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Leveraging IT and Culture for Enhanced Logistics Capability and Performance

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Abstract

Purpose: This study examines the impact of Information Technology Capability (ITC) and Organizational Culture (OC) on Logistics Capability (LC) and Logistics Performance (LP) in the Vietnamese logistics industry. **Research Design, Data, and Methodology:** Using Partial Least Squares Structural Equation Modeling (PLS-SEM), this study analyzes data collected from 90 logistics managers across different regions and enterprise types. The study assesses the direct and mediated relationships among ITC, OC, LC, and LP to evaluate their combined influence on logistics performance. **Results:** The findings reveal that ITC and OC significantly enhance LC ($\beta = 0.287$, $p < 0.05$; $\beta = 0.344$, $p < 0.05$). Additionally, LC mediates the relationship between these factors and LP, highlighting its essential role in logistics operations. Notably, ITC also has a direct positive impact on LP ($\beta = 0.257$, $p < 0.05$). The model explains 76.1% of the variance in LP ($R^2 = 0.761$). **Conclusions:** The results emphasize the need for logistics firms in emerging markets to integrate digital transformation with organizational culture development to enhance logistics performance. Strengthening IT capabilities and fostering an adaptive organizational culture are key strategies for improving efficiency and competitiveness in the logistics sector.

Keywords : Logistics Capability, Information Technology Capability, Organizational Culture, Logistics Performance, Vietnam.

JEL Classification Code: L80, L81, L91, M1

1. Introduction

In today's highly competitive and digitally driven global market, logistics capability (LC) has emerged as a strategic pillar for business success. Efficient logistics operations not only streamline supply chain processes but also enhance customer satisfaction, reduce costs, and improve overall market responsiveness (Fugate et al., 2010). However, achieving superior logistics performance (LP) requires more than just operational efficiency—it demands a synergistic integration of technology and organizational culture, enabling firms to adapt to rapid market changes and evolving customer expectations.

Two critical enablers shaping modern logistics are Information Technology Capability (ITC) and Organizational Culture (OC). ITC facilitates real-time data analytics, automation, and digital transformation, empowering firms to optimize transportation, warehousing, and demand forecasting (Forman & Lippert, 2005). Meanwhile, OC influences how organizations adopt technology, foster collaboration, and manage logistics complexity, ultimately affecting supply chain agility and resilience (Carter & Jennings, 2002). While extensive research has explored these factors in developed economies, there remains a significant gap in understanding their impact in emerging markets—particularly in Vietnam, a rapidly expanding logistics hub in Southeast Asia.

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This study seeks to bridge this gap by examining how ITC and OC drive LC and, in turn, enhance LP in Vietnam's logistics sector. Grounded in the Theory of Planned Behavior (TPB) and Capability Theory (CT), the research develops a conceptual model to analyze these relationships. Employing Structural Equation Modeling (SEM), we leverage survey data from 90 logistics managers to empirically validate the impact of technological and cultural capabilities on logistics outcomes.

By addressing these relationships, this study contributes to both academic literature and industry practice, offering insights into how businesses can strategically leverage digital transformation and organizational development to optimize logistics performance. Given the increasing complexity of global supply chains, understanding these dynamics is crucial for firms seeking to build resilient, technology-driven logistics ecosystems in Vietnam and beyond.

2. Theoretical Basis

This research is based on the Theory of Planned Behavior (TPB) and Capability Theory (CT). TPB theory was proposed by Ajzen (1991) to explain the complex relationship between beliefs, intentions and behavior. TPB expands the scope of the Theory of Reasoned Action (TRA) by adding a cognitive element of behavioral control, enhancing the ability to predict and explain behavior in many contexts. According to TPB, trust, a factor that directly affects intention, is classified into three types: behavioral trust, general normative trust, and autonomy trust. TPB asserts that intention is a key driver of behavior. The addition of behavioral control further strengthens the explanatory power of the TPB, making it one of the most widely applied and cited behavioral theories (Cooke & Sheeran, 2004). TPB theory helps analyze organizations' intentions in performing behaviors related to applying Information Technology, improving Logistics Capability and changing organizational culture, thereby predicting the likelihood of success of these activities to Logistics performance.

Besides, Capability Theory asserts that the ability of an organization or individual to perform a specific task depends on the combination of four main factors: resources, knowledge, skills and experience. Resources include material, financial and human resources, which are the foundation for mission implementation. Expert knowledge, experience, industry and technology understanding play an important role in decision making and problem solving. Practical skills, information processing, problem solving and teamwork are essential elements for effective task performance. Finally, accumulated experience from performing tasks in the past is an important factor to help learn from experience, improve capabilities and make appropriate decisions. In short, the harmonious combination of these four elements will create real capability for organizations or individuals to perform tasks effectively. CT theory helps analyze an organization's ability to perform effective Logistics activities based on the combination of resources, knowledge, skills and experience.

