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RESEARCH ARTICLE

Impact of Countries' Logistics Performance on Their Exports: The Case of G-8 Countries

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ABSTRACT

The increase in international integration along with technological developments in the world is effective in increasing the diversity of communication and transportation means between countries. In addition, production and export volumes are also increasing thanks to the removal of obstacles to international trade and facilitating legislative practices. The dynamic structure of production and export growth causes the increase and intensification of logistics activities, further increasing the importance of logistics activities. From this point of view, this study analyzes the relationship between the logistics performance indicators of eight developed countries and their export rates. In the analysis, the decision tree method, which is one of the machine learning methods that has been developed differently from other data analysis methods and gives more stable and qualified results in the established models, has been used. In the decision tree analysis, the logistics performance index and export rate data obtained from eight developed countries between the years 2007 and 2022 were used. As a result of the analysis, it is seen that the efficiency of logistics processes significantly affects export performance. However, depending on the differentiation of the country's trade and legislation structures, it is seen that the logistics performance indicators that affect exports differ in the countries that are the subject of the analysis.

Keywords: Export, Logistics Performance, Decision Trees, Machine Learning
Jel Code: C45, F02, F13, F17

1. Introduction

Logistics refers to the transportation, planning and storage processes and the movement of goods in domestic and foreign markets from the first moment the goods and services are produced to meet the needs of consumers until the consumption stage. In this context, logistics activities are important because they play a coordinating role in both production and consumption processes (Aksungur & Bekmezci, 2020). The increase in international integrations with the technological developments in the world has been effective in increasing the diversity of communication and transportation tools, especially among the countries that are trade partners. In addition, the volume of production and exports increased with the removal of barriers to international trade and facilitating legislative practices. The dynamic structure of production and export growth has increased the importance of logistics activities by causing the increase and intensification of logistics activities (Acar & Benli, 2021). This importance of logistics activities in providing domestic and international flows of goods and services makes it necessary to examine the logistics performances and logistics management of countries. Accordingly, the systematic management of logistics activities in an economy reduces economic and time costs, leading to an increase in competitiveness within and outside the country. Considering that many countries in the world have developed strategies to increase their international competitiveness, the importance of logistics activities, especially in international trade, comes to the fore (Ofluoğlu at all., 2018).

Considering countries' trade structures, it is generally seen that there are many export-promoting activities. The regularity and continuity of these encouraging activities are significantly affected by logistics activities. When developed countries with developed trade infrastructure and high export potential are examined, it is observed that the logistics networks of these countries are developed. In addition, in today's global competitive environment, it is considered a necessity for goods or services to reach the supplier quickly and completely. This situation requires the logistics processes to be completed. Therefore, it becomes important to measure the logistics processes that provide a competitive advantage in trade in goods and services because the measurable logistics performance of countries makes it easier to make comparisons between countries (Aksungur & Bekmezci, 2020).

The measurement of logistics activities of countries is carried out using various sub-dimensions based on certain performance criteria. Such a measurement is carried out through the logistic performance index. The logistics performance index provides information about the structure and development levels of countries' logistics networks. This index is calculated and published by the World Bank. The main purpose of the World Bank in creating the logistics performance index is to provide information to increase trade performance by eliminating the difficulties that countries face while trading (Altıntaş, 2021). With this information, measures and regulations regarding the country's logistics infrastructure can be made. In this way, the logistics performance index and logistics capabilities of the countries can be improved and it also provides a competitive advantage in global trade (Pınar & Diken; 2020).

Sub-dimensions taken as basis in creating the logistics performance index include:

- Ability to track and trace consignments;
- Competence and quality of logistics services;
- Ease of arranging competitively priced shipments;
- Efficiency of customs clearance process;
- Frequency with which shipments reach consignee within scheduled or expected time; and
- Quality of trade and transport-related infrastructure (Altıntaş, 2021).

