Toros University FEASS Journal of Social Sciences
Special Issue on International Symposium of Sustainable Logistics
Toros Üniversitesi İİSBF Sosyal Bilimler Dergisi Uluslararası Sürdürülebilir Lojistik Sempozyumu Özel Sayı

RESEARCH ARTICLE/ ARAŞTIRMA MAKALESİ

ISSN: 2147-8414

Research on Sustainable Criteria Affecting the Logistics Sector

Lojistik Sektörü Sürdürülebilirliğini Etkileyen Kriterler Üzerine Araştırma

Emel YONTAR[1]

ABSTRACT

The understanding of sustainability can be applied in almost every sector and has a very wide impact in the logistics sector. Today, taking into account the sustainability criteria is among the basic conditions of doing business for companies in the supply chain, and it is becoming more and more important. In this study, 15 articles that studied with sustainable logistics criteria between 2008 and 2020 are reviewed and the sustainable logistics criteria included in each study are determined. These 103 logistics criteria, which are determined, are ranked in importance by Pareto analysis, in consultation with expert academicians and logistics sector employees, and it is concluded that 33 criteria can be more important than others. This criterion evaluation study, compiled from the literature, shows the companies that will apply sustainability methodology in the logistics sector, in a unique way, where to start. With the understanding that it is possible to minimize the damage caused by the sector to the environment with an effective sustainability strategy if these sustainable logistics criteria are given importance, logistics companies will reach a competitive level in the field of sustainability.

Keywords: Sustainable logistics, logistics criteria, sustainability, sustainable logistic literature, pareto analysis.

ÖZ

Sürdürülebilirlik anlayışı hemen hemen her sektörde uygulanabilmekle birlikte lojistik sektöründe çok geniş bir etkiye sahiptir. Günümüzde sürdürülebilirlik kriterlerinin dikkate alınması tedarik zincirinde yer alan şirketler için iş yapmanın temel koşulları arasında yer almakta ve giderek daha önemli hale gelmektedir. Bu çalışmada 2008-2020 yılları arasında sürdürülebilir lojistik kriterleri ile çalışılan 15 makale incelenmiş ve her bir çalışmada yer alan sürdürülebilir lojistik kriterleri belirlenmiştir. Belirlenen bu 103 lojistik kriteri, uzman, akademisyenler ve lojistik sektörü çalışanları ile istişare edilerek Pareto analizi ile önem derecesine göre sıralanmış ve 33 kriterin diğerlerinden daha önemli olabileceği sonucuna varılmıştır. Literatürden derlenen bu kriter değerlendirme çalışması, lojistik sektöründe sürdürülebilirlik metodolojisini uygulayacak firmaları özgün bir şekilde nereden başlamaları gerektiğini göstermektedir. Sektörün çevreye verdiği zararı etkin bir sürdürülebilirlik stratejisi ile bu sürdürülebilir lojistik kriterlerine önem verilmesi halinde en aza indirmenin mümkün olduğu anlayışı ile lojistik firmaları sürdürülebilirlik alanında rekabetçi bir seviyeye ulaşacaktır.

Anahtar Kelimeler: Sürdürülebilir lojistik, lojistik kriterler, sürdürülebilirlik, sürdürülebilir lojistik literatürü, pareto analizi.

Cite (Atıf): *Yontar, E. (2021).Research on Sustainable Criteria Affecting the Logistics Sector. Toros University FEASS Journal of Social Sciences, 8(Special Issue): 36-51.*

Received Date (Makale Geliş Tarihi): 30.06.2021 Accepted Date (Makale Kabul Tarihi): 13.09.2021

[1]Asst. Prof., Tarsus University, Faculty of Engineering, Department of Industrial Engineering, eyontar@tarsus.edu.tr ORCID: 0000-0001-7800-2960

1. INTRODUCTION

Sustainability studies have a wide impact in the logistics sector. Because logistics activities are one of the basic business functions that can directly affect our environment and climate changes. So, it is becoming more and more important to consider the sustainability criteria. Sustainability is defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Sustainability studies address three factors called the Triple Bottom Line (TBL) as economic, social and environmental (Elkington, 1994). The logistics sector is not only a significant contributor to national economic performance and development, but also plays a vital role in environmental and social aspects. Logistics, on the other hand, is to maintain the efficiency of operations with the integration of material supply, transportation and storage activities (Heizer and Render, 2014).

