EFFECT OF LOGISTICS COSTS ON EXPORT AND COMPANY PERFORMANCE: A RESEARCH ON TRC 1 REGION COMPANIES

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ABSTRACT

The aim of this study is to measure the effect of logistics costs on firm performance and export performance. In this context, a research was conducted on 391 businesses registered to the Chamber of Industry and Commerce of the TRC 1 region (Gaziantep, Adıyaman and Kilis). In the research, logistics cost scale developed by Hai and Son (2019), firm performance scale developed by Ellinger et al. (2002) and export performance scale developed by Navarro et al. (2010) were used. SPSS 25 program was used for analyzing the data. A factor analysis was performed on each variable in order to determine how much of the total variance the variables explained and to determine how consistent the questions about each variable were. As a result of the factor analysis, logistics cost variable and export performance variables consist of one sub-dimension, firm performance variable consists of two sub-dimensions, logistics cost variable has 63,577% of total variance, Firm Performance variable is 64,726% of total variance, and Export performance variable is 75.458 percent of total variance. As a result of the factor analysis, it was also concluded that the questions regarding these variables were compatible with each other. Normality test was performed to measure whether the scales were normally distributed and it was seen that the data were normally distributed. Reliability analysis was performed to measure whether the scales were reliable and it was determined that the scale was highly reliable. Correlation analysis was performed to measure the relationship between the factors, and as a result of the correlation analysis, it was concluded that there was a moderately significant relationship of 0.361 between logistics costs and firm performance, and a low-level insignificant relationship of 0.045 between logistics costs and export performance. As a result of the regression analysis, it was seen that logistics costs explained 13% of the changes in firm performance and each unit increase in logistics cost appropriateness created an increase of 0.288 in firm performance. Considering the sigma value, it is concluded that logistics costs have a positive and significant effect on firm performance.

Keywords: Logistics cost, firm performance, export performance

INTRODUCTION

As the world has become more globalized, logistics has grown in importance as a cost for businesses to be able to compete globally and have a market share. The cost of producing the goods or services that the businesses offer is comparable, and companies who intend to compete successfully should increase their supremacy in logistical costs (Kara et al., 2009:72).

The literature on performance measures has a large number of research. However, there was no mention of the study looking at the connection between logistics costs, business, and export performance in the literature. It is anticipated that the study will contribute to the literature in this regard.

There are three key components to this study, which focuses at how logistics costs affect business and export performance. Some research on logistics costs, export performance, and company performance are covered in the first section as the review of the literature. The research's methodology and analytical results are presented in the second section. The research's conclusions and various recommendations were interpreted in the last section.

Ceren et al. (2022), sought to define logistics costs in Logistics 4.0 applications and to quantitatively assess the impact of logistics expenses on their companies' profitability. In their studies using panel data analysis, it was concluded that net profit margin and earnings per share ratios were negatively and at the same time statistically strongly correlated with logistics expenses.

By using a survey in Konya, Balta and Cura (2022) investigated the impact of logistics performance on export and company performance. The research's findings showed that the enterprise's export and firm performance are positively and statistically significantly impacted by the logistics performance.

Memiş and Korucuk (2021) used the MOOSRA approach in their research in the province of Giresun to explore to evaluate the elements that have an impact on logistics costs. The study's findings led the researchers to the conclusion that handling activities had the least impact on logistics expenses in manufacturing firms and that inventory management activities have the greatest impact.

Hoa et al. (2020) sent over a questionnaire to logistics companies operating business in Vietnam with the intention of conducting an experimental study on the important factors influencing logistics costs. The study's findings led the researchers to the following conclusions: transportation and distribution expenses stand for 80.94% of the logistics cost, storage costs are 13.53%, macro and environmental issues are 2.84%, and customer service costs are 2.69%.

In their research, Bayraktutan and Özbilgin (2015) examined the factors that affect the logistics performance of different countries and regions. As a result, they classified the logistics performance measures as input, output, efficiency, result and service quality, and they came to the conclusion that strategically approaching the logistics performance measurement elements would provide superiority to the organizations

The goal of Liu and Lyons (2011) was to evaluate the link between the performance and service competence of third-party logistics (3PL) companies in Taiwan and England. The most significant features and offerings of 3PL's operational performance are discussed in the study. The study's findings led them to the conclusion that 3PL providers may improve operational performance while still achieving superior financial performance.