The logistics performance index created in this way is a value between 1 and 5. The calculation of the index is obtained based on the arithmetic averages of the sub-dimensions. According to the obtained logistics performance index, countries are grouped as follows (Altıntaş, 2021):

Table 1. LPI Country Classification

Groups	LPI Value	Describing
1. Group	$0 \leq LPI \leq 2.24$	Non-logistics friendly countries
2. Group	$2.25 \leq LPI \leq 2.99$	Partially performing countries
3. Group	$3 \leq LPI \leq 3.49$	Countries with stable performance
4. Group	$3.50 \leq LPI \leq 5$	Logistics friendly countries

Source: Altıntaş, 2021

Logistics activities are also considered as a process that starts with the pre-transportation information flow following the purchase and sale of goods and services and is completed with the post-transportation storage process. For this reason, the importance of logistics activities is increasing, especially in international trade. In this context, developments in the logistics performance of countries also affect export rates (Şimşek &Yiğit, 2019). The developed logistics processes, as well as the legal structures of the countries, create a competitive advantage in mutual trade. With the impact of globalization, the removal of many obstacles to the flow of international goods causes transportation and logistics costs to come to the fore. Therefore, transportation costs are expected to be lower in countries with developed and stable logistics performance. By ensuring logistics efficiency, countries become advantageous in international trade and their export potential increases (Uğurlu & Keser, 2020).

Depending on the increase in global trade, it is observed that logistics activities increase proportionally (Şimşek & Yiğit, 2019). Increases in logistics activities lead to the increased division of labor specialization in this field. Increasing the division of labor and specialization helps to facilitate international trade. Therefore, this cycle between logistics activities and foreign trade turns into a self-reinforcing process, enabling countries to increase their foreign trade performance. Additionally, sustainable logistics activities are important in increasing the foreign trade potential of countries because there is a positive relationship between the logistics performance of countries and their development levels (Ateş & Işık, 2010).

2. Literature Review

Some studies related to the literature on logistics performance and export performance of countries are given below. From the studies conducted on this subject, according to Başar and Bozma (2017), a relationship was observed between the logistics performance index and foreign trade. According to Emirkadı and Balcı (2018), there is a positive relationship between the logistics sector and exports. According to Emirkadı and Balcı (2018), there is a positive relationship between the logistics sector and exports. In their study, Pekmezci and Mutlu (2018) analyzed the subject of the logistics performance index and examined the tendencies of researchers on the subject. Bozkurt and Mermertaş (2019) argue that the G-8 countries exhibit high logistics performance. According to Çubukçu and İmamoğlu (2019), a positive relationship was detected between the logistics performance of companies and their export performance. According to Güngör et al. (2019), developments in the logistics sector of countries affect the economic growth capacity. In their study, Karaköy and Üre (2019) found a positive relationship between the logistics performance

and economic growth performance of common and high-income countries. In their study, Korkut et al. (2020) concluded that there is a mutual relationship between international trade structures and logistics sector activities in G-20 countries. Arabacı and Yücel (2020) concluded in their study that the logistics sector contributed to economic growth as a result of increasing trade volume. In their study, Cansız and Ünsalan (2020) analyzed the input components affecting the logistics performance index with an artificial neural network model and suggested that a more objective logistics performance index could be obtained. According to Koca (2021), there is a positive and bidirectional causality relationship between the logistics sector and foreign trade. In the study where Manavgat and Demirci (2021) analyzed the factors affecting the logistics performance index, they concluded that foreign trade data has a positive and significant effect on the logistics performance index. Aydın (2022) emphasizes that the logistics sector has a strong relationship with other sectors, based on the input-output model he made for the logistics sector. According to Balta and Cura (2022), there is a positive relationship between the export performance of companies and their logistics performance. According to Bozdağlıoğlu and Kesir (2022), the logistics sector in Turkey affects foreign trade. In their study, Erturgut and Oğuz (2022) concluded that logistics activities increase exports in EU countries. Meşin and Cura (2022) argue that there is a positive relationship between the logistics performance of countries and their economic development levels. In their study, Bilgin and Sunaoğlu (2022) analyzed many studies on the subject in different national/international databases. As a result of the study, it was determined that the number of studies conducted specific to certain products and sectors was low in the articles examined.