3. Literature Review and Research Gaps

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

Table 1: Results of Review of Related Research Documents

Research \ Factor		Finance	Market	Strategy	Structure	Culture	Social responsibility	Client	Speed	Reliability
Technological Capabilities Information	Huang et al. (2012)	x	x		x					
	Shang and Marlow (2005)	x	x							
	Zhao et al. (2009)			x	x					
Organizational Culture	Tsui et al. (2006)					x	x			
	Carter and Jennings (2002)					x				
	Knight and Cavusgl (2004)					x	x			
Logistics Capability	Morash et al. (1996)								x	
	Ellinger et al. (2000)							x		x
	Cho et al. (2008)								x	x
	Ralston et al. (2013)							x	x	
Logistics Performance	Agarwal (2018)	x	x		x		x		x	x
	Qorri (2018)	x				x		x		x
	Zakery (2011)	x		x	x		x	x		x
	Hoang (2024)	x		x		x		x	x	

Source: Compiled by the author (2024)

The results of the literature review in Table 1 show that previous studies have synthesized factors that contribute to building the relationship between Information Technology Capability, Cultural Organization, Logistics Capability and Logistics Performance. Conclusions about the relationship between factors are as follows:

- Information Technology Capabilities positively impact Logistics Performance;
- Information Technology Capabilities and Cultural Organizations positively impact Logistics Capabilities;
- Logistics Capability has a positive impact on Logistics Performance.

Information Technology helps businesses collect, store, process and analyze Logistics data quickly and accurately. Warehouse, transportation and supply chain management systems provide detailed information about goods status, shipping schedules, and customer needs, thereby supporting businesses in making timely and effective decisions. Besides, Information Technology optimizes the process, eliminating manual steps and minimizing errors. For example, an automated warehouse management system (WMS) helps optimize warehousing, warehousing, and inventory, while a transportation management system (TMS) supports route planning and tracking transport. In addition, Information Technology provides data analysis and simulation tools, allowing businesses to forecast demand, plan production and distribution, optimize Logistics networks and make informed decisions strategy. As noted by the studies Huang et al. (2012), Shang and Marlow (2005), Zhao et al. (2009).

Organizational Culture, as a system of values, beliefs and common norms, deeply affects all business activities, including the Logistics field. Logistics Capability not only depends on technology or process factors but is also affected by how employees interact, share information and cooperate with each other. Therefore, the relationship between Organizational Culture and Logistics Capability is increasingly receiving research and analysis attention. As noted by the studies Tsui et al (2006), Carter and Jennings (2002), Knight and Cavusgil (2004).

In addition, strong Logistics Capabilities allow businesses to design and manage effective supply chains, minimizing waiting time, waste and disruption; helps businesses quickly and accurately respond to customer needs, improving customer satisfaction and loyalty. Effective Logistics capabilities allow businesses to optimize the use of resources, minimizing transportation, storage and inventory management costs. In the market, Logistics Capability is an important factor that helps businesses create competitive advantages and enhance business position. As noted by the studies Morash et al. (1996), Ellinger et al. (2000), Cho et al. (2008), Ralston et al. (2013).

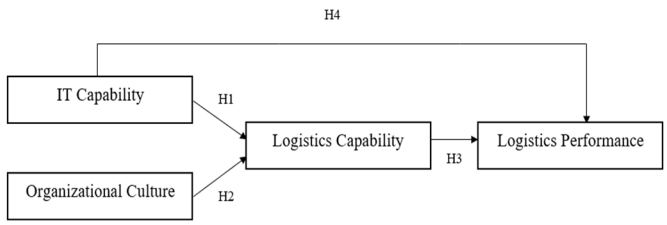
Logistics Performance is a measure of the effectiveness of logistics activities in meeting customer needs and achieving business goals. It reflects a business's ability to manage the supply chain, transport goods, store, process orders and deliver goods effectively, saving costs and time. High logistics performance is demonstrated through minimizing waste, optimizing resources, improving delivery accuracy and speed, and bringing customer satisfaction. As noted by the studies Agarwal (2018), Qorri (2018), Zakery (2011), Hoang (2024).