The relationship between logistics and financial success of companies operating in Finland was examined by Töyli et al. (2008). There was no statistically significant relationship between financial performance and logistical performance as a consequence of the research.

A model based on logistics performance was intended to be theorized and evaluated by Green et al. (2008). The study's findings revealed that the supply chain management approach had a positive impact on logistics performance. Additionally, it has been determined that logistics performance and supply chain method strategy affect marketing performance positively and financial performance is positively affected depending on this situation.

Shang and Marlow (2005) examined the relationship between logistics capabilities, logistics performance and financial performance by using the structural equation modeling of 1200 industrial companies operating in Taiwan. The study's findings led him to the conclusion that knowledge-based competence influences financial performance indirectly through logistical performance.

Schramm-Klein and Morschett (2006) examined the impact of marketing and logistics on organizational performance. The research's findings led them to the conclusion that logistics and marketing have a high importance on organizational performance.

Ellinger et al. (2002) investigated the link between the notion of the learning organization and corporate financial performance. According to the findings of the study, there is a positive relationship between learning organization approaches and objective measures of corporate financial success.

In their study, İrak and Şen (2019) measured the effect of logistics costs on logistics performance and logistics performance on firm and export performance and they determined that logistics costs explained for 10% of the change in logistics performance, whereas logistics performance explained for 7.3% of the change in export performance.

METHOD

Model of the Research

The research was designed to assess the impact of logistics costs on company performance and export performance. The survey method, one of the quantitative data collecting methods, was used to acquire the data. The association between the components was evaluated by applying the correlation test to the collected data (Mehrens & Lehmann, 1991). The influence of the independent variable on the dependent variables was

then investigated using the regression test on the data (Baykul, 2000). The theories explored in this approach, as well as the research model, are given below.

H1: Logistics Costs Have a Significant Effect on Firm Performance

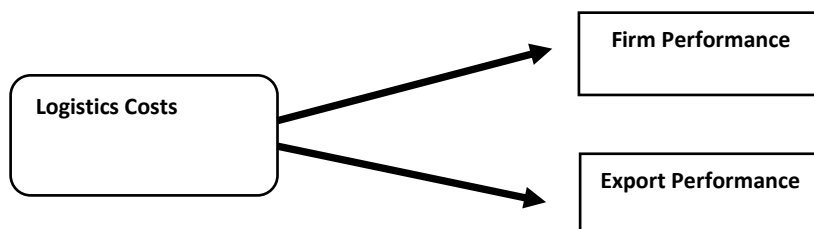H2: Logistics Costs Have a Significant Effect on Export Performance

Figure 1. Research Model

Research Group

Research has been made for companies registered with the chambers of industry and commerce of Adıyaman, Kilis and Gaziantep provinces in the TRC 1 region and engaged in international trade.

Table 1. Distribution of Participants by Gender

Gender	Number of Persons	Ratio (%)
Male	299	76,5
Female	92	23,5
Total	391	100

According to the table, 299 of the 391 firm officials that participated in the study are male, while 92 are female. When the participants are seen in proportion, it is clear that 76.5% are men and 23.5% are women.

Table 2. Age Range of Participants

Age Range	Number of Persons	Ratio (%)
18-25	58	14,8
25-32	77	19,7
33-40	131	33,5
41-49	91	23,3
50 and above	34	8,7
Total	391	100

In terms of age, it is clear that the majority of participants are between the ages of 33 and 40. it is seen that the lowest age range proportionally is 50 years and over.

Table 3. Education Level of Participants

Educational Level	Number of Persons	Ratio (%)
Primary school	6	1,5
Middle School	13	3,3
High School	41	10,5
Associate Degree	136	34,8
License	141	36,1
Master's Degree	45	11,5
PhD	9	2,3
Toplam	391	100

Table 3 shows that the great majority of the participants are undergraduate and associate degree graduates. Primary school graduates have the lowest education level, both numerically and proportionately.