When the studies in the literature are examined, it can be said that there is a generally positive relationship between the logistics performance of countries and their export or foreign trade performance as a whole.

3. Data Set and Method

This study aims to test the relationship between the logistics performances of the G-8 countries (Italy, Germany, France, Canada, America, England, Russia, Japan) and their export quantities, based on the evaluations in the literature. In the analysis used in the study, exports are included as the dependent variable, and the logistics performance index values are included as the independent variable. In the analyses made within this framework, the logistics performance index data and export data of the G-8 Countries between the years 2007-2022 were used.

The data used was obtained from the World Development Indicator database. The relationship between the variables was tested using the decision tree method, one of the machine learning algorithms, which is included in the artificial intelligence analysis methods, in parallel with the widespread use of artificial intelligence in data analysis in the recent period. Subgroup classifications of the data used in the analysis of the logistics performance index are given in the table below.

Table 2. Variable Definitions

Variables	Description
Exp	Export
X_1	Tracking (TRA)
X_2	Logistics Competence (LOG)
X_3	International Transportation (INT)
X_4	Customs Clearance (CUS)
X_5	Timing (TIM)
X_6	Infrastructure (INF)

Source: Koyuncu, 2022

Data regarding the logistics performance index was obtained from the logistics performance index research conducted by the World Bank, international organizations, academic institutions and logistics companies. These data are defined as follows:

Tracking (TRA) measures the ability to track and trace shipments. Logistics Competence (LOG) measures the logistics competence and quality of logistics services. International Transportation (INT) Competitively priced shipments measure ease of arrangement. Customs Clearance (CUS) measures the efficiency and effectiveness of the customs clearance process. Timing (TIM) means that the shipment is delivered on time. It measures how often logistics service providers reach the recipient within the planned and expected delivery time. Infrastructure (INF) measures the quality of the country's telecommunications and transportation infrastructure (Koyuncu, 2022) Export is the annual growth rate of exports of goods and services based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. Exports of goods and services represent the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude compensation of employees and investment income (formerly called factor services) and transfer payments.

3.1. Decision Trees

One of the important methods used in predicting data among machine learning methods is the decision tree method. The decision tree approach is considered as a method that approximates a target function and displays the learning algorithms with the decision tree structure. Therefore, the resulting decision tree structure is expressed as a predictive and descriptive model. A decision tree structure plays an important role in determining the input-output relationship and the effect of each factor on the output during the decision-making or evaluation phase. In this context, the decision tree structure can be frequently used among data analysis methods because they are easy to interpret, have low transaction costs and are considered reliable methods (Emel & Taşkın, 2005).

Decision tool algorithms used in data analysis create new models that enable unknown data to be easily interpreted. The decision tree structure used in predictions consists of leaf nodes and branches. The starting point of the decision tree is called the root node. The nodes in the leaves of the decision tree represent the test results obtained based on the variable values. Here, the observed leaf nodes represent the classes in which the sample is located. The easily understandable structure of the decision tools and their strong predictions have made this approach popular (Alan, 2014).

Figure 1. Decision Tree Root, Node and Branch Structures
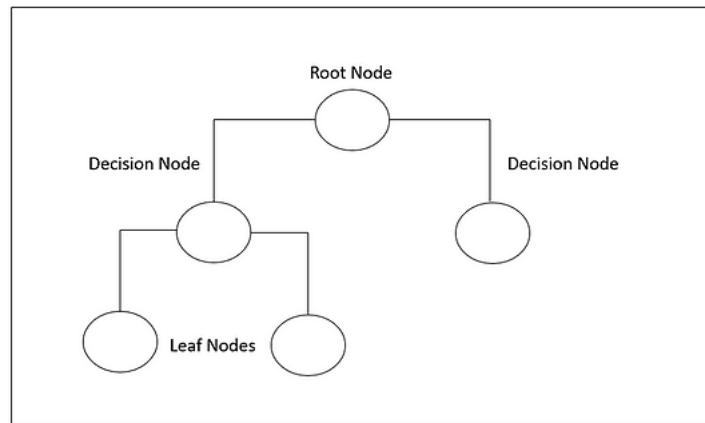
Decision trees can be used to represent classification and regression models in the data analysis process. At the same time, thanks to decision trees, other sub-decision models can be obtained and the results can be interpreted. In this context, decision trees are preferred by analysts who want to develop strategies by reaching the most accurate results that are likely to occur. In data analysis, when decision trees are used for classification, they are called classification trees, and when they are used for regression modeling, they are called regression trees. The decision tree method is considered the most popular inductive method among data analysis methods. Decision tree structures, which are generally formed in two stages, reveal the best discriminant sub-data set between classes at each node (Alan, 2014).