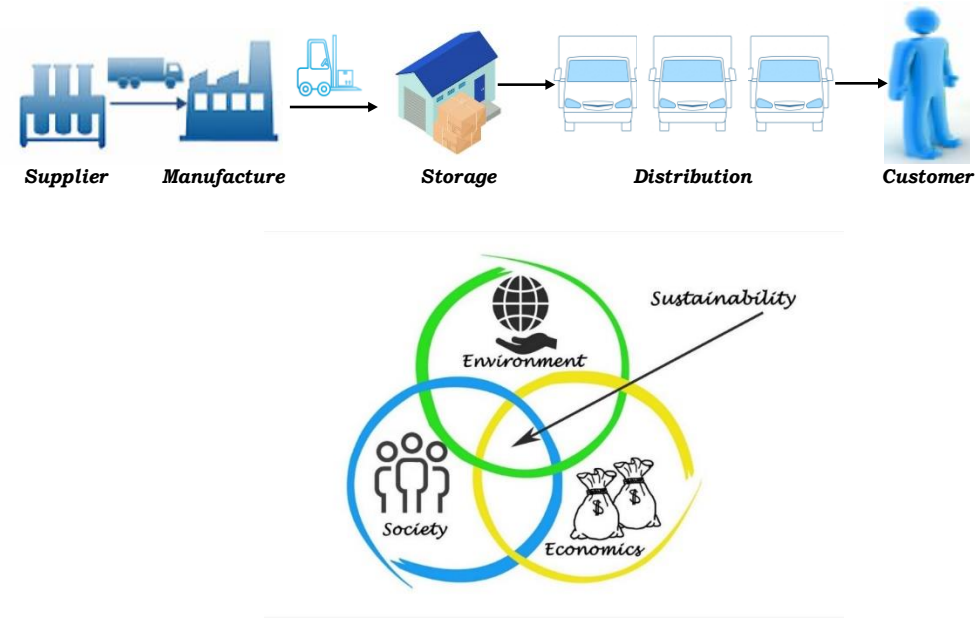

Figure 1. Logistics and Sustainability

The visuals of logistics and sustainable logistics concepts are given in the Figure 1. Logistics is the science of managing the flow of goods, information and other resources between the point of origin and the point of consumption in order to meet the needs of customers. Includes integration of information, shipping, inventory, warehousing, material handling and packaging.

Sustainable logistics has emerged with the aim of reducing the environmental impact of all logistics activities (Mayfield, 2021). Sustainable development of logistics calls for activities that lead to the highest economic and social gains while reducing the negative environmental losses. Sub-headings that need attention regarding the environment are noise, air quality, land use, biodiversity and waste management. Improvement studies in this direction are of great importance (Beken, 2016). Considering these factors, sustainable logistics is a major determinant in terms of economy as well as society and environmental gains.

There are certain reasons why the sustainable logistics approach is accepted by many companies today. Jørsfelt et al. (2017) listed these reasons as follows; (1) Pressures exerted by the developing social awareness and non-governmental organizations. (2) Rapid depletion of raw material resources and

anxiety caused by this situation. (3) Global warming results begin to manifest themselves. In the field of economy, the effects of sustainable logistics are positive, especially in the long run. Although the applications to be made make companies think in terms of cost, the investments to be made in this field will show their return as soon as possible with the awareness of the consumers.

There are a number of benefits when sustainable logistics is implemented. These are;

- Companies engaging in sustainable logistics seek to lower their CO_2 emissions and accidents (such as chemical leaks).
- They might also focus on lowering air pollution, noise pollution and all of which can negatively impact people and life.
- Reducing energy use in logistics activities increases the use of renewable energy sources.
- It can be ensured that recycled products are preferred within the activities and additive values are created from their recycling.
- In the packaging activity, gains are achieved in terms of cost and nature.
- With its environmentally friendly identity, customer satisfaction increases and employee rights are at the forefront.

About sustainable logistics performance measurement; nowadays, businesses that want to be sustainable need to constantly examine their performance and improve themselves according to this review. For an effective performance measurement, "What do we want to measure?", "Why do we want to measure?" The answers to the questions are sought. In order to measure the sustainable logistics performance, it is important to choose the indicators correctly. For this reason, criteria that can be used for sustainable logistics are determined in this study. The criteria discussed in the study can also be used in performance evaluation studies.

The aim of the study is to emphasize the importance of the concept of sustainability in the logistics sector and to determine the contributing criteria. From this point of view, in the second section of the study, studies based on the logistics sector on sustainability are examined. In the third section, sustainability criteria are investigated in the light of the studies obtained in the literature. The ranking of the criteria according to the degree of importance is made by Pareto Analysis. A total of 103 sustainable logistics criteria have been determined. These criteria are ranked in importance by Pareto Analysis by taking the opinions of experts in their field and it is concluded that 33 criteria can be more important than others. The criteria determined in the fourth section are explained and grouped under the main criteria title. In the conclusion section, the findings are discussed and suggestions are made for new studies.

2. LITERATURE REVIEW

Sustainability has become a growing concern for consumers, businesses and governments in recent years. Increasing regulatory rules, scarcity of natural resources and increasing population are forcing companies to remain competitive and constantly offer new products and services in today's market. There are also increasing levels of waste and demands from customers and stakeholders. Due to these problems, efficient and sustainable supply chain operations are mentioned in the literature.

Zhang and Zhao (2012) emphasized the need for green packaging and stated that green packaging, supported by the government, should be produced with a strength that can be easily recycled and reused

in accordance with hygiene rules. Lin and Ho (2011) investigated the key determinants of logistics performance in Chinese industry and found that logistics performance is influenced by technological dimensions, environmental factors and corporate competitiveness. In addition, government support found that regulatory measures significantly increased the adoption of green practices in Chinese logistics companies.