Table 4. Status of Participants

Status	Number of Persons	Ratio (%)
Company Owner	23	5,9
General Manager	70	17,9
Marketing Manager	84	21,5
Import/Export Manager	78	19,9
Purchasing Manager	91	23,3
Production Maanger	35	9
Other	10	2,6
Total	391	100

The majority of members are purchasing managers and marketing managers, according to their participant status.

Table 5. Distribution of Participants by Province

City	Number of Firm	Ratio (%)
Gaziantep	208	53,2
Adıyaman	123	31,5
Kilis	60	15,3
Total	391	100

According to the provinces where the firms are registered with the chamber of industry and commerce, 53.2% of the participants in this research, which covers the TRC 1 region, are Gaziantep-based enterprises, 31.5% are Adyaman-based enterprises, and 15% are Kilis-based enterprises.

Table 6: Distribution of Participants by Sector

Sector	Number of Firm	Ratio (%)
Industry	105	26,9
Construction	44	11,3
Trade	211	54,0
Transportation and Communication	31	7,9
Total	391	100

When analyzed on a sectoral basis, it is seen that the majority of the participants operate in the industry and trade sectors, respectively.

Table 7. Distribution of Participants by Operating Time

Operating Time	Number of Firm	Ratio (%)
Less than 5 years	45	11,5
5-10 years	112	28,6
11-15 years	105	26,9
16-20 years	102	26,1
21 yıl and above	27	6,9
Total	391	100

When the activity period of the participating firms is analyzed, it is shown that the majority of them operate between 5 and 20 years.

Table 8. Distribution of Participants by Duration of Export

Export Period	Number of Firm	Ratio (%)
Less than 5 years	56	14,3
5-10 years	101	25,8
11-15 years	107	27,4
16-20 years	88	22,5
21 years and above	39	10,0
Total	391	100

When analyzed in terms of export duration, it is seen that the majority of participating companies operate in the range of 5-20 years in parallel with their operational processes.

Table 9. Distribution of Participants by Size

	Number of Firm	Ratio (%)
Micro Entreprise	60	15,3
Small Business	91	23,3
Medium-sized Enterprise	151	38,6
Large Enterprise	89	22,8
Total	391	100

When the table is examined, it is obvious that the majority of the participating firms are medium-sized enterprises.

Data Collecting Tools

Compliance with Ethical Rules

The principles of scientific research and publishing ethics were followed throughout the research procedure. The principle of voluntariness was kept in mind when gathering data. The study was carried out with the necessary approvals (ethics committee/parent approval). Ethics committee approval was obtained from Şırnak University Ethics Committee (dated 02.06.2022; numbered E.38370; numbered E74546226-050.03-38370).

An online questionnaire was utilized in the research to evaluate logistics costs, firm performance, and export performance on 391 enterprises registered with the chamber of industry and commerce in the TRC1 region's provinces.

The logistics cost scale was adapted from the scale developed by Hai and Son (2019). The logistics cost scale is a 5-point Likert scale and consists of 8 questions.

The firm performance scale was adapted from the scale developed by Ellinger et al. (2002). The business performance scale consists of 16 items on a 5-point Likert scale.

The export performance scale was adapted from the scale developed by Navarro et al. (2010). The export performance scale is a 5-point likert and consists of 5 questions.

Analysis of Data

The SPSS 25 software was used to conduct the research analyses. 13 questionnaires that were filled incompletely before the analyzes were made were excluded from the evaluation. Exploratory factor analysis was made with the remaining data and it was determined that the 15th question in the firm performance scale was meaningless and this question was removed.

Factor analysis is a technique designed to examine the structure of a group of variables and to explain the relationships between these variables in terms of fewer unobservable hidden variables called as factors (Atilla & Kılıç, 2022).

The KMO and Bartlett Test were used to assess whether the data were suitable for factor analysis and the data were found to be suitable for factor analysis.

The factor analysis revealed that the questions concerning logistics costs, firm performance, and export performance factors were all consistent.