Although the authors of previous studies have pointed out most of the concepts involved in the research model, there are still gaps that need to be explored to evaluate the impact of Information Technology Capability, Organizational Culture and Logistics Capability to Logistics Performance in Vietnam such as:

- First, the impact of Logistics 4.0 technology on Logistics Capability and Logistics Performance.
- Second, employee interest in using new technology.
- Third, barriers prevent Vietnamese businesses from applying Information Technology in Logistics.
- Fourth, the Organizational Culture model is suitable to promote Logistics Efficiency in Vietnam.
- Fifth, the evaluation model is suitable for the characteristics of Vietnamese businesses.

4. Proposed Research Model and Hypothesis

Based on the literature review and research gaps, a general model to evaluate the impact of Information Technology Capability, Organizational Culture and Logistics Capability on Logistics Performance in Vietnam is presented at Figure 1.



Source: Suggested by author (2024)

Figure 1: Model of the Impact of ITC, OC and LC on LP

4.1. The Role of ITC and OC in Logistics Capability

The TPB framework (Ajzen, 1991) explains that organizational behaviors, including logistics digitalization and operational improvements, are influenced by beliefs, intentions, and control mechanisms. ITC, which

encompasses data-driven decision-making, automation, and real-time tracking, enhances firms' ability to optimize logistics operations (Forman & Lippert, 2005). Meanwhile, OC shapes how effectively organizations adopt and integrate technology, fostering collaboration, knowledge sharing, and adaptability (Carter & Jennings, 2002). When combined, ITC and OC contribute to strengthening LC, enabling firms to enhance supply chain agility, reliability, and responsiveness.

4.2. Logistics Capability as a Driver of Logistics Performance

According to Capability Theory (Teece et al., 1997), a firm's ability to maintain a competitive advantage depends on its capability to leverage resources efficiently. LC, which includes transportation efficiency, inventory management, and order fulfillment, serves as a key mediator that translates ITC and OC investments into tangible performance outcomes (Ellinger et al., 2000). A well-developed LC ensures cost efficiency, reduced lead time, and enhanced customer satisfaction, ultimately leading to improved LP.

4.3. Direct and Indirect Effects of ITC and OC on Logistics Performance

While LC acts as an intermediary, ITC and OC may also directly influence LP. Advanced IT systems enable firms to automate logistics operations, reducing human errors and increasing efficiency. Likewise, an adaptive and innovative OC supports firms in overcoming logistical challenges, improving decision-making, and fostering continuous process optimization.

The research hypotheses were built to test as follows:

- **Hypothesis H1:** Information Technology Capability has a positive impact on Logistics Capability.
- **Hypothesis H2:** Organizational Culture has a positive impact on Logistics Capability.
- **Hypothesis H3:** Logistics Capability has a positive impact on Logistics Performance.
- **Hypothesis H4:** Information Technology Capability has a positive impact on Logistics Performance.

5. Research Methodology

This study uses qualitative research methods combined with quantitative. In the qualitative phase, the research is carried out through reviewing relevant documents, building an analytical framework and research model. In addition, in-depth interviews with experts in the fields of Logistics, Information Technology and Organizational Management were conducted to collect professional opinions and supplement and complete the evaluation scale.

A stratified sampling technique was applied to ensure representativeness across key economic regions (North, Central, and South Vietnam) and different types of enterprises (state-owned and private enterprises of varying sizes: small, medium, and large). Middle and senior managers were targeted for participation, as they possess the most relevant insights into IT Competencies and Organizational Culture in logistics firms. The questionnaire was distributed electronically via Google Forms, leveraging its accessibility and ease of use to maximize response rates.

The sample size of 90 respondents aligns with established guidelines for Partial Least Squares Structural Equation Modeling (PLS-SEM). According to Hair et al. (2019), the 10-times rule suggests that the minimum sample size should be at least 10 times the largest number of indicators for a single construct or the highest number of predictors in the structural model. In this study, the construct with the highest number of indicators has five observed variables, and the most complex dependent variable has three predictors, which means a minimum sample size of 50 is sufficient. Our study exceeds this threshold, ensuring reliable estimation of the model parameters.

Discriminant validity assesses whether constructs are sufficiently distinct from each other. This study applies the Fornell-Larcker criterion to evaluate discriminant validity, where the square root of AVE for each construct should be greater than its correlation with other constructs (Fornell & Larcker, 1981). Additionally, the Heterotrait-Monotrait Ratio (HTMT) is examined, with a threshold of HTMT < 0.85 (Henseler et al., 2015) indicating strong discriminant validity.

Furthermore, PLS-SEM has been widely applied in studies with small to medium sample sizes (Henseler et al., 2014; Ringle et al., 2015). Given that this study focuses on exploring relationships rather than confirming an existing theory, PLS-SEM is particularly appropriate for handling limited sample sizes while maintaining robust analytical power (Chin, 1998).