In the Helm (2018) study, 'How can sustainability be a source of competitive advantage for logistics in remote locations?' is asking the question. To answer this question, it uses an interdisciplinary framework and conducts a detailed literature review, integrating the academic disciplines of business and sustainability. Abbasi and Nilsson (2016), the aim of their study is to explore the themes and challenges in developing environmentally sustainable logistics activities. Findings show the main themes by analyzing activities in the development of environmentally sustainable logistics activities. Accordingly, four categories of challenges were identified: customer priorities, administrative complexity, network imbalance, and technological and legal uncertainties. It was concluded that there is a great need for a holistic perspective where logistics service providers and product owners can together analyze and design the logistics installations of the future. Çamlıca and Akar (2014) reveals the level of sustainability-related practices in the logistics sector, and the concepts of environmental, economic and social sustainability are discussed in terms of the logistics sector, the importance of the concept of sustainability for the sector and the requirements for ensuring sustainability.

Byrne et al. (2013), provides a comprehensive literature review showing the evolution of logistics activities. Based on this document, the results of the face-to-face exploration research conducted to analyze the attitude, knowledge and readiness among sellers but more comprehensive logistics service buyers to implement sustainable logistics in Ireland are also presented.

In addition to the literature review studies, the subject of sustainable logistics, which take place between the years 2008-2020, is discussed in this study. The difference from the existing studies is to bring together the evaluation criteria found in the literature. Comprehensive criteria research of the study is presented in the methodology section.

3. METHODOLOGY

In this section, the path followed in the study is explained. The conceptual model of the study is as shown in Figure 2.

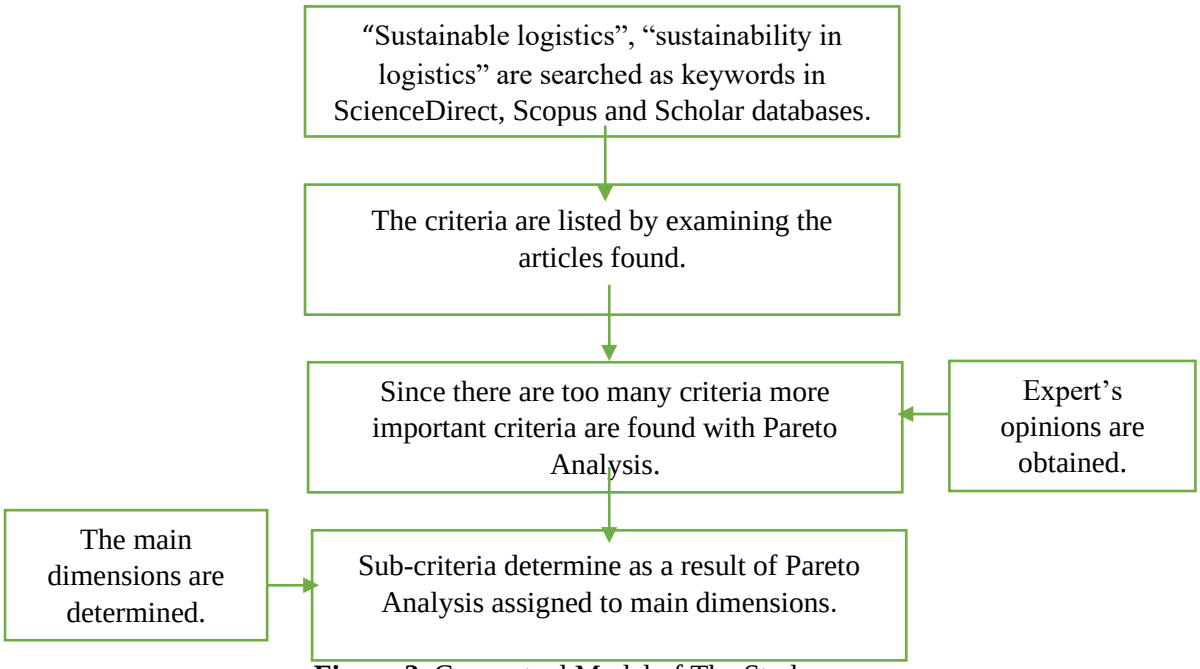

Figure 2. Conceptual Model of The Study

In the study, firstly, "sustainable logistics" and "sustainability in logistics" are researched as keywords in ScienceDirect, Scopus, Scholar databases. Due to the narrow frame, a total of 15 articles are found. The articles found are examined and the criteria are given in Table 1. Since there are 103 sub-criteria, it is aimed to find more important criteria with Pareto Analysis by taking the opinions of experts. Then the main dimensions are determined. The sub-criteria determined as a result of the Pareto analysis are classified into main dimensions.