4. Results

Descriptive statistics data regarding the export and logistics performance index data used in the decision tree analysis are included in the table below. This table includes the mean, median, maximum value, minimum value, standard error, and skewness and kurtosis values of the variables, which are indicators of kurtosis and skewness.

Table 3. Descriptive Statistics for Variables

	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
Exp	4.7214	3.1939	24.8607	-1.8236	4.5513	2.14653	9.421603
X1	3.8429	4.01	4.2653	2.17	0.4949	-2.094913	6.170807
X2	3.7720	3.91	4.31	2.46	0.4588	-1.814674	5.221699
X3	3.4715	3.575	3.91	2.4504	0.3730	-1.611925	4.5994
X4	3.5200	3.7117	4.1230	1.94	0.5707	-1.793168	5.111945
X5	4.0775	4.19	4.48	2.94	0.3861	-1.840394	5.299256
X6	3.8515	4.03	4.4393	2.23	0.5583	-1.881089	5.340728

Source: Table data calculated by us.

The decision tree obtained as a result of the analysis made in this study, where the logistics performances and export performances of G-8 countries are evaluated, is shown below.

Figure 2. Decision Tree Results
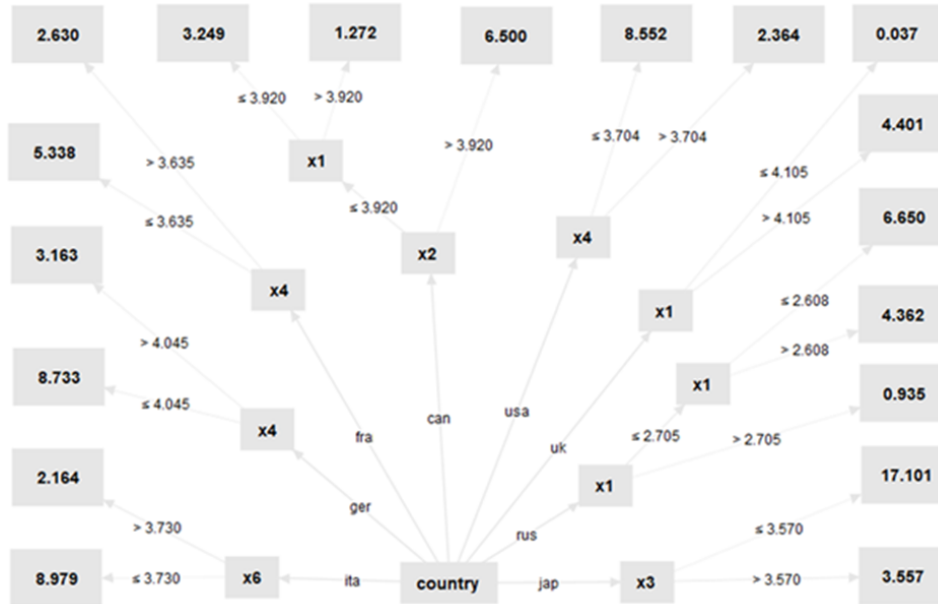
The analyses in the study were made using the Rapid Miner program. At the same time, the decision tree regression model was applied in the study. Decision tree regression differs from classification algorithms in terms of the outputs obtained. In this context, the decrease in the mean square error is considered as a criterion in demonstrating the reliability of the study results. Therefore, the values of the error squares obtained from the analysis are given in the table below.

