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A Study on The Relationship Between Logistics Activities and Business Performance of Textile Enterprises in Dong Nai Province, Vietnam

Ho Thi Hong Xuyen[a*], **To Tran Lam Giang**[a], **Nguyen Thi Phuong Thuy**[a]
[a] Faculty of Economics, Ho Chi Minh City University of Technology and Education, Vietnam

*Corresponding author email: xuyenhth@hcmute.edu.vn
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ORCID iD: **Ho Thi Hong Xuyen**: 0000-0002-7031-1432

Abstract
Currently, the export turnover of the textile industry ranks among the highest within the total export turnover of Dong Nai Province, Vietnam. However, to meet the growth and innovation requirements of textile enterprises in a modern economy, the authors studied the relationship between logistics operations and business efficiency of textile firms in Dong Nai Province. The research results revealed both positive and negative impacts of various logistics activities on the business performance of these enterprises. The findings provide useful information to help textile companies implement policies to optimize costs and enhance business efficiency in the future.

Keywords: Logistics activities, business performance, Dong Nai province, Textile enterprises

1. Introduction

Logistics has become one of the most important sectors in recent years, playing a crucial role in a country's economic development. If businesses fail to optimize logistics costs, they will face significant financial burdens, creating major barriers to economic integration and growth. Over the past decade, companies have invested heavily in logistics infrastructure and operations, yet the results have often fallen short of expectations. The lack of cost optimization has led to excessive expenses, reducing the competitiveness of domestic businesses against international rivals. However, when logistics costs are effectively managed, business efficiency improves, and companies can enhance their market position.

Currently, among all export sectors, the textile industry plays the most important role. ranking second in Vietnam's total export turnover, according to the Vietnam Logistics Report 2023 by the Ministry of Industry and Trade (MOIT, 2023). As a result, logistics has become increasingly important in facilitating the export of goods and raw materials, especially as Vietnam integrates into the global economy. However, managing logistics operations efficiently including warehousing costs, raw materials, and transportation has become a significant challenge for garment enterprises in the context of global economic integration. This poses considerable difficulties for Vietnamese logistics companies, as most domestic firms remain small and

fragmented, lacking strong connections with businesses throughout the service supply chain. As a result, they incur high additional costs, leading to an overall increase in total logistics expenses. In addition, the shortage of skilled human resources particularly those proficient in advanced technology, foreign languages, and high-level management-remains a pressing challenge for Vietnam's logistics sector.

In today's national economy, the textile industry has become an indispensable sector. Particularly in the current era of economic globalization, textile enterprises must compete within an integrated supply chain. The ability to exchange, collect, and respond to supply chain information is essential for businesses seeking to enhance their competitiveness (Li et al., 2009). When companies can quickly and accurately access supply chain data and facilitate efficient transactions with key partners, their competitive advantage significantly improves.

In 2023, following a challenging period due to the COVID-19 pandemic, Vietnam's textile export turnover reached $40 billion, according to the Vietnam Textile and Apparel Association. To support long-term growth, the government has recently approved a development strategy for the textile and garment industry, outlining key objectives until 2030, with a vision toward 2035. During the 2021-2030 period, the industry aims for an average annual export growth rate of 6.8-7%, with 7.2-7.7% projected for 2021-2025. By 2025, the sector's export revenue is expected to reach $77-80 billion, increasing to $106-108 billion by 2030. These projections highlight the industry's vital role in Vietnam's economic structure and underscore the necessity for sustainable growth, particularly amid ongoing economic instability and global recessions.

Currently, Dong Nai province is home to approximately 200 textile enterprises, as recorded by the Dong Nai Provincial Tax Department. According to statistics, the textile industry accounts for the highest proportion of the province's export turnover, making up around 30% of total exports. Additionally, 64% of textile enterprises in Dong Nai specialize in contract manufacturing for export (People's Committee of Dong Nai Province, 2023).