Table 1. Author and Criteria

Criterion-Authors	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Consumer behavior	*														
Existing practices	*														
Environmental factors	*				*						*				
Minimizing environmental problems				*											
Environmental uncertainty											*				
Supply chain integration	*														
Taking supply/value chain view		*													
Government support	*										*		*	*	
Compliance with legislation and standards		*													
Adaptation to future policies and corporate governance		*													

Product value	*							
Reverse logistics costs	*							
Reverse logistics applications						*		
Quantity of returned products	*							
Quality of returned products	*							
External Factors	*							
Internal Factors	*							
Internal resources efficiency, effectiveness, and utilization		*						
Economy/Economic Performance/Economic factors	*			*				
Economic support								*
Economic growth				*				
Return On Investment	*							
Recapturing Value	*							
Logistics Cost Optimization	*							
Recycle Efficiency	*							
Annual Sales of remanufactured products	*							
Disposal Costs	*							
Minimum Energy Consumption	*							
Energy and fuel efficiency		*						
Energy production			*					
Energy use					*			
Use of recycled material	*							
Optimum use of raw material	*							
Product use			*					
Product use by consumers			*					
Production and distribution planning							*	
Transport Optimization	*							
Transportation			*					
Transport from supplier to manufacturer and vice versa			*					
Transport from supplier to consumers and vice versa			*					
Transport from supplier to end-oflife facilities and vice versa			*					

Transport from manufacturers to end-of-life facilities and vice versa		*				
Goods transport				*		
Choice of mode of transport and intermodal transport					*	
Reduced Packaging	*					
Green packaging				*		
Waste Reduction	*					
Waste management			*			
Social Performance/Social factors	*					
Society			*			
Community complaints	*					
Consumer Health and Safety	*					
Stakeholders Participation	*					
Rate of job creation				*		
Quality of human resource						*
Donations to Community	*					
Employee Benefits	*					
Sustainability behavioral cautiousness		*				
Measurement and assessment		*				
Taking initiatives		*				
Efficient utilization of external logistical infrastructure		*				
Vertical and horizontal collaboration		*				
Innovation and research		*				
Technological development		*				
Technological and legislative uncertainties		*				
Technological dimensions						*
Design for sustainability		*				
Customer priorities		*				
Customer pressure						*
Managerial complexity		*				
Complexity						*
Network imbalance		*				

Manufacturing		*													
Manufacturing at suppliers		*													
Manufacturing at manufacturers		*													
Testing		*													
End-of-use alternatives		*													
Re-use		*													
Refurbishing		*													
Air quality				*											
Bio diversity				*											
Noise				*											
Land use				*											
Greenhouse gas emissions (GHGE)					*										
Transition to green practices			*											*	
Consumer awareness studies			*												
Increasing awareness	*														
Competitiveness				*											
Corporate competitiveness										*					
Customs						*									
Infrastructure						*									
Arranging Shipments						*									
Logistics Competence						*									
Tracking & Tracing						*									
Timeliness						*									
Vehicle selection and efficiency									*						
Selection of fuel type to be used									*						
Conveying speed									*						
Compatibility										*					
Organizational support										*					
Company size										*					
Well-connected information and goods flows	*														
Using advanced technology and software in logistics activities											*				

(Authors; 1-Agrawal and Singh, 2019; 2-Abbasi and Nilsson, 2016; 3-Neto et al., 2008; 4-Beken, 2016; 5-Altuntaş and Türker, 2012; 6-Rashidi and Cullinane, 2019; 7-Arvis et al., 2010; 8-Zhang and Zhao 2012; 9-Krajewski, 2013; 10-Görgün and Bardakçı, 2014; 11-Lin and Ho, 2011; 12-Geiger, 2016; 13-Chunguang et al., 2008; 14-Lai and Wong, 2012; 15-Pazirandeh and Jafari, 2013)

Table 1 is created for the criteria and authors in this study. These are the authors who study with sustainability criteria. Table 1 shows the author and criteria relationship. The numbers represent to the authors. For example; 1 is Agrawal and Singh, (2019) studied consumer behavior, existing practices, environmental factors, supply chain integration, product value, reverse logistics costs, quantity of

returned products, quality of returned products, external factors, internal factors, economy/economic performance/economic factors, return on investment, recapturing value, logistics cost optimization, recycle efficiency, annual sales of remanufactured products, disposal costs, minimum energy consumption, use of recycled material, optimum use of raw material, transport optimization, reduced packaging, waste reduction, social performance/social factors, community complaints, consumer health and safety, stakeholders participation, donations to community, employee benefits. Another one, 14 is Lai and Wong, (2012) and they studied government support and economic support.

Table 1 give the intersection of criterion and author. A total of 103 criteria are achieved. Due to the large number of sub-criteria obtained after extensive research, it is asked to simplify and determine the importance of these criteria.

At this point, Pareto Analysis is used because it is shown with the help of graphics and concentrates attention on the most important cause of the problem and helps to determine the priorities. According to Pareto Analysis quality tool, which is also called "80-20 Rule" in the literature, it is concluded that "80% of the problems are caused by 20% activity and this important share is concentrated above 20%". In other words, it represents the "visible majority, influential minority"

With the Pareto Analysis, the importance of the problems, the number of realization of the errors and the reasons are clearly determined. In this way, the areas where the improvements will be applied first are determined and studies are carried out (Özgüvenç, 2011).

According to these statements, the opinions of 12 people, including 5 sector representatives and 7 academicians, are asked to score these criteria between 1-10 according to their importance. The expert group consisting of 12 people are people who have studies in the field of logistics and work on logistics. Together with the calculations make after the answers, the Pareto Graph of 103 criteria is defined as in the Figure 3.