A normality test was conducted in the continuance of the research, and it was determined that the data had a normal distribution (Tabachnick & Fidell, 2013).

Cronbach's alpha values for the factors were found to be greater than 0.7 as a result of the reliability analysis, and it was considered that the data on this scale were highly trustworthy (Baum & Wally, 2003).

Correlation analyses were undertaken in the continuance of the research to examine the association between logistics costs and firm performance and export performance, and regression analyses were performed to determine the influence of logistics costs on firm performance and export performance.

FINDINGS

Factor Analysis

The KMO and Bartlett Test were used to assess the data's appropriateness for factor analysis (Mustafa and Argın, 2015). Each variable underwent factor analysis to see how much of the overall variation the variables explained and how well the questions connected to each variable were in itself.

Logistics Cost Variable

Table 10. Lojistik Maliyet KMO ve Bartlett Testi

Kaiser-Mayer-Olkin Measurement of Sampling Adequacy	,899
Bartlett Sphericity Value	2092,309
Df.	28
Sig.	,000

The KMO value measures whether the data are suitable for factor analysis. Kaiser stated that the a KMO value between 1 and 0.90 is excellent, between 0.80-0.90 is very good, between 0.70-0.80 is good, between 0.60-0.70 is mediocre, between 0.50-0.60 is bad and below 0.50 is unacceptable (Mustafa and Argın, 2015). In this research, KMO and Bartlett tests were applied to measure whether the data were suitable for factor analysis. As a result, as seen in the table, the Bartlett value is 'sig. value of < 0.05 was significant. The KMO value, on the other hand, was very good as 0.89 in the range of 0.80-0.90. In line with these results, it is seen that the data are suitable for factor analysis.

Table 11. Factor Analysis of Logistics Cost

Factor	Factor Load	Total Variance Explained
LogisticsCost1	,767	
LogisticsCost2	,826	
LogisticsCost3	,851	
LogisticsCost4	,876	
LogisticsCost5	,642	
LogisticsCost6	,824	
LogisticsCost7	,819	
LogisticsCost8	,750	
Total of Logistics Cost		**63,577**

When the table is reviewed, it is seen that the data of the logistics cost factor constitutes 1 sub-component in total and this factor constitutes 63,577% of the total variance. The consistency of the questions regarding this factor among themselves was calculated as 0.642>0.40, and it was found significant.

Firm Performance Variable

Table 12. Firm Perforamnce KMO and Bartlett's Test

Kaiser-Mayer-Olkin Measurement of Sampling Adequacy	,938
Bartlett Sphericity Value	3934,442
df.	105
Sig.	,000

As can be seen in the table, the Bartlett value is 'sig. value of < 0.05 was significant. The KMO value, on the other hand, was excellent as 0.93 in the range of 0.90-1. In line with these results, it is seen that the data are suitable for factor analysis.

Table 13. Factor Analysis of Firm Performance

Factor	Factor Load	Total Variance Explained
FirmPerf.1	,679	
FirmPerf.2	,813	
FirmPerf.3	,804	
FirmPerf.4	,770	
FirmPerf.5	,747	
FirmPerf.6	,727	
FirmPerf.7	,658	
FirmPerf.8	,508	
F1 Component		**53,525**
FirmPerf.9	,601	
FirmPerf.10	,722	
FirmPerf.11	,823	
FirmPerf.12	,796	
FirmPerf.13	,805	
FirmPerf.14	,796	
FirmPerf.16	,750	
F2 Component		**11,200**
Total of Firm Performance		**64,726**

When the table is examined, it is seen that the data belonging to the firm performance factor form 2 sub-components in total. It is seen that the first of these components is 53,525 and the second is 11,200, and the firm performance factor constitutes 64,726% of the total variance. The consistency of the questions regarding this factor among themselves was calculated as 0.642>0.40, and it was found significant.