Table 4. Root Mean Square Error of Decision Trees Analysis

MODEL	RMSE	MAE
Performance Vector of Decision Tree	6.618	6.250

According to the test errors in the table, it is observed that the prediction errors including RMSE (root mean square error) and MAE (mean absolute error) values have decreased. It is observed that the models established according to Lewis' evaluation criteria are "good" models, that is, stable.

According to the decision tree analysis, the quality of infrastructure related to trade and transportation in Italy, one of the G-8 countries, was analyzed as the decision variable that most affected export performance. In Italy, transportation-related infrastructure quality values vary between 3.52 and 3.85. This value range indicates that Italy is a logistics-friendly country according to the LPI country classification. In this context, when the value of trade and transportation infrastructure exceeds 3.73, a 1-unit change in the logistics performance index increases the export amount by 2.16%, and when the value of trade and transportation infrastructure falls below 3.73, the 1-unit change in the logistics performance index is reduced. It is observed that the export amount increased by 8.97%.

The effectiveness of the customs clearance process in Germany has been analyzed as the decision variable that most affects export performance. In Germany, the efficiency values of the customs clearance process vary between 3.88 and 4.12. This value range shows that Germany is a logistics-friendly country according to the LPI country classification. Accordingly, when the efficiency of the customs clearance process exceeds 4.04, a 1-unit change in the logistics performance index increases the export amount by 3.16%, and when the efficiency of the customs clearance process falls below 4.04, a 1-unit change in the logistics performance index increases the export amount. It increases by 8.73%.

In France, as in Germany, the efficiency of the customs clearance process was analyzed as the decision variable that most affected export performance. In France, the efficiency values of the customs clearance process vary between 3.51 and 3.71. This value range shows that France is a logistics-friendly country according to the LPI country classification. Accordingly, when the efficiency of the customs clearance process exceeds 3.63, a 1-unit change in the logistics performance index increases the export

amount by 2.63%, and when the efficiency of the customs clearance process falls below 3.63, a 1-unit change in the logistics performance index increases the export amount by 5.33%. rate increases.

In Canada, unlike these countries, the competence and quality of logistics services are important as the decision variable that most affects export performance. In Canada, the values of competence and quality of logistics services vary between 3.85 and 4.20. This value range shows that Canada is a logistics-friendly country according to the LPI country classification. Accordingly, when the competence and quality of logistics services in Canada exceeds 3.92, a 1-unit change in the logistics performance index increases the export amount by 6.50%. increases the amount by 3.24%.

In the USA, the effectiveness of the customs clearance process has been analyzed as the decision variable that most affects export performance. In the USA, the efficiency values of the customs clearance process vary between 3.52 and 3.78. This value range shows that the USA is a logistics-friendly country according to the LPI country classification. Accordingly, when the efficiency of the customs clearance process in the USA is above 3.70, the 1-unit change in the logistics performance index increases the export amount by 2.36%, and when the efficiency of the customs clearance process falls below 3.70, the 1-unit change in the logistics performance index increases. change increases the export amount by 8.55%.

The ability to track shipments in the UK has been analyzed as the decision variable that most affects export performance. Values for tracking shipments in the UK range from 4 to 4.12. This value range shows that the UK is a logistics friendly country according to the LPI country classification. Accordingly, a 1-unit change in the logistics performance index increases the export amount by 4.40% when the ability to track the shipment is above 4.10. The change increases the export amount by 0.03%.

The ability to track shipments in Russia draws attention as the decision variable that most affects export performance. Values for tracking shipments in Russia vary between 2.17 and 2.85. This range of values shows that according to the LPI country classification, Russia remains in the indecision zone between the partially performing country and the logistics unfriendly country classification. Accordingly, when the ability to track shipments exceeds 2.70, a 1-unit change in the logistics performance index increases the export amount by 0.93%. When the ability to track shipments is between 2.60 and 2.70, a 1-unit change in the logistics performance index increases the export amount by 4.36%. When the ability to track the shipment drops below 2.60, a 1-unit change in the logistics performance index increases the export amount by 6.65%.