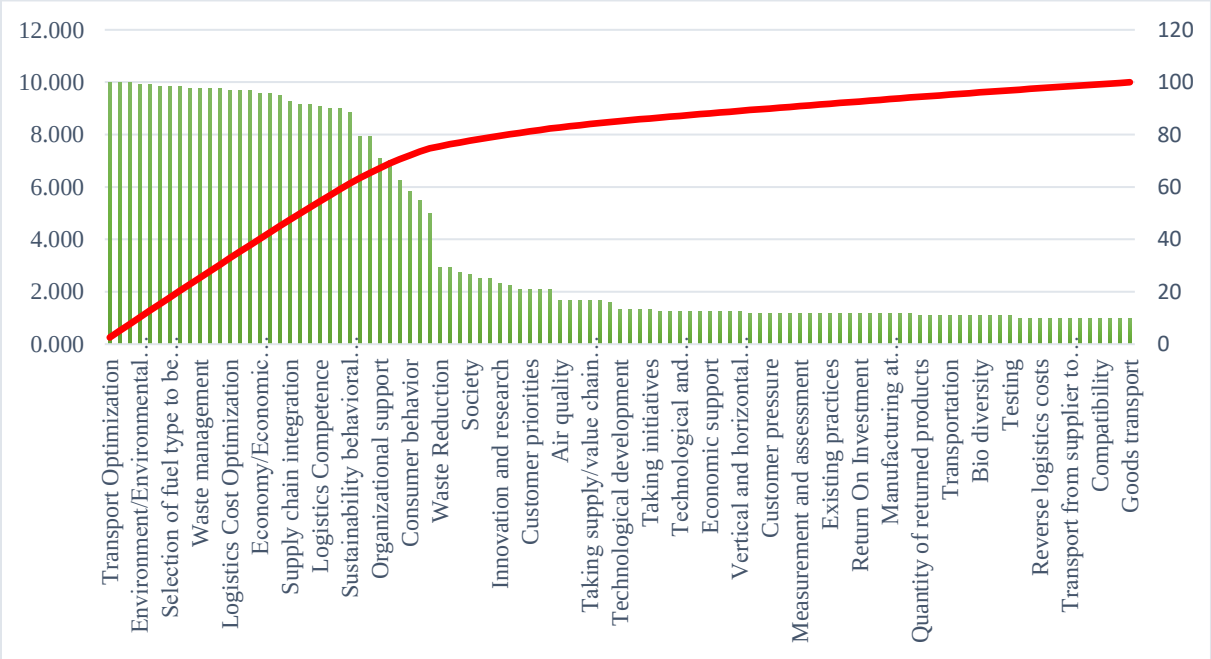

Figure 3. Pareto Graph for Sustainability Logistics Criteria

4. FINDINGS AND DISCUSSION

According to the Pareto Analysis results, it is understood that 33 criteria out of 103 criteria are more important. These are shown in Table 2.

Table 2. 33 Important Criteria From Pareto Analysis

No	Criteria
1	Transport optimization
2	Energy and fuel efficiency
3	Production and distribution planning
4	Environment/Environmental conditions/Environmental factors/Environmental Performance
5	Well-connected information and goods flows
6	Internal resources efficiency, effectiveness, and utilization
7	Selection of fuel type to be used
8	Choice of mode of transport and intermodal transport
9	Energy use
10	Waste management
11	Recycle efficiency
12	Vehicle selection and efficiency
13	Logistics cost optimization
14	Using advanced technology and software in logistics activities
15	Minimum energy consumption
16	Economy/Economic Performance/Economic factors
17	Greenhouse gas emissions (GHGE)
18	Reduced packaging
19	Supply chain integration
20	Consumer awareness studies
21	Social Performance/Social factors
22	Logistics competence
23	Reverse logistics applications
24	Government support / Government regulated laws/Government rules & regulations
25	Sustainability behavioral cautiousness
26	Use of recycled material
27	Increasing awareness
28	Organizational support
29	Employee benefits
30	Green packaging
31	Consumer behavior
32	Infrastructure
33	Product value

The definitions of some of these criteria are as follows:

Internal resources efficiency, effectiveness, and utilization: The most common activities to increase effectiveness and efficiency of internal logistical resources are related to the mode of transportation used and vehicle energy usage (Abbasi and Nilsson, 2016).

Energy and fuel efficiency: Energy is an inseparable part of environmentally sustainable logistical activities. It can be used in sustainable logistics as follows:

- To energize and utilize resources like vehicles and facilities fed by non-fossil/renewable fuels.
- Collaboration with vehicle manufacturers to design more environmentally friendly trucks, trains, vessels, as well as aircrafts that are lighter and more aerodynamic, have more efficient engines, and emit zero GHG emissions.

Sustainability behavioral cautiousness: The behavior of different stakeholders are by most of the cases as an important area affecting sustainable development. Suppliers can be scanned to make sure they meet social and environmental requirements (Abbasi and Nilsson, 2016).

Use of recycled material: It can be ensured that recycled products are preferred within the activities and additive values are created from their recycling.

Green packaging: The packaging used in the product is recyclable.