The study applies Structural equation modeling (SEM) using SmartPLS software to analyze relationships among key constructs. The data analysis follows a two-step approach:

(1) Measurement Model Assessment

- Reliability and Validity: The study evaluates convergent validity through standardized factor loadings (>0.70) and Average Variance Extracted (AVE > 0.50) to ensure that each construct appropriately represents its indicators.

- Internal Consistency: Composite reliability (CR) and Cronbach's alpha were used to assess the internal consistency of each construct, with values above 0.70

considered acceptable.

(2) Structural model evaluation and Hypothesis testing

- Hypotheses were tested through path coefficient analysis, with T-statistics and p-values used to determine the statistical significance of relationships.

- The coefficient of determination (R^2) was examined to assess the explanatory power of the model.

- The study follows the conventional hypothesis testing criteria:

$\mathbf{H_a}$ is accepted if t-statistic > 1.96 with p-value < 0.05.

$\mathbf{H_0}$ is retained if t-statistic < 1.96 with p-value > 0.05.

6. Result

6.1. Results of Expert Survey on Models and Scales

To determine the research model firmly, the author conducted interviews with 14 experts in the field to collect opinions on basic hypotheses to build an official research model. The results show that all hypotheses received consensus from 13/14 experts (represented by the symbol "☑"), only one expert disagreed with hypothesis three (represented by "-" symbol, see Table 2).

Table 2: Expert Opinions on Model Hypotheses

Hypothesis (H)	Expert													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
H1	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
H2	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
H3	☑	☑	-	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑
H4	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑	☑

Source: Compiled by the author (2024)

In addition, Expert 3 also suggested editing the scale of variable LC1 from "Enterprise always meets customer needs" to "Enterprise meets customer needs quickly and effectively".

After a process of polling experts, the hypotheses were determined to be appropriate and appropriate for use in the research model. For each hypothesis, the author has analyzed and listed related factors to evaluate the appropriateness of that hypothesis. These factors have been represented as variables and details of the variables (questions) of each factor are presented in Table 3.

Table 3: Scale Content of Factors

No.	Variable	Content
Information Technology Capabilities		
1	ITC1	Information Technology effectively manages inventory and minimizes goods loss.
2	ITC2	Information Technology changes flexibly according to changing market needs.
3	ITC3	Information Technology is proactive in planning and reacts quickly to changes.
4	ITC4	Information Technology reduces the number of employees and automates manual work.
5	ITC5	Information Technology changes the way of working, enhancing cooperation between departments.
Organizational Culture		
6	OC1	Enterprises create conditions for employees to develop their abilities and creativity.
7	OC2	Businesses promote transparency and clarity in communication between stakeholders.
8	OC3	Build reputation for businesses, increase trust of customers and partners.
Logistics Capability		
9	LC1	Businesses respond to customer needs quickly and effectively.
10	LC2	Businesses improve customer experience and increase loyalty.
11	LC3	Enterprises ensure that goods are delivered at the right time, to the right place and of the right quality.
12	LC4	Enterprises apply security measures to ensure the safety of goods.
Logistics Performance		
13	LP1	Enterprises apply Information Technology to create favorable conditions for effective Logistics operations.
14	LP2	Innovating organizational culture in businesses increases the efficiency of Logistics operations.
15	LP3	Cultural diversity encourages creativity, creating favorable conditions for effective Logistics operations.
16	LP4	Maximize Logistics Capability to promote the development of Logistics Performance.

Source: Compiled by the author (2024)

6.2. Sample Statistics

Before proceeding with detailed analysis, a preliminary sample collection phase was carried out. This survey focused on the opinions of 90 middle and senior managers of Logistics businesses, ensuring enough information about the characteristics of the business and the work experience of the participants. This provides a necessary initial database for further research and analysis. The results of preliminary sample collection are presented in Table 4.