Textile enterprises in Dong Nai province are receiving significant investment and development support under government directives. However, for these businesses to achieve sustainable growth, they must overcome challenges related to logistics operations. Establishing a systematic logistics framework and assessing the business performance of textile enterprises in Dong Nai is essential. Therefore, this study will analyze the current logistics situation and propose policies that enable businesses to optimize costs and enhance operational efficiency in the coming years. This necessity also serves as the driving force behind the research topic: "A Study on the Relationship Between Logistics Activities and Business Performance of Textile Enterprises in Dong Nai Province, Vietnam" This research aims to support the long-term development and innovation of businesses in the sector.

2. Literature Reviews

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2.1 Definition of Logistics:

According to Bichou (2004), logistics is the process of optimizing the location, storage, and transportation of raw materials or input factors from the initial point of origin the supplier to manufacturers, and then, through the production process, to wholesalers, retailers, and ultimately, to end consumers through a series of economic activities.

A more precise and comprehensive definition was provided by the Council of Supply Chain Management Professionals (CSCMP, 2007) in the United States, Logistics is an integral part of the supply chain process, encompassing planning, execution, and effective control over the storage and movement of goods and services. Additionally, it involves managing bidirectional information flows from the point of origin to the end consumer, ensuring that customer demands are efficiently met. In any industry, the ultimate objective of business operations is to generate profitability. Within the textile industry, profitability serves as the primary indicator of business performance. Logistics activities play a crucial role in enhancing business efficiency and competitiveness. The interdependence between logistics services and business performance can be observed through the following aspects:

Logistics services contribute to improving production efficiency while optimizing resource utilization and minimizing operational costs. Effective logistics management enables enterprises to allocate resources strategically, thereby strengthening their competitive advantage.

Second, the efficiency of logistics operations directly influences the supply chain's ability to deliver materials and products on time. Timely and well-coordinated logistics processes contribute to uninterrupted production flows, cost reductions, and enhanced product quality, ultimately fostering competitive pricing. Logistics activities minimize additional costs incurred during production by allowing managers to effectively monitor inventory levels, material availability, and stock conditions. Such oversight ensures a smooth and uninterrupted production process, reducing inefficiencies and potential delays.

Logistics operations enhance the overall business value by facilitating seamless distribution and supply chain integration. Unlike traditional transportation services, which were limited to basic delivery functions, modern logistics has evolved into a complex and integrated system. With the increasing globalization of supply chains, finished products often consist of components sourced from multiple countries and are distributed across diverse international markets. This transformation has led to the emergence of comprehensive logistics solutions, catering to the growing demands of enterprises and consumers alike.

Additionally, logistics operations help businesses enhance their commercial value by facilitating the continuous flow of goods, which serves as an extension of the production process within distribution and circulation. Compared to traditional transportation and freight forwarding, logistics is a much broader and more complex service. In the past, transport service providers mainly offered simple, stand-alone services. However, with advancements in manufacturing and global trade, the movement of goods has become more intricate. A finished product may now

consist of multiple components sourced from different countries and be distributed across various markets. As a result, logistics companies and transportation service providers have expanded their operations to meet the growing and diverse demands of customers. Thus, optimizing logistics activities is essential for improving business performance, reducing costs, enhancing product quality, and maintaining a competitive edge in the global textile industry.

According to Angelisa Elisabeth Gillyard (2003), with conducted an empirical study on supply chain management (SCM) and its role in enhancing customer service while minimizing costs. The research explored the relationship between logistics activities, logistics strategies, and business performance, proposing a cost-focused logistics strategy that prioritizes cost reduction, quality assurance, delivery efficiency, and operational flexibility. By employing Multivariate analysis of variance, the study confirmed that businesses with highly adaptable logistics systems achieved superior business performance compared to those with rigid, less flexible logistics structures.