Government rules and regulations: Government rules and regulations are important for disposition decisions making. Research on certain activities of sustainability by the regulatory bodies greatly impact the disposition decisions in sustainability (Lambert et al., 2011).

Consumer behavior: More conscious consumers may return the products timely rather than storing or disposing them in the environment (Jack et al., 2010).

Product value: Product value is one of the important factors of the decision-making decision. Low value products are generally preferred for material recovery through recycling. The higher cost of reproduction is one of the reasons for this. Also, consumers will probably prefer the new product because absolute savings in terms of money are low. (Chung and Wee, 2011).

Logistics cost optimization: These costs include storage, transportation, packaging, etc. consists of costs. The decisions are taken according to the cost-benefit analysis of the logistics and it is desired to be optimized.

Supply chain integration: It relates to an organization's ability to adopt RL and integrate it into its existing supply chain. It is aimed to provide resources for the successful operation of RL (Hazen et al., 2012).

Logistics Competence: The overall level of competence and quality of core logistics services providers such as transport operators, distributors, freight forwarders, customs and border agencies, and shippers.

Infrastructure: The quality of trade and transport-related infrastructure such as ports, railroads, roads, information technology, etc.

In addition, the frequency of using these criteria by the authors is examined (Figure 4). Government regulations, economy and environmental factors are mostly taken into account. Others take part in the studies once.

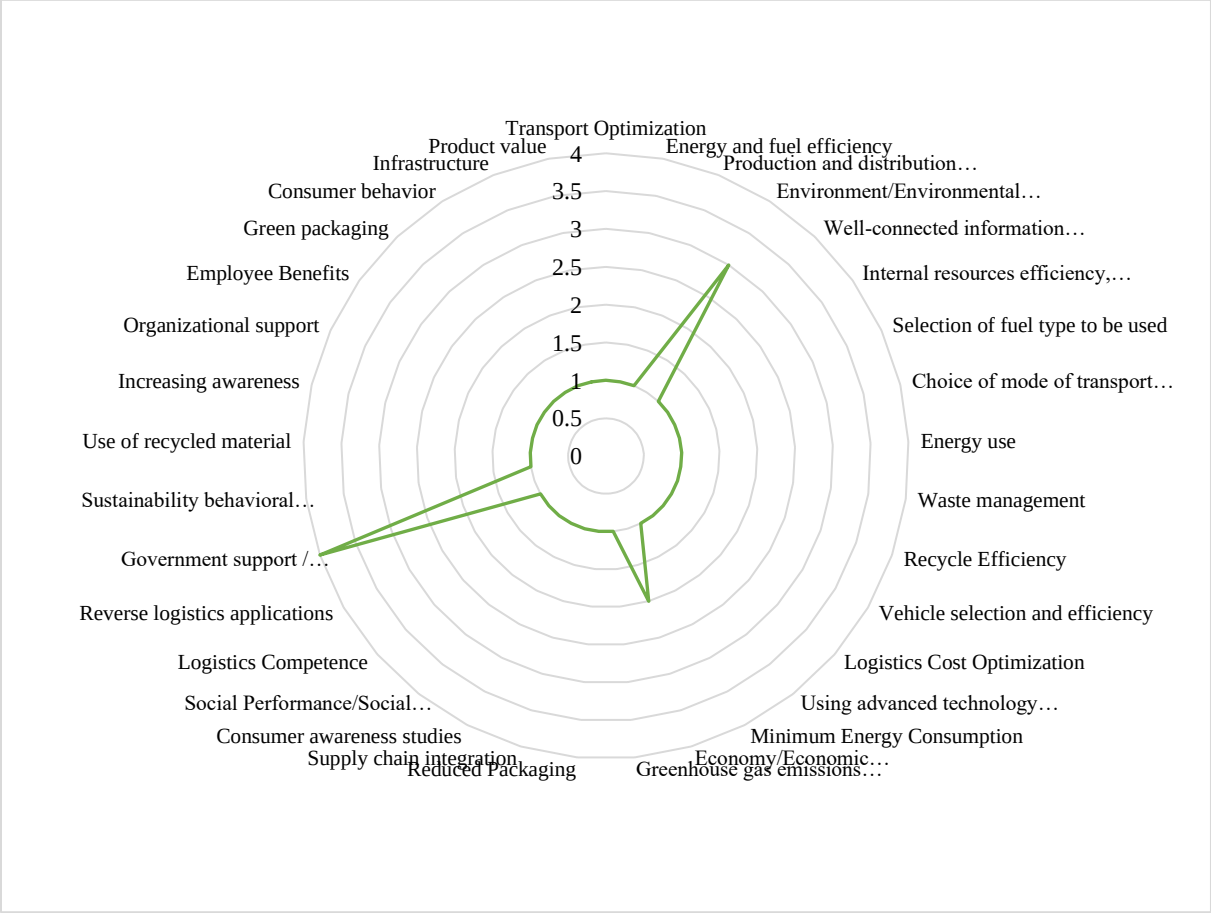

Figure 4. Frequency of Using Importance Criteria

Then, 33 criteria are asked to be classified under main dimensions (Figure 5). This study includes four criteria for main dimensions. These are economic, social, environmental and internal factors. Economic, social and environmental factors have been involved with TBL. Internal factor is the criterion in which company information will be included.