Table 4: Sample Collection Results

Demographic composition		Frequency	Percent	Cumulative percentage
Sex	Male	71	78.9	78.9
	Female	19	21.1	100.0
	Total	90	100.0	
Age	From 16 to under 35	23	25.6	25.6
	From 35 to under 45	30	33.3	58.9
	From 45 to under 55	26	28.9	87.8
	From 55 and up	11	12.2	100.0
	Total	90	100.0	
Academic level	Bachelor	32	35.6	35.6
	Master	48	53.3	88.9
	Doctorate or higher	10	11.1	100.0
	Total	90	100.0	
Enterprise scale	Large	30	33.3	33.3
	Medium	35	38.9	72.2
	Small	25	27.8	100.0
	Total	90	100.0	
Working time	From 1 to less than 5 years	31	34.4	34.4
	From 5 to less than 10 years	39	43.3	77.7
	From 10 to under 15 years	12	13.3	91.0
	From 15 years or more	8	9.0	100.0
	Total	90	100.0	
Work location	Ho Chi Minh City	48	53.3	53.3
	Hanoi	23	25.6	78.9
	Other provinces	19	21.1	100.0
	Total	90	100.0	

Source: Results collected from the author (2024)

The demographic profile of the study participants (Table 4) shows that the study group was mainly male (78.9%), aged from 35 to under 55 (accounting for 62.2% total number of participants), with education levels concentrated at bachelor and master levels (88.9%). They come from many provinces and cities in Vietnam, including Ho Chi Minh City is the place with the largest number of participants (32.2%). The research group's work experience in the Logistics field is quite diverse, ranging from 1 to 20 years, with the majority of people having experience from 1 to 10 years (77.7%). Regarding business size, there is a fairly even distribution between large, medium and small enterprises, accounting for 33.3%, 38.9% and 2% respectively.

6.3. Results of Evaluating the Research Model

6.3.1. Validity Test

To ensure that the questionnaire used in this study collects data accurately and reliably, the author conducted a reliability test using the convergent reliability assessment method and AVE of the indicators in the measurement model. This method is based on the correlation between the scores of each item or component calculated using PLS (partial least squares method). The correlation above 0.70 with the observed structure shows that the indicator's reflection is reliable. According to Ghozali & Hengky (2015), loading values from 0.5 to 0.6 are considered acceptable.

Table 5: Table of AVE and Outer Loading Values

Variable	Coded	Outer Loading	AVE	Description
Information Technology Capabilities (ITC)	ITC1	0.732	0.533	Valid
	ITC2	0.766		Valid
	ITC3	0.811		Valid
	ITC4	0.741		Valid
	ITC5	0.712		Valid
Organizational Culture (OC)	OC1	0.720	0.584	Valid
	OC2	0.778		Valid
	OC3	0.702		Valid
Logistics Capability (LC)	LC1	0.700	0.515	Valid
	LC2	0.723		Valid
	LC3	0.698		Valid
	LC4	0.751		Valid
Logistics Performance (LP)	LP1	0.807	0.561	Valid
	LP2	0.770		Valid
	LP3	0.744		Valid
	LP4	0.683		Valid

Source: Results collected from the author (2024)

6.3.2. Reliability Test

This study uses the Cronbach Alpha test and the Composite Reliability test to evaluate reliability. Cronbach Alpha is a minimum measure of reliability. If Cronbach alpha is greater than 0.70, the data is considered reliable. Composite reliability evaluates the true value of a variable's reliability. If the data's aggregate reliability score exceeds 0.70, it is considered extremely reliable. Test results show that all instruments can be considered reliable, as evidenced by Cronbach Alpha scores and composite reliability greater than 0.7.

Table 6: Table of Cronbach's Alpha and Composite Reliability Values

	Cronbach's Alpha	Composite Reliability
Information Technology Capabilities (ITC)	0.832	0.911
Organizational Culture (OC)	0.875	0.906
Logistics Capability (LC)	0.963	0.990
Logistics Performance (LP)	0.855	0.914

Source: Results collected from the author (2024)

6.3.3. Discriminant validity test

Discriminant validity assesses whether constructs are sufficiently distinct from each other. This study applies the Fornell-Larcker criterion (Fornell & Larcker, 1981), where the square root of AVE for each construct should be greater than its correlation with other constructs (Table 7).

Table 7: Fornell-Larcker Criterion

	ITC	OC	LC	LP
ITC	0.730068	0.6	0.55	0.5
OC	0.6	0.764199	0.58	0.52
LC	0.55	0.58	0.717635	0.57
LP	0.5	0.52	0.57	0.748999

Additionally, the Heterotrait-Monotrait Ratio (HTMT) is examined, with a threshold of HTMT < 0.85 (Henseler et al., 2015) indicating strong discriminant validity (Table 8).

Table 8: Heterotrait-Monotrait Ratio (HTMT)

	ITC	OC	LC	LP
ITC	1	0.7	0.65	0.6
OC	0.7	1	0.75	0.68
LC	0.65	0.75	1	0.72
LP	0.6	0.68	0.72	1

6.3.4. R-Square Test

The coefficient of determination (R-squared) is used to evaluate the influence of factors on the dependent variable. R-squared values are presented in Table 7 and determined using the Smart PLS tool.