Following a recent study examined the relationship between logistics activities and business performance in textile enterprises located in Bình Trị Thiên (Le et. al, 2023). The study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze survey data from 212 textile enterprises. The findings identified five key logistics factors influencing business performance: "Internal logistics", "Inbound logistics", "Outbound logistics", "Support logistics" and "Logistics costs". These findings suggest that textile enterprises must prioritize logistics optimization across multiple dimensions internal logistics, inbound and outbound logistics, support logistics, and cost efficiency to enhance competitiveness and long-term sustainability. Similarly, Đoan (2020) investigated the impact of logistics activities on business performance in textile enterprises in Hanoi. Using Exploratory Factor Analysis (EFA), the paper identified five independent variables that positively influenced business performance: Internal logistics, Inbound logistics, Outbound logistics, Support logistics and Logistics costs. The results indicated that businesses seeking to enhance their financial performance must optimize logistics expenditures and improve the quality of logistics services. The study reaffirmed the critical role of efficient logistics operations in sustaining business growth and competitiveness within Vietnam's textile industry.

2.2 Proposed Research Model

The studies collectively establish a framework for understanding the impact of logistics activities on business performance in textile enterprises. To build upon these findings, the author conducted qualitative research through interviews with textile industry managers in Dong Nai Province. Based on these insights, the proposed research model incorporates five independent variables, as shown below:

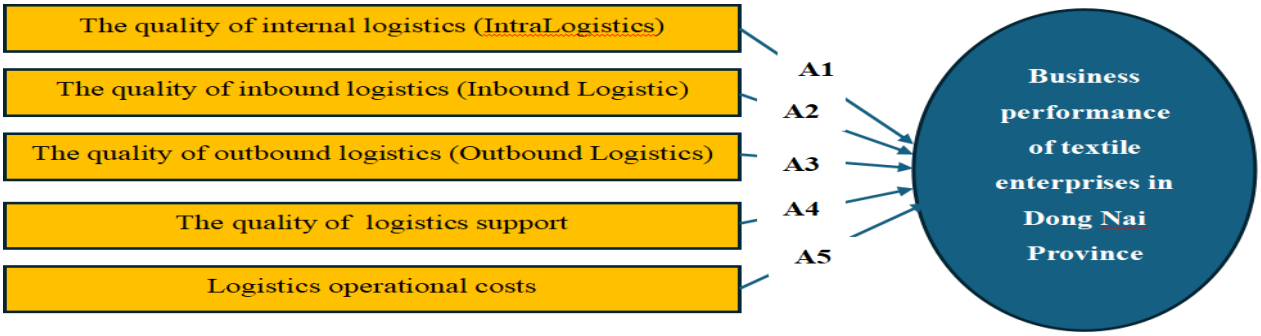

Figure 2.1: Proposed research model

The proposed research model includes five hypotheses, each examining the relationship between logistics quality and business performance in textile enterprises:

A1: The quality of internal logistics (Intra Logistics) has a positive relationship with the business performance of textile enterprises.

A2: The quality of inbound logistics (Inbound Logistics) has a positive relationship with the business performance of textile enterprises.

A3: The quality of outbound logistics (Outbound Logistics) has a positive relationship with the business performance of textile enterprises.

A4: The quality of logistics support has a positive relationship with the business performance of textile enterprises.

A5: Logistics operational costs have a positive relationship with the business performance of textile enterprises.

3. Methobology

3.1 Qualitative Method

A qualitative method was employed to refine the research model and adjust the measurement scale. This involved expert interviews with staff responsible for logistics activities at both logistics service companies and textile enterprises in Dong Nai province. These interviews also helped identify and incorporate additional observational variables for measuring the research concepts, building upon the initial theoretical framework.

