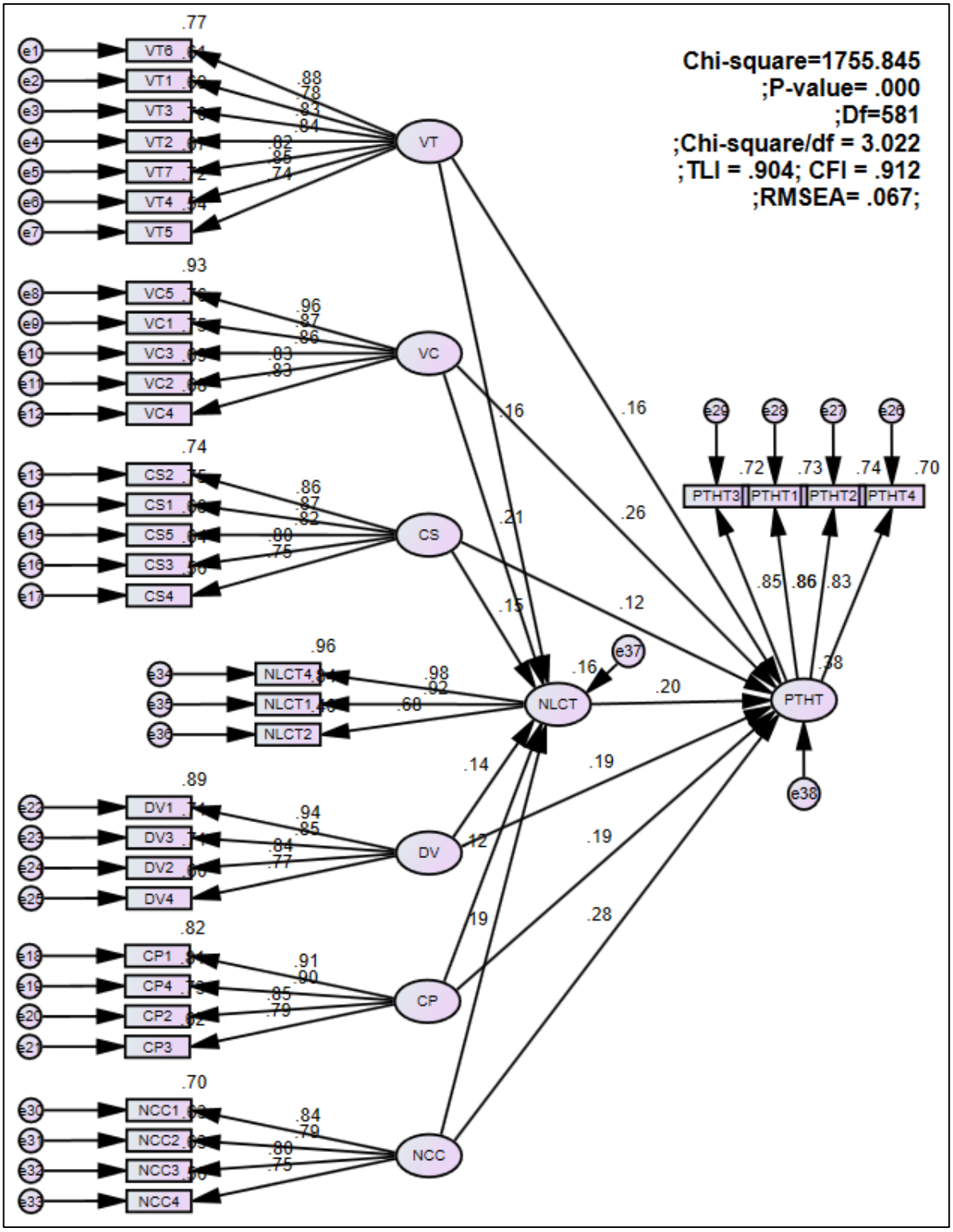
Relationship			Correlation coefficients	SE	CR	p-value
CS	<-->	CP	0.145	0.047	18.290	0.000
CS	<-->	DV	0.153	0.047	18.141	0.000
CS	<-->	PTHT	0.386	0.044	14.088	0.000
CS	<-->	NCC	0.293	0.045	15.651	0.000
CS	<-->	NLCT	0.325	0.045	15.107	0.000
CP	<-->	DV	0.117	0.047	18.819	0.000
CP	<-->	PTHT	0.310	0.045	15.361	0.000
CP	<-->	NCC	0.107	0.047	19.010	0.000
CP	<-->	NLCT	0.198	0.046	17.318	0.000
DV	<-->	PTHT	0.353	0.044	14.637	0.000
DV	<-->	NCC	0.188	0.046	17.499	0.000
DV	<-->	NLCT	0.253	0.046	16.343	0.000
PTHT	<-->	NCC	0.450	0.042	13.036	0.000
PTHT	<-->	NLCT	0.482	0.041	12.514	0.000
NCC	<-->	NLCT	0.307	0.045	15.412	0.000