Table 9: Table of R-Square Values

	R-Square	R-Square Adjusted
Logistics Performance (LP)	0.761	0.741

Source: Results collected from the author (2024)

The analysis results show that the coefficient of determination (R-squared) of logistics performance at businesses is 0.761. This means that 76.1% of logistics performance is influenced by Information Technology Capabilities, Organizational Culture, and Logistics Capabilities, while the remainder (23.9%) is influenced by other factors mentioned in this study.

6.3.5. Hypothesis Test

Table 10: Table of Relationship Values between Variables

	Original Sample (O)	T-statistics (|O/STDEV|)	P-values	Result
ITC → LP	0.287	2,736	0.008	Significant positive
OC → LP	0.344	2,976	0.022	Significant positive
LC → LP	0.266	2,610	0.011	Significant positive
ITC → LP	0.257	2,389	0.034	Significant positive

Source: Results collected from the author (2024)

The analysis confirms that Information Technology Capability (ITC) and Organizational Culture (OC) significantly impact both Logistics Capability (LC) and Logistics Performance (LP). Specifically:

- ITC positively affects LC ($\beta = 0.287$, $p < 0.05$), indicating that stronger IT capabilities enhance logistics efficiency.
- OC positively influences LC ($\beta = 0.344$, $p < 0.05$), reinforcing the importance of organizational culture in logistics adaptability.
- LC positively contributes to LP ($\beta = 0.266$, $p < 0.05$), highlighting its mediating role in logistics success.
- ITC directly improves LP ($\beta = 0.257$, $p < 0.05$), confirming that digital transformation enhances logistics performance.

The R^2 value for LP is 0.761, meaning that ITC, OC, and LC collectively explain 76.1% of the variance in LP, reinforcing the explanatory power of the model. Based on the presented research results, 4 hypotheses were built with the following test results:

First, Information Technology Capability positively impacts Logistics Capability. The analysis results accept H1 (t-statistic > 1.96; p-value < 0.05) proving that Information Technology Capability has a positive impact on Logistics Capability. The statistically significant positive correlation between these two variables shows that the stronger the Information Technology Capability, the more improved the Logistics Capability.

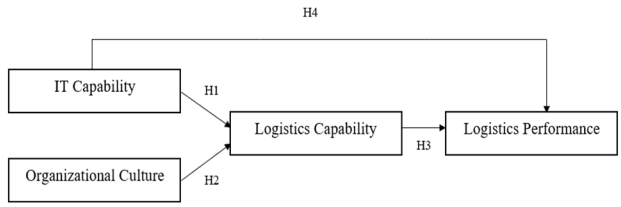
Second, Organizational Culture positively impacts Logistics Capability. The analysis results accept H2 because t-statistic > 1.96 and p-value < 0.05. The statistically significant positive correlation between these two variables shows that a positive Organizational Culture contributes to building strong Logistics Capability.

Third, Logistics Capability positively impacts Logistics Performance. Hypothesis H3 is accepted (t-statistic > 1.96; p-value < 0.05). The analysis results confirm that Logistics Capability has a positive impact on Logistics Performance. The higher the Logistics Capability, the more clearly the Logistics Performance is improved.

Fourth, Information Technology Capability positively impacts Logistics Performance. The analysis results accept H4 because t-statistic > 1.96 and p-value score < 0.05, proving that Information Technology Capability has a positive impact on Logistics Performance. Effective application of Information Technology is the key to improving Logistics Performance.

In summary, Information Technology Capability and Organizational Culture of businesses have a positive impact on Logistics Capability. In addition, Information Technology Capability and Logistics Capability have a positive impact on Logistics Performance at Vietnamese enterprises.

So, based on the expert's adjustment results and the results of model analysis and evaluation, the research model of factors affecting Logistics Activities in Vietnam is confirmed as follows:



Source: Suggested by author (2024)

Figure 2: Model of the Impact of ITC, OC and LC on LP

The content of the scale meets reliability requirements as follows:

Table 11: Content of Variables of Factors Belonging to the Scale

No.	Variable	Content
Information Technology Capabilities		
1	ITC1	Information Technology effectively manages warehouse corrugated iron, minimizing goods loss.
2	ITC2	Information Technology changes flexibly according to changing market needs.
3	ITC3	Information Technology is proactive in planning and reacts quickly to changes.
4	ITC4	Information Technology reduces the number of employees and automates manual work.
5	ITC5	Information Technology changes the way of working, enhancing cooperation between departments.
Organizational Culture		
6	OC1	Enterprises create conditions for employees to develop their abilities and creativity.
7	OC2	Businesses promote transparency and clarity in communication between stakeholders.
8	OC3	Build reputation for businesses, increase trust of customers and partners.
Logistics Capability		
9	LC1	Businesses respond to customer needs quickly and effectively.
10	LC2	Businesses improve customer experience and increase loyalty.
11	LC3	Enterprises ensure that goods are delivered at the right time, to the right place, and of the right quality.
12	LC4	Enterprises apply security measures to ensure the safety of goods.
Logistics Performance		
13	LP1	Enterprises apply Information Technology to create favorable conditions for effective Logistics operations.
14	LP2	Innovating organizational culture in businesses increases the efficiency of Logistics operations.
15	LP3	Cultural diversity encourages creativity, creating favorable conditions for effective Logistics operations.
16	LP4	Maximize Logistics Capability to promote the development of Logistics Performance.

Source: Suggested by author (2024)

7. Discussions and Theoretical Contributions

7.1. Discussions

This study empirically investigates the impact of Information Technology Capability (ITC) and Organizational Culture (OC) on Logistics Capability (LC) and Logistics Performance (LP) within the Vietnamese logistics industry. The findings confirm that both ITC and OC significantly influence LC ($\beta = 0.287$, $p < 0.05$ and $\beta = 0.344$, $p < 0.05$, respectively), highlighting their critical role in shaping firms' logistics effectiveness. Furthermore, LC functions as a key mediator between these factors and LP, reinforcing the importance of a well-integrated logistics

system where both technology and culture play a foundational role. The direct impact of ITC on LP ($\beta = 0.257$, $p < 0.05$) further suggests that firms embracing digital transformation can achieve performance gains beyond improvements in logistics capabilities alone.

These findings align with previous studies that emphasize the contribution of ITC to supply chain efficiency and operational agility (Mukhopadhyay et al., 1995; Brynjolfsson & Hitt, 1996). However, a notable insight from this study is the stronger influence of OC on LC ($\beta = 0.344$, $p < 0.05$), suggesting that organizational culture may be a more dominant driver of logistics capability in emerging markets. In environments where technological adoption is still evolving, an organization's ability to foster collaboration, adaptability, and process standardization plays a pivotal role in shaping logistics efficiency. This contrasts with findings in developed economies, where technological infrastructure is often prioritized over cultural factors in driving logistics performance (Carter & Jennings, 2002).

Another key takeaway is the high explanatory power of the model ($R^2 = 0.761$), indicating that ITC, OC, and LC together account for 76.1% of the variance in LP. This underscores the need for logistics firms to adopt a holistic approach, where technological advancement is complemented by cultural transformation to optimize operational outcomes. Rather than viewing ITC and OC as separate influences, firms should recognize their interconnected role in shaping logistics performance—where IT enables operational enhancements, and culture facilitates the effective adoption and integration of these advancements.

7.2. Theoretical Contributions

This research makes several notable contributions to logistics and management theory:

Expanding the Resource-Based View (RBV) in Logistics Performance. The study extends RBV theory (Barney, 1991) by demonstrating that IT capabilities alone are not sufficient to drive superior logistics performance. Instead, ITC must be leveraged through complementary organizational resources, particularly a well-integrated logistics culture to fully materialize performance gains. This aligns with the argument that dynamic capabilities, rather than static IT investments, are the true differentiators in competitive supply chains (Teece et al., 1997).

Bridging IT-Driven Logistics Capabilities with Organizational Culture. The findings reinforce the Technology-Organization-Environment (TOE) framework, emphasizing that successful IT integration requires a supportive organizational culture (Tornatzky & Fleischer, 1990). While previous research has examined IT adoption in logistics (Sanders & Premus, 2002), this study highlights how cultural alignment with digital transformation enhances logistics capabilities, an aspect often overlooked in developing markets where digital maturity is still evolving.

Logistics Capability as a Strategic Mediator. By confirming LC as a mediator between ITC, OC, and LP, this study strengthens the theoretical foundation for logistics capability research. While prior studies have examined LC's role in supply chain efficiency (Shang & Marlow, 2005), the direct and indirect pathways identified in this study underscore the importance of capability-building strategies. Firms cannot solely rely on technological solutions or cultural reinforcement; rather, they must develop an integrated capability-building strategy to achieve long-term performance improvements.

Empirical Validation in the Context of Emerging Economies. Most logistics and supply chain management studies focus on developed markets, where IT-driven automation and process optimization are the primary levers of performance improvement. This study provides empirical validation in Vietnam, an emerging economy where organizational culture and adaptability play a crucial role in determining the success of logistics transformation efforts. The results suggest that in markets with lower digital penetration, OC can act as a catalyst for ITC adoption, ultimately driving LC and LP improvements.