3.2 Quantitative Method

The quantitative research method enables the author to test the proposed model by quantifying and accurately measuring the collected data. To conduct the survey, the study utilized a questionnaire distributed among enterprises. Based on the research model, this questionnaire was designed with the purpose of gathering information for subsequent analysis and hypothesis testing. The quantitative approach combined with the use of SPSS software was

employed to analyze the collected data as follows: Descriptive statistical analysis; Evaluation of the reliability of the measured variables using Cronbach's Alpha; Identification of the factors representing the observational variables via Exploratory Factor Analysis (EFA); and testing the research hypotheses regarding the factors affecting the business performance of textile enterprises in Dong Nai province through correlation analysis and linear regression.

3.3 Data Collection

The subjects of this study are experts and professionals involved in logistics activities at textile companies throughout Dong Nai province. The survey questionnaire was administered at a time when the respondents were most comfortable and willing to participate, thereby ensuring the highest possible accuracy of the results. A valid sample size of 117 responses was obtained; to achieve this, more than 130 questionnaires were distributed. The questionnaire consisting of pre-formulated questions was disseminated through online links, email, and telephone calls to personnel involved in logistics activities within textile enterprises in Dong Nai province, selected through random sampling. In doing so, the study collected and compiled primary data from responses provided by employees and experts engaged in logistics work at these enterprises

4. Results

4.1 Testing the Reliability of the Measurement Scale

In this study, the Cronbach's Alpha coefficient is used to assess the reliability of the measurement scale. This coefficient indicates the degree of correlation and variability among the items in the survey questionnaire. It helps to eliminate "noisy" variables that do not meet the reliability criteria. The reliability coefficient (Cronbach's Alpha) is required to be greater than 0.6, with the inter-item correlations being greater than 0.3. Variables with correlations below 0.3 are automatically excluded a necessary condition for establishing the reliability of a measurement scale (Slater, 1995; Nunally & Bernstein, 1994; Peterson, 199). In essence, the higher the Cronbach's Alpha, the greater the reliability of the scale, and vice versa. The Cronbach's Alpha reliability coefficients for this study are presented below.

Table 4.1: Cronbach's Alpha Reliability Coefficient for the Internal Quality Variable

Reliability Statistics	
Cronbach's Alpha	N of Items
0.807	4

According to the reliability test presented in Table 4.1, all observational items have inter-item correlations greater than 0.3. With a Cronbach's Alpha of 0.807 (> 0.6), the reliability

requirement is met, and hence all items in this factor are included for the Exploratory Factor Analysis (EFA).

Table 4.2: Cronbach's Alpha Reliability Coefficient for the Inbound Logistics Quality Variable

Reliability Statistics	
Cronbach's Alpha	N of Items
0.800	5

As shown in Table 4.2, all observational items recorded values greater than 0.3. With a Cronbach's Alpha of 0.800 (> 0.6), these items meet the reliability criteria and are therefore included in the EFA.

Table 4.3: Reliability Coefficient for the Outbound Logistics Quality Variable (After Removing OB2)

Reliability Statistics	
Cronbach's Alpha	N of Items
0.776	4

After rerunning the analysis without OB2, the Cronbach's Alpha increases from 0.672 to 0.776 (> 0.6), indicating that the remaining items meet the reliability criteria. These items are retained for the EFA.

Table 4.4: Reliability Coefficient for the Logistics Support Quality Variable

Reliability Statistics	
Cronbach's Alpha	N of Items
0.841	6

According to Table 4.4, all observational items have values > 0.3, and with Cronbach's Alpha = 0.841 (> 0.6), these items meet the reliability requirements and are thus included in the EFA.

Table 4.5: Reliability Coefficient for the Logistics Cost Variable

Reliability Statistics	
Cronbach's Alpha	N of Items
0.847	6

Similarly, Table 4.5 shows that all observational items have values > 0.3, with a Cronbach's Alpha of 0.847 (> 0.6). These items fulfill the reliability requirements and are included in the EFA.

Table 4.6: Reliability Coefficient for the Business Performance Variable

Reliability Statistics	
Cronbach's Alpha	N of Items
0.841	4

Table 4.6 indicates that all observational items have values > 0.3, with Cronbach's Alpha = 0.841 (> 0.6). These items meet the reliability requirements and are carried forward to the EFA.