In Japan, unlike other countries, the ease of arranging competitively priced shipments is important as the decision variable that most affects export performance. Values for the ease of arranging competitively priced shipments in Japan range from 3.30 to 3.69. This value range shows that, according to the LPI country classification, Japan is in the uncertainty zone between a stable performing country and a logistics-friendly country. However, according to the decision tree analysis, if the efficiency of the customs clearance process in Japan is low, export performance increases significantly. Therefore, Japan can be considered a country with stable performance. Accordingly, when the effectiveness of the customs clearance process in Japan exceeds 3.57, a 1-unit change in the logistics performance index increases the export amount by 3.55%, and when the effectiveness of the customs clearance process falls below 3.57, a 1-unit change in the logistics performance index increases the export amount by 3.55%. It increases by 17.10 percent.

5. Discussion and Conclusions

In this study, where the relationship between logistics performance indicators and export rates of eight developed countries is analyzed by the decision tree method, it is observed that Western Bloc countries such as Italy, Germany, France, Canada and England, among the G-8 countries, are logistics-friendly countries. It is observed that the logistics performance of Eastern Bloc countries such as Japan and Russia is lower. In addition, analyzing the effectiveness of the customs clearance process as a decision variable in Germany, France and the USA, which are within the Western Bloc, reveals the importance of the customs clearance process in terms of export performance. In this context, it can be concluded that the effective and fast processing of the customs clearance process significantly affects export performance. In addition, when the findings obtained from the study are evaluated holistically, it becomes clear that the logistics performance indicators of countries vary depending on the country structure and their impact on export performance.

Based on these results obtained from developed countries, it can be said that the effectiveness of the customs clearance process comes to the fore compared to other logistics performance indicators. In this context, considering that the export-led growth strategy has come to the fore recently, increasing the efficiency of the customs clearance process in terms of increasing export performance can significantly increase the export performance of countries. Based on this result, the idea that customs union agreements between countries can significantly affect the country's exports is supported. Therefore, in order to increase export performance, increasing the functionality of customs clearance processes together with bilateral agreements regarding customs processes between countries can significantly affect the export performance of countries.

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REFERENCES

Acar, Ö. D. & Benli, M. (2021). Dış Ticarette Lojistik Performansın Etkisi [The Effect of Logistics Performance in Foreign Trade]. *Journal of Management and Economics Research, 19* (4), 48-65. DOI: 10.11611/yead.897110.

Aksungur, M. & Bekmezci, M. (2020). Türkiye'nin Lojistik Performansının Değerlendirilmesi Boylamsal Bir Araştırma [Logistics Performance Evaluation of Turkey: A Dimensional Research]. *Toros Univercity İİSBF Social Science Journal, 7* (12), 19-40. Retrieved from https://dergipark.org.tr/tr/pub/iisbf/issue/54695/647883.

Altıntaş, F. F. (2021). Lojistik Performans Bileşenleri Arasındaki İlişkilerin Yapay Sinir Ağları İle Kestirimi [Estimation of Relations Between Logistics Performance Components By Artificial Neural Networks]. *Euroasia Journal of Social Sciences & Humanities, 8*(20), 101-112.

Arabacı, H., & Yücel, D. (2020). Lojistik sektörünün ekonomik büyümeye etkisi [The Effect Of Logistics Sector On Economic Growth]. *Balkan and Near Eastern Journal of Social Sciences, 6*(4), 78-84.

Ateş, İ. & Işık, E. (2010). Türkiye'de Lojistik Hizmetlerinin Gelişiminin İhracattaki Büyümeye Etkileri [The Effects of Development in Logistics Services on Export Led Growth in Turkey]. *Journal of Economic Sciences, 2*(1), 99-106. Retrieved from https://dergipark.org.tr/tr/pub/ebd/issue/4855/66779

Aydın, A. (2022). Lojistik Sektörünün Türkiye Ekonomisindeki Yerinin Girdi Çıktı Modeli ile Analizi [Analysis of Importance of Logistics Sector in Turkish Economy by Using Input Output Model]. *Istanbul Gelisim University Journal of Social Sciences, 9* (2), ss. 467-491.