8. Practical Contributions

This study provides empirical evidence that Information Technology Capability (ITC), Organizational Culture (OC), and Logistics Capability (LC) significantly impact Logistics Performance (LP), offering actionable insights for logistics firms, policymakers, and industry leaders. The findings indicate that ITC directly enhances LP ($\beta = 0.257$, $p < 0.05$) and indirectly improves it through LC ($\beta = 0.287$, $p < 0.05$), underscoring the necessity for firms to invest in real-time tracking, AI-driven forecasting, and cloud-based logistics management systems. Additionally, integrating big data analytics and automation in logistics processes can optimize route planning, inventory control, and supply chain visibility, reinforcing the role of ITC in driving logistics efficiency. However, technology alone is insufficient without a supportive organizational culture, as the results demonstrate OC's strong influence on LC ($\beta = 0.344$, $p < 0.05$). This finding highlights the importance of a collaborative work environment, continuous learning, and adaptability to technological changes, ensuring that digital transformation efforts are effectively implemented.

Furthermore, the study confirms LC as a key mediator between ITC, OC, and LP ($\beta = 0.266$, $p < 0.05$), reinforcing the need for firms to develop logistics capability-building

initiatives. Companies can enhance logistics efficiency by automating warehouse operations, adopting flexible transportation networks, and standardizing logistics processes to improve service reliability. Given the high explanatory power of the model ($R^2 = 0.761$), industry-wide initiatives and regulatory support are crucial. Governments should offer financial incentives, tax benefits, and infrastructure investments to facilitate technological adoption in logistics firms, while public-private partnerships can drive innovation in smart logistics hubs, blockchain-based supply chains, and IoT-enabled transport systems. Firms that strategically align IT investments with organizational culture and logistics capability development will achieve sustained performance improvements, ensuring greater adaptability and efficiency in an increasingly complex supply chain landscape.

9. Conclusion, Limitations, and Future Directions

9.1. Conclusion

This study provides empirical evidence on the impact of Information Technology Capability (ITC), Organizational Culture (OC), and Logistics Capability (LC) on Logistics Performance (LP) within the Vietnamese logistics industry. The findings confirm that ITC and OC significantly enhance LC ($\beta = 0.287$, $p < 0.05$ and $\beta = 0.344$, $p < 0.05$, respectively), which in turn improves LP ($\beta = 0.266$, $p < 0.05$). Furthermore, ITC also has a direct positive effect on LP ($\beta = 0.257$, $p < 0.05$), highlighting the strategic role of digital transformation in logistics operations. The study's results emphasize the necessity for firms to leverage IT investments, cultivate a supportive organizational culture, and develop strong logistics capabilities to achieve optimal performance. Given the high explanatory power of the model ($R^2 = 0.761$), integrating these factors can significantly enhance logistics efficiency and competitiveness in emerging economies.

9.2. Limitations

Despite its contributions, this study has several limitations. First, the sample size (90 logistics managers), while adequate for analysis, may limit the generalizability of findings across the broader logistics industry. A larger dataset covering multiple industries and firm sizes could provide more robust insights. Second, the study was conducted within Vietnam, and while the results may be relevant for other emerging markets, cultural and infrastructural differences may influence logistics dynamics in other regions. Third, the cross-sectional research design captures relationships at a specific point in time, limiting the ability to observe long-term trends and causal effects. Future studies could employ longitudinal analysis to examine how IT investments and organizational culture evolve over time in shaping logistics performance. Finally, this study primarily focuses on internal firm capabilities, whereas external factors such as government policies, competitive pressures, and supply chain disruptions may also play a significant role in logistics performance.

9.3. Future Directions

To build on the current findings, future research should explore cross-country comparisons to assess whether the impact of ITC, OC, and LC on LP varies across different economic and regulatory environments. Additionally, investigating the moderating role of external factors, such as government support, infrastructure development, and competitive intensity, could provide a more comprehensive view of logistics performance determinants. Future studies should also consider integrating advanced analytics techniques, such as machine learning and big data modeling, to refine performance measurement and predict logistics trends. Finally, examining the long-term impact of digital transformation on logistics sustainability, including green supply chain practices and environmental efficiency, would be a valuable extension of this research.

By addressing these future directions, researchers can further enhance the theoretical and practical understanding of how firms can optimize logistics performance through IT capabilities, cultural adaptation, and strategic logistics development in an increasingly digitalized and competitive global landscape.

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