4.2 Exploratory Factor Analysis (EFA)

EFA on the Independent Variables After testing the reliability of the measurement scale with Cronbach's Alpha, one observational item (OB2) was eliminated from a total of 30 items across 6 scales, leaving 29 items for EFA.

KMO Coefficient: According to Trong and Ngọc (2008), the Kaiser-Meyer-Olkin (KMO) coefficient is used to assess the suitability of data for factor analysis. A KMO value between 0.5 and 1 indicates that the data are adequate for factor analysis; values below 0.5 suggest unsuitability.

Results from Two Rounds of EFA:

Table 4.7: KMO Test Results

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.827**
Bartlett's Test of Sphericity	Approx. Chi-Square	1182.589
	df	276
	Sig.	0.000

After two rounds of running the EFA on the independent variables (with KMO values of 0.816 in the appendix and 0.827 in the final run), both results satisfy the condition (0.5 < KMO < 1), and Sig. = 0.000 (< 0.05) confirms that the observational items are suitably correlated for factor analysis. In the first round, 25 observational items were entered into the analysis; however, the variable HT6 was eliminated because it loaded on two factors and its loading value was below 0.5. Thus, the remaining 24 items contributed significantly to the model.

EFA on the Dependent Variable The EFA for the dependent variable resulted in 4 observational items that comprise one specific scale. The details are presented in the table below. From Table 4.8, with KMO = 0.816 (> 0.5) and Sig. = 0.000, the factors in the model are cohesive and appropriate for factor analysis. In addition, the extracted variance for the single factor from the observational items is 67.905% (> 50%), with an eigenvalue of 2.716 (> 1), confirming its suitability and meaningfulness.

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Table 4.8: KMO Test Results for the Dependent Variable

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.816
Bartlett's Test of Sphericity	Approx. Chi-Square	1338.311
	df	300
	Sig.	0.000

4.2.3 Correlation and Regression Analysis

Step 1: Correlation Analysis Before conducting multiple linear regression, the correlation between the independent variables and the dependent variable must be examined.

According to Table 4.9, the correlation matrix between the independent variables and the dependent variable (HQ) shows significance values below the alpha level of 5% (Sig. < 0.05) and correlation coefficients (r) greater than 0. This indicates that the independent variables are significantly correlated with the dependent variable.

Step 2: Regression Analysis The regression analysis was performed with the following five independent variables: Internal Logistics (IL); Inbound Logistics (IB); Outbound Logistics (OB); Logistics Support (HT); and Logistics Cost (CP)

The multiple regression analysis was conducted using the Enter method. The evaluation of the model's fit and appropriateness is detailed below.

Table 4.9: Correlation Analysis Results

Correlations							
		IL	**IB**	**OB**	**HT**	**CP**	**HQ**
IL	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	117					
IB	Pearson Correlation	0.371**	1				
	Sig. (2-tailed)	0.000					
	N	117	117				
OB	Pearson Correlation	0.216*	0.194*	1			
	Sig. (2-tailed)	0.019	0.036				
	N	117	117	117			
HT	Pearson Correlation	0.361**	0.261**	0.371**	1		
	Sig. (2-tailed)	0.000	0.005	0.000			

International Journal of Home Economics Technology Volume 1, Issue 1, (January - June 2025)
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	N	117	117	117	117		
CP	Pearson Correlation	0.160	0.215*	0.499**	0.423**	1	
	Sig. (2-tailed)	0.085	0.020	0.000	0.000		
	N	117	117	117	117	117	
HQ	Pearson Correlation	0.607**	0.542**	0.385**	0.603**	0.419**	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.000	
	N	117	117	117	117	117	117

Table 4.10: Model Fit Test for the Research Model

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.802[a]	0.643	0.627	0.38208	1.945

The results indicate an adjusted R^2 of 0.627, meaning the independent variables explain 62.7% of the variation in the dependent variable (HQ). The Durbin-Watson statistic of 1.945 (within the acceptable range of $1.5 < d < 2.5$) confirms that there is no first-order auto correlation, and thus the regression model does not violate the assumption of independent errors.