Balta, D., & Cura, F. (2022). Uluslararası Ticarette Lojistik Performansın İhracat Performansına Ve Firma Performansına Etkisi: Konya İlinde Bir Uygulama [The Effect of Logistics Performance on Export Performance and Company Performance in International Trade: An Application in Konya Province]. *The Journal of Social Economic Research, 22*(1), 17-29.

Başar, S. İ., & Bozma, G. (2017). Ülkelerin lojistik performanslarının belirleyicileri [Determinants of Countries' Logistic Performances]. *Kafkas Univercity Jornal Of Institute of Social Sciences*, (20), 447-458.

Bilgin, T. ve Kazancı Sunaoğlu, Ş. (2022). Lojistik Performans ve Uluslararası Ticaret İlişkisi Üzerine Alanyazın İncelemesi [A Literature Review on Logistics Performance and International Trade] *Pamukkale Sosyal Bilimler Enstitüsü Dergisi*. 53. ss. 325-344.

Bozdağlıoğlu, E., Y. & Keşir, B. (2022) Türkiye'de Lojistik Sektörünün Dış Ticarete Etkisi [The Impact Of Logistics Industry On Foreign Trade Turkey]. *Journal of Business and Economics Studies, 10*(1), 1-17.

Bozkurt, C. & Mermertaş, F. (2019). Türkiye ve G-8 ülkelerinin lojistik performans endeksine göre karşılaştırılması [Comparison of Turkey and the G8 Countries According to the Logistics Performance Index]. Journal of Business and Economics Studies, 7(2): 107-118.

Cansız, Ö. F. & Ünsalan, K. (2020). Yapay Zekâ ve İstatistiksel Yöntemler ile Küresel Ticarette Rekabet Ölçütü Olan Lojistik Performans İndeksine (LPI) Etken Parametrelerin Ülke Bazlı İncelenmesi ve Tahmin Modellerinin Geliştirilmesi [Prediction of Logistics Performance Index by Analysis of Effective Parameters on LPI Based on Countries, Which is Competition Criterion in Global Trade by Using Artificial Intelligence and Statistical Methods]. *Fırat University Journal of Engineering Science, 32*(2), 571-582.

Çubukçu, M. İ., & İmamoğlu, N. (2019). Lojistik Performansın, Firma Performansı ve İhracat Performansına Etkisi [The Effect of Logistics Performance on Company Performance and Export Performance]. *Journal of International Social Research, 12*(62).

Erturgut, R., & Oğuz, S. (2022). Lojistik merkezlerin ihracata etkisi: AB ülkeleri üzerine yatay kesit veriler ile regresyon analizi [The Impact of Logistics Centers on Export: Regression Analysis with Horizontal Section Data on EU Countries]. *Journal of Aksaray Unıversity Faculty of Economics and Administrative Sciences, 14*(4), 423-430.

Emel, G., G. & Taşkın, Ç. (2005). Veri madenciliğinde karar ağaçları ve bir satış analizi uygulaması [Decision Trees in Data Mining and A Sales Analysis Application] *Eskişehir Osmangazi University Journal of Social Sciences, 6*(2), 221-239.

Güngör, Ş., Dursun, E., & Karaoğlan, A. (2019). Lojistik Faaliyetlerin Akdeniz Ülke Ekonomileri ile İlişkisi [The Relationship Between Logistics Activities and the Economy of Mediterranean Countries]. *Journal of Economic Policy Researches, 6*(2), 91-106.

İrak, G. & Şen, H. (2021). Lojistik Maliyetler Ve Lojistik Performansın, Firma Ve İhracat Performansına Etkisinin Analizi [Analysis of the Effects of Logistics Costs and Logistics Performance on Firm and Export Performance] *Journal of Accounting and Taxation Studies, 14*(3), 1109-1131.