Export Performance Variable

Table 14. Export Performance KMO ve Bartlett's Test

Kaiser-Mayer-Olkin Measurement of Sampling Adequacy	,873
Bartlett Küresellik Value	1405,042
df.	10
Sig.	,000

As can be seen in the table, the Bartlett value is 'sig. value of < 0.05 was significant. The KMO value, on the other hand, was very good as 0.87 in the range of 0.80-0.90. In line with these results, it is seen that the data are suitable for factor analysis.

Table 15. Export Performance's Factor Analysis

Factor	Factor Load	Total Variance Explained
ExportPerf.1	,817	
ExportPerf.2	,879	
ExportPerf.3	,893	
ExportPerf.4	,896	
ExportPerf.5	,857	
Total of Export Performance		**75,458**

When the table is examined, it is seen that the data of the logistics cost factor constitutes 1 sub-component in total and this factor constitutes 75,458% of the total variance. The consistency of the questions regarding this factor among themselves was calculated as 0.642>0.40, and it was found significant.

Normality Test

The normality test was applied to the data to evaluate if it had a normal distribution. Table 16 shows the normality test results.

Table 16. Noramlity Test

Factors		Values
Logistics Cost	Skewness	**-,158**
	Kurtosis	**-,717**
Firm Perforamance	Skewness	**,238**
	Kurtosis	**-,641**
Export Performance	Skewness	**-,270**
	Kurtosis	**-1,175**

As seen in the table, it was concluded that the Skewness and kurtosis values in all three scales were between -1.5 and +1.15, and accordingly the data were normally distributed (Tabachnick & Fidell, 2013).

Reliability Analysis

The normality test was applied to the data to evaluate if it had a normal distribution. Table 16 shows the normality test results.

Table 17. Reliability Analysis of Logistics Cost

Cronbach's Alpha	Number of Items
,916	8

The Cronbach's alpha value, as shown in the table, was 0.916. Since this value is more than 0.7, the data on this scale may be deemed to be highly reliable (Baum & Wally, 2003).

Table 18. Reliability Analysis of Firm Performance

Cronbach's Alpha	Number of Items
,937	15

The Cronbach's alpha value is 0.937, as seen in the table. This value indicates that the scale's data is highly reliable.

Table 19. Reliability Analysis of Export Performance

Cronbach's Alpha	Number of Items
,918	55

According to the table, the Cronbach's alpha value is 0.918. This value indicates that the scale's data is highly reliable.

Correlation Analysis

Correlation analysis was used to determine the relation between the independent and dependent variables. Table 20 shows the findings of the correlation analysis.

Table 20. Correlation Analysis

	Logistics Cost	Firm Perforamance	Export Perforamance
Logistics Cost	-	,361**	,045
Firm Perforamance	,361**	-	-
Export Perforamance	,045	-	-

When the literature is evaluated, the correlation value is revealed to be between -1 and +1.

It's possible to say that if the correlation value is between 0 and 0.30, it is considered low; if it is between 0.31 and 0.69, it is considered moderate; and if it is 0.70 or above, it is considered high (Orhunbilege, 2002).

When the table is reviewed, it is discovered that the connection between logistics cost and company performance is relatively positive, with a value of 0.361.

The correlation value between logistics cost and export performance is 0.045, indicating that the correlation between these two factors is both positive and low.

Regression Analysis

Regression analysis was used to determine the influence of the independent variable on the dependent variables, and the results are shown in Table 21.

Table 21. Regression Analysis

Model	R	R^2	Adjusted R^2		
1	,361a	,130	,128		
Model	**B**	**Standard Error**	**Standardized Beta Value**	**T**	**Sig.**
(Fixed)	1,778	,124		14,340	,000
Logistics Cost	,288	,038	,361	7,626	,000

When the r square value in Table 21 is reviewed, it can be stated that logistics costs, the independent variable, explain 13% of corporate performance, the dependent variable.

The logistic cost factor parameter value is 0.288, and the related sig. value is 0.000, as shown in the table. The fact that the sig. value achieved is smaller than 0.05 (0.0000.05) indicates that the factor's parameter value is significant.

DISCUSSION AND CONCLUSION

In today's intense competitive environment, the ability of organizations to obtain a competitive edge and preserve that supremacy is dependent on improving their performance. In this context, it has been examined to what extent the logistics costs, which are thought to affect the performance of the selected firm and the export performance, are effective on these two performances.