Table 4.11: ANOVA Test

Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	29.149	5	5.830	39.934	0.000[b]
	Residual	16.204	111	0.146		
	Total	45.354	116			

The ANOVA test assesses the overall validity of the regression model. The hypotheses tested are:

H_0: The independent variables have no linear relationship with the dependent variable.

H_1: The independent variables are linearly related to the dependent variable.

Since $F = 39.934$ and $Sig. = 0.000$ (< 0.05), H_0 is rejected and H_1 is accepted, indicating that a significant linear relationship exists between the independent variables and the dependent variable.

The results in Table 4.12 indicate that the independent variables IL, IB, and HT are statistically significant ($p < 0.05$) in this model. In addition, the Variance Inflation Factor (VIF) values for all variables are below 10, signifying that multicollinearity is not a concern.

Based on these findings, it can be concluded that the scales for "Internal Logistics Quality (IL)", "Inbound Logistics Quality (IB)", and "Logistics Support Quality (HT)" (all with Sig. < 0.05) significantly influence the business performance of textile enterprises in Dong Nai province. In terms of the strength of impact, "Internal Logistics Quality (IL)" has the strongest effect, followed by "Logistics Support Quality (HT)", and then "Inbound Logistics Quality (IB)". Specifically:

Internal Logistics Quality (IL): With Sig. = 0.000 at the 1% significance level and a regression coefficient of 0.319 (positive), an increase of one unit in IL leads to a 0.319 unit increase in business performance (HQ), holding all other factors constant.

Inbound Logistics Quality (IB): With Sig. = 0.000 and a regression coefficient of 0.268 (positive), an increase of one unit in IB results in a 0.268 unit increase in HQ, ceteris paribus.

Logistics Support Quality (HT): With Sig. = 0.000 and a regression coefficient of 0.286 (positive), a one-unit increase in HT brings about a 0.286 unit increase in HQ, all else remaining equal.

Table 4.12: Coefficients Test for the Factors

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-0.165	0.283		-0.584	0.560		
	IL	0.319	0.059	0.349	5.441	0.000	0.781	1.280
	IB	0.268	0.058	0.287	4.611	0.000	0.830	1.205
	OB	0.058	0.056	0.069	1.029	0.306	0.711	1.406
	HT	0.286	0.060	0.320	4.752	0.000	0.709	1.410
	CP	0.135	0.071	0.132	1.915	0.058	0.678	1.475

5. Conlusions

Through this research, it is evident that logistics activities play a critically important role in socio-economic development. However, logistics costs have become a heavy burden and a major barrier in the current development of Vietnam's socio-economic system. Despite

the increased focus and substantial investment in logistics activities by Vietnamese enterprises in recent years, the outcomes have fallen short of expectations and remain limited by various constraints. Consequently, the production costs and manufacturing expenses of enterprises in both domestic and international markets remain high, thereby reducing their overall competitiveness.

This study has analyzed how logistics service activities affect the business performance of textile enterprises in Dong Nai province and has offered policy recommendations to improve the quality of logistics services, which in turn can enhance the business performance of these enterprises. For emerging markets and at the macroeconomic level, research (such as that conducted by McKinsey) suggests that a 10% reduction in logistics costs can add approximately 1.5% to 2% of GDP as an economic benefit. For individual enterprises, optimizing logistics costs is a key driver for increasing profits, enhancing competitiveness against other companies, and ultimately improving business performance. In every enterprise, logistics functions are considered one of the most critical economic factors—essential to achieving success in both production and service sectors. Managers worldwide prioritize cost cutting and the optimization of logistics costs as a central strategy to reduce overall business expenditures, which in turn improves the competitive positioning of their products and enhances business performance.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they hold no competing interests.