Figure 5. Main Dimensions for Sustainable Logistics

A classification is made according to these four main dimensions and 33 criteria are matched with the main dimensions (Figure 6).

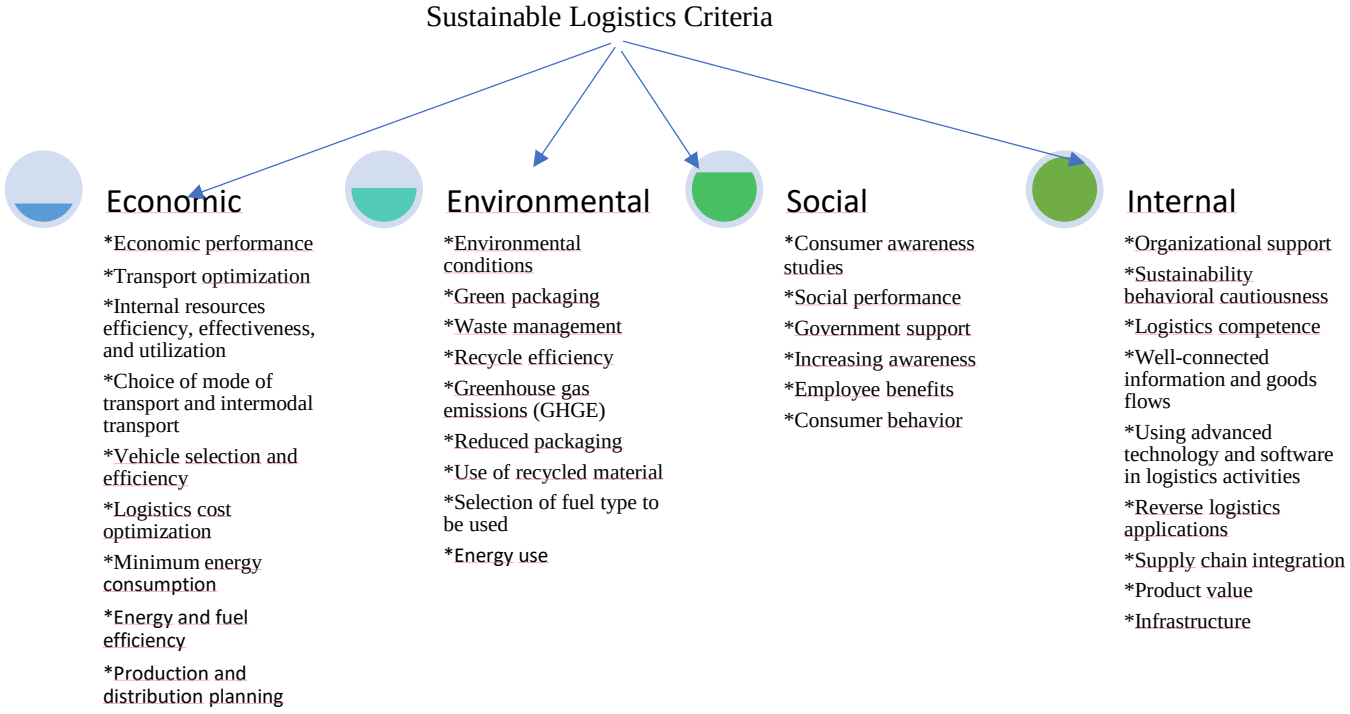

Figure 6. Main Dimensions With Sub-Criteria.

The sub-criteria under the main dimensions determined according to this study are as follows (Figure 6). In economic dimension, there are criteria for economic performance, transport optimization, internal resources efficiency, effectiveness, and utilization, choice of mode of transport and intermodal transport, vehicle selection and efficiency, logistics cost optimization, minimum energy consumption, energy and

fuel efficiency, production and distribution planning. In environmental dimension; there are criteria for environmental conditions, green packaging, waste management, recycle efficiency, greenhouse gas emissions (GHGE), reduced packaging, use of recycled material, selection of fuel type to be used and energy use. In social dimension; there are criteria for consumer awareness studies, social performance, government support, increasing awareness, employee benefits and consumer behavior. In internal dimension; there are criteria for organizational support, sustainability behavioral cautiousness, logistics competence, well-connected information and goods flows, using advanced technology and software in logistics activities, reverse logistics applications, supply chain integration, product value and infrastructure. These dimensions and criteria are based on the classification of the criteria in the study.

The criteria used in this study reflect economic, environmental, social and internal factors of the logistics industry. The criterion “logistics cost optimization” reflects the economic aspect, “energy use” and “greenhouse gas emissions” reflect the environmental aspect, the “Increasing awareness” reflects the social aspect and "organizational support" reflect the internal aspect of the logistics sector. Together, they all reflect the overall sustainability performance of a nation's logistics sector.