A study was conducted on enterprises registered with chambers of commerce and industry in the provinces of Gaziantep, Adyaman, and Kilis, which are known to as the TRC 1 region. 13 of the 404 firms who participated in the research were eliminated from the evaluation because they filled out the relevant data incompletely or improperly.

The research concluded that 76.5% of the 391 participants were male and 23.5% were female. Looking at the age range, it was discovered that 33.5% of the participants were between the ages of 33 and 44. When the participants' educational levels were assessed, it was discovered that the majority were associate degree and undergraduate grads. When the roles of the company's participants were examined, it was discovered that the majority of them were marketing managers, import/export managers, and buying managers. On a provincial level, the majority of participants (53.2%) are registered with the Gaziantep Chamber of Industry and Commerce, in relation to the number of enterprises registered with the chambers of industry and commerce. When assessed proportionately on a sectoral basis, the participants are the organizations that do the highest business. When the activity and export periods are analyzed, the majority of the individuals had an activity period ranging from 5 to 20 years. In terms of business size, it is clear that medium-sized enterprises account for the vast majority of participants.

To assess the relation between logistics costs and firm and export performance, a correlation research was conducted. Table 20 indicates a 0.361 positive moderate correlation between logistics costs and firm performance. When the relation between logistics costs and export performance is analyzed, it is discovered that there is a positive correlation at the level of 0.045, nevertheless it is a low level.

Table 21 shows the results of the regression analysis used to determine the influence of the independent variable on the dependent variables. According to the R square value in the table, logistics costs explain 13% of the firm's performance.

The logistic cost factor parameter value is 0.288, and the related sig. value is 0.000, as shown in the table. The fact that the sig. value obtained is lower than 0.05 (0.0000.05) implies that the factor's parameter value is significant. As a result, the independent variable logistics costs has a positive and substantial influence on the dependent variable firm performance. This data means that a unit increase in logistics cost appropriateness will lead to an increase of 0.288 on firm performance. When the logistic cost factor parameter value is considered, it is found to be 0.288.

When the literature is reviewed, Schramm-Klein and Morschett (2006) found in their research that logistics operations had a considerable impact on firm performance and also Gümrah (2022) determined that logistics expenses had a considerable impact on firm performance. Zhao et al. (2001) concluded that logistics capabilities have a direct impact on firm performance.

In the previous correlation analysis, no significant relationship was found between logistics costs and export performance, and therefore a regression analysis was not performed to determine the effect between these variables. The absence of a relationship between these two factors means that there is no effect between these two factors. In this case, the hypothesis that logistics costs have an effect on export performance is rejected.

When the literature is examined, there are studies that conclude that logistics costs are effective on export performance. İrak and Şen (2022), in their study, concluded that logistics costs explain 10% of the change in logistics performance, while logistics performance explains 7.3% of the change in export performance, and they concluded that logistics costs have an indirect effect on export performance.

Gumrah (2022) analyzed 12 firms operating in the food sector in Borsa Istanbul with DEA and MOORA methods to examine the effect of logistics costs on firm performance. As a result of the study, it was concluded that 8 firms were fully efficient as of 2020-2021, while 4 firms could not reach the full efficiency level.

As a result, the research examined the relationship between logistics costs and firm performance and export performance, as well as the effect on these two variables. It was discovered that logistics costs had a reasonably significant relationship with firm performance and a low-level irrelevant relationship with export performance. Logistics costs were found to have a positive and considerable impact on business performance. The influence of logistics expenses on export performance has been determined to be worthless since the relationship level is low and meaningless.

RECOMMENDATIONS

Based on the conclusion that the appropriateness of logistics costs has a positive and considerable impact on firm performance, it is advised that enterprises operating on a global scale optimize their logistics cost levels in order to improve firm performance.

ETHICAL TEXT

This article complies with journal writing rules, publication principles, research and publication ethics, and journal ethics. Responsibility for any violations that may arise regarding the article belongs to the author(s).

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