Karaköy, Ç., & Üre, S. (2019). Yüksek Ve Orta Gelirli Ülkelerde Büyüme Ve Lojistik Performans Endeksi Arasındaki İlişki [The Relationship Between Growth and Logistics Performance Index in High and Middle-Income Countries]. *Al -Farabi 4. International Congress of Social Sciences*, 475-480.

Koca, M. (2021). Lojistik Sektörünün Dış Ticaret Gelişimi Üzerine Etkisinin İncelenmesi: Türkiye Örneği [Investigation of the Impact of the Logistics Sector on Foreign Trade Development: The Case Of Turkey]. *Mersin University Journal of Maritime and Logistics Research, 3*(1), 40-62.

Korkut, Y., Yavuz, S., & Zeren, F. (2021). Uluslararası Ticaret ve Lojistik Arasındaki İlişkinin İncelenmesi: G20 Ülkeleri Örneği [The Investigation

of Relationship Between International Trade and Logistics: An Example Of G20 Countries]. *International Journal of Economics and Administrative Studies*, (30), 77-88.

Koyuncu, G. (2022). Lojistik Performans Endeksi ve Alt Bileşenleri: Türkiye Örneği. *Social Sciences Studies Journal (SSSJournal), 8*(97), 1409-1414.

Manavgat, G., & Demirci, A. (2021). Lojistik Performans Endeksi Tutarlılığının Sıralı Lojistik Regresyon Modeliyle İncelenmesi [Investigation of Consistency of Logistics Performance Index Using Ordered Logistic Regression Model]. *Journal of Yaşar University, 16*(64), 1856-1871.

Meşin, K., & Cura, F. (2022). Türkiye Dış Ticaretinin Lojistik Performans Çerçevesinde Değerlendirilmesi [Evaluation of Turkey's Foreign Trade in The Framework Of Logistics Performance]. *The Journal Of Social Economic Research, 22*(2), 139-149.

Ofluoğlu, N. Ö., Kalaycı, C., Artan, S., & Bal, H. Ç. (2018). Lojistik performansındaki gelişmelerin uluslararası ticaret üzerindeki etkileri: AB ve MENA ülkeleri örneği [The Effects Of Developments in Logistic Performance on International Trade: The Case Of EU and Mena Countries]. *Gümüşhane University Journal of Social Sciences, 9*(24), 92-109.

Pekmezci, M., & Mutlu, M. (2018). Türkiye'yi Konu Alan" Lojistik Performans İndeksi" Çalişmalarina Yönelik Bibliyometrik Bir Analiz. *In IV. International Caucasus-Central Asia Foreign Trade and Logistics Congress*, Didim/Aydin.

Pinar, A., & Diken, A. (2020). Lojistik Performans Endeksi Kapsamında Lojistik Üslerin Türkiye Ekonomisine Etkisi Üzerine Bir İnceleme [A Review on the Impact of Logistics Bases on Turkish Economy Within the Scope Of Logistics Performance Index]. *Istanbul Ticaret University Journal of Social Sciences, 19*(39), 1384-1406.

Şimşek, T., & Yiğit, E. (2019). Lojistik Performans ve Ekonomik Büyüme Arasındaki İlişki: Orta-Doğu Avrupa Ülkeleri ve Türkiye Örneği [The Relationship Between Logistics Performance and Economic Growth: Example of Central and Eastern Europe Countries and Turkey]. *Journal of International Management Educational and Economics Perspectives, 7*(2), 169-177.

Uğurlu, S. & Keser, E. (2020). Dış Ticaretin Gelişiminde Lojistik Sektörünün Rolü: Ekonometrik Bir Analiz [The Role Of The Logistics Sector In The Development Of Foreign Trade: An Econometric Analysis]. *International Social Mentality and Researcher Thinkers Journal*, (Issn:2630-631X) 6(37): 2061-2069.

World Bank (2023). World Development İndicator. https://databank.worldbank.org/source/world-development-indicators (Erişim tarihi; 20.08.2023)

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