(Source: Compiled from research results, 2023)

- Unidirectionality: The model has indicators consistent with testing standards and does not detect correlation between measurement errors. Conclusion: The model is unidirectional.
- Theoretical value: The model was built by reviewing the literature and inheriting the scale, so it is evaluated as consistent with theory and can be used in applied research.

5.5. Structural equation modeling results

Results of testing the SEM model on AMOS with ML (Maximun Likehood) estimation to estimate the parameters in the model are presented in Figure 5. The results show that the theoretical model is consistent with physical survey data. Shown through the following indicators: Chi-square value = 1755.845, degrees of freedom df = 581, p-value = 0.000 < 0.05: unsatisfactory (possibly due to inappropriate sample size); Chi-square/df value = 3.022 < 5: satisfactory; TLI index = 0.904 > 0.9: satisfactory, CFI index = 0.912 > 0.9: satisfactory; and RMSEA index = 0.067 < 0.08: satisfactory. Thus, the general assessment is that the model fits the actual data.



(Source: Compiled from research results, 2023)

Fig 5. Confirmatory factor model standardized weight results

The estimation results in Table 7 show that all p-values are less than 0.05, indicating a statistically significant relationship between the factors.

Table 8. Results of testing the correlation between concepts (not standardized)

Relationship			Coefficient	S.E.	C.R.	P-value
NLCT	<---	CS	0.143	0.044	3.285	0.001
NLCT	<---	VC	0.328	0.071	4.587	0.000
NLCT	<---	VT	0.191	0.054	3.534	0.000
NLCT	<---	DV	0.250	0.081	3.095	0.002
NLCT	<---	CP	0.147	0.059	2.507	0.012
NLCT	<---	NCC	0.235	0.06	3.907	0.000
PTHT	<---	NCC	0.173	0.028	6.101	0.000
PTHT	<---	CP	0.121	0.027	4.518	0.000
PTHT	<---	DV	0.162	0.037	4.396	0.000
PTHT	<---	NLCT	0.096	0.022	4.288	0.000
PTHT	<---	CS	0.055	0.02	2.775	0.006
PTHT	<---	VC	0.196	0.033	5.892	0.000
PTHT	<---	VT	0.090	0.025	3.646	0.000

(Source: Compiled from research results, 2023)

6. Managerial Implications

6.1. Managerial implications for the legal and policy system

Statistics on the Legal and policy system scale with 6 component variables with average values from 3.24 to 3.50. This value range is at the level of high neutral and low agreement, showing that businesses do not completely agree with the contents of this scale. In order to increase the level of agreement of businesses with this overall scale, the logistics center system of the Southern Key Economic Region needs to focus on improving CS2 scale "Logistics centers can easily access information and policies of the State, grasp all legal information related to the center's operations" from 3.34 and CS4 scale "The State applies appropriate tax rates" from 3.24 to above 3.40.

Vietnam Logistics Service Business Association (VLA) plays an important role in promoting logistics development in the southern key economic region. The author proposes some specific solutions for the Vietnam Logistics Service Business Association to propose to the State and authorities to realize logistics policies:

- Exemption from value-added tax on imports of ships transporting goods, exemption from import tax and deep reduction in fees calculated on tonnage in case of operating container ships of 1,500 TEU or more or ships running on clean energy such as LNG;
- Continue to implement amended Decision No. 221/QD-TTg and supplement Decision No. 200/QD-TTG dated February 14, 2017 on approving the action plan to improve competitiveness and develop Vietnam's logistics services until 2017;
- Propose and develop solutions to encourage business expansion for logistics centers, develop and innovate institutional and policy frameworks to suit the region's situation;
- Focus on supporting a number of shipping companies in the region to have enough capacity to operate internationally;
- Promote activities to support regional alliances and links in logistics operations;
- Develop a logistics service ecosystem with the main focus being the system of logistics centers.

6.2. Managerial implications for infrastructure

Statistics of the Infrastructure scale with 5 component variables with average values ranging from 3.64 to 3.67. This value range is at a low level, showing that businesses have consistent agreement with the contents of this scale. To be able to increase the level of agreement of businesses with this overall scale, the logistics center system of the Southern Key Economic Region needs to simultaneously upgrade all 5 component variables to above 4.20. The improvement is not small, so the central logistics system needs great efforts. To solve this problem, the authors propose some solutions such as:

- Planning container transport routes connecting Cai Mep - Thi Vai seaport with inland waterway ports in the region;
- Continue to build logistics centers that integrate many functions, including micro warehouses specializing in serving e-commerce goods;
- Promote planning, announcement, and construction of dry ports.

6.3. Managerial implications for location

Statistics of the Position scale with 7 component variables with average values ranging from 3,442 to 3,538. This value range is at a low level, showing that businesses agree with the contents of this scale. In order to increase the level of agreement of businesses with this overall scale, the logistics center system of the Southern Key Economic Region needs to simultaneously upgrade all 7 component variables to above 4.20. However, the improvement is not small, so the central logistics system needs great efforts. To solve the above problems, the authorsproposes the following:

- It is necessary to focus on the last-mile delivery segment of agricultural products and fresh goods;
- Vietnam Logistics Service Business Association is a bridge and host organization for organizing promotion activities and logistics conferences to raise awareness of the business community and media about logistics services;
- Logistics businesses need to focus on developing and improving the quality of human resources to meet the development needs of the logistics industry.

6.4. Managerial implications for service quality

Statistics of the Service quality scale with 4 component variables have average values ranging from 3.89 to 3.97, this value range is at a high level (Table 5.5); showing that businesses have high agreement with the contents of this scale. This is the factor with the level of agreement closest to the threshold of 4.20, so it is also the factor that is easiest to improve to improve the development of the logistics center system in the Southern Key Economic Region.

6.5. Managerial implications for cost reasonableness

Statistics on the Cost Reasonability scale with 4 component variables with average values ranging from 3.60 to 3.72. This value range is at a high level showing that businesses have high agreement with the contents of this scale. In order to increase the level of agreement of businesses with this overall scale, the logistics center system of the Southern Key Economic Region needs to simultaneously upgrade all 4 component variables to above 4.20. The gap that needs improvement is still quite large, so the central logistics system needs to make more efforts.

6.6. Managerial implications for service provider capacity

Statistics of the Supplier Capacity scale with 4 component variables with average values ranging from 3.32 to 3.51; This value range is at a relative assessment level, showing that businesses do not completely agree with the contents of this scale. In order to increase the level of agreement of businesses with this overall scale, the logistics center system of the Southern Key Economic Region needs to focus

on improving the NCC4 scale "The supplier's warehousing services meet the needs of businesses" from 3.32 to above 3.40.

6.7. Managerial implications for competitiveness

Statistics of the Competitiveness scale with 4 component variables with average values ranging from 3.60 to 3.74; This value range is at a high level of agreement, showing that businesses have high agreement with the contents of this scale. To be able to increase the level of agreement of businesses with this overall scale, the logistics center system of the Southern Key Economic Region needs to simultaneously upgrade all 4 component variables to above the level of 4.20. This gap is still quite large, so the central logistics system needs more efforts.

7. Conclusion

In conclusion, this study makes important theoretical contributions by constructing and empirically testing an integrated model evaluating how myriad internal/external, hard/soft factors impact Vietnamese logistics center system advancement. Practical insights are offered into how transportation bodies can better direct resources to enhance legal/policy systems, infrastructure, location selection, service quality, cost-efficiencies, provider capabilities and competitiveness. Efforts in these areas promise to strengthen regional supply chains. Scholars can build on this work by applying this research lens to other geographic areas and industries as well as addressing limitations like sample size and narrow focus to determine generalizability. As global supply chains continue to grow in complexity, understanding the array of interdependent drivers that underpin logistics infrastructure development remains imperative.

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