5. CONCLUSION AND IMPLICATIONS

Logistics is one of the sectors that includes many activities from the supplier to the customer and has recently been regulated in terms of the environment. In this context, sustainability studies are one of the most important issues for the logistics industry. In the study, inspired by these issues, it is requested to investigate the criteria affecting the activities in the logistics sector on the basis of sustainability. Thus, the table of criteria developed by literature review is limited to Pareto Analysis and grouped under the main dimensions and made original.

The highlights covered in this study are as follows**;**

- Within the scope of the study, sustainable logistics performance criteria are determined as a result of a detailed analysis.
- During the determination, Pareto Analysis is used by taking the opinions of academics and representatives from the sector.
- The criteria created as the final table are classified under the main criteria.
- Logistics companies should take into account the sustainability criteria in the study in order to minimize the damage they cause to the environment and increase their competitiveness.

The study is studied in addition to other studies in the literature and brought together all possible sustainable logistics criteria. The literature review on the criteria is detailed. In addition to contributing to the literature on this subject, it has been an original study by collecting sustainable logistics criteria in four main groups.

As a result of these findings, this study is important for companies. First, they can examine the criteria and decide where they want to start and what they want to apply. They can measure the sustainable logistics performance of their own companies with the determined criteria. They can identify their shortcomings and develop in that area. For sustainable logistics, they work for a more livable world by taking into account the social and economic factors as well as the environment. Also, the study provides the opportunity for companies to evaluate themselves by using these criteria in future studies. Evaluation can be made on criteria by using multi-criteria decision making methods.

REFERENCES

Abbasi, M., & Nilsson, F. (2016). Developing environmentally sustainable logistics: Exploring themes and challenges from a logistics service providers' perspective. Transportation Research Part D: Transport and Environment, 46, 273-283.

Agrawal, S., & Singh, R. K. (2019). Analyzing disposition decisions for sustainable reverse logistics: Triple Bottom Line approach. Resources, Conservation and Recycling, 150, 104448.

Altuntaş, C., & Türker, D. (2012). Sustainable supply chains: A content analysis of sustainability reports. Dokuz Eylül Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 14 (3), 39-64.

Beken, H. G. (2016). Sürdürülebilirlik ve rekabet edebilirlik yolu yeşil lojistik mi. Balkan ve Yakın Doğu Sosyal Bilimler Dergisi, 2(01), 78-88.

Byrne, P. J., Ryan, P., & Heavey, C. (2013). Sustainable logistics: a literature review and exploratory study of Irish based manufacturing organizations. International Journal of Engineering and Technology Innovation, 3(3), 200.

Chung, C. J., & Wee, H. M. (2011). Short life-cycle deteriorating product remanufacturing in a green supply chain inventory control system. International Journal of Production Economics, 129(1), 195-203.

Chunguang, Q., Xiaojuan, C., Kexi, W., & Pan, P. (2008, December). Research on green logistics and sustainable development. In 2008 International Conference on Information Management, Innovation Management and Industrial Engineering (Vol. 3, pp. 162-165). IEEE.

Çamlıca, Z., & Akar, G. S. (2014). LOJİSTİK SEKTÖRÜNDE SÜRDÜRÜLEBİLİRLİK UYGULAMALARI. Gümüshane University Electronic Journal of the Institute of Social Science/Gümüshane Üniversitesi Sosyal Bilimler Enstitüsü Elektronik Dergisi, 5(11).

Elkington, J. (1997). Cannibals with forks – Triple bottom line of 21st century business. Stoney Creek, CT: New Society Publishers.

Geiger, C. (2016). ICT in green freight logistics. In Green transportation logistics (pp. 205-241). Springer, Cham.

Görgün ve Bardakçı, (2020) Green Logıstıcs and Applıcatıons Of Green Logıstıcs In Turkey Yeşil Lojistik Ve Türkiye'de Yeşil Lojistik Uygulamaları, 4th Internatıonal Zeugma Conference On Scıentıfic Researches.

Hazen, B. T., Hall, D. J., & Hanna, J. B. (2012). Reverse logistics disposition decision-making. International Journal of Physical Distribution & Logistics Management.

Heizer, J., Render, B., & Munson, C. (2014). Operations Management-Sustainability and supply chain management (11. utg.). Essex: Pearson.

Helm, M. D. (2018). Sustainable logistics as a source of competitive advantage in remote locations. Journal of Sustainable Development of Transport and Logistics, 3(3), 6-26. doi:10.14254/jsdtl.2018.3-3.1.

Jack, E. P., Powers, T. L., & Skinner, L. (2010). Reverse logistics capabilities: antecedents and cost savings. International Journal of Physical Distribution & Logistics Management.

Jørsfeldt, L. M., Hvolby, H. H., Nguyen, V. T., (2016). "Implementing environmental sustainability in logistics operations: a case study" Strategic Outsourcing: An International Journal, 9(2), s. 98-125.

Krajewski, L. J., Ritzman, L. P., & Malhotra, M. K. (2013). Operations management: processes and supply chains (Vol. 1). New York, NY: Pearson.

Lai, K. H., & Wong, C. W. (2012). Green logistics management and performance: Some empirical evidence from Chinese manufacturing exporters. Omega, 40(3), 267-282.

Lambert, S., Riopel, D., & Abdul-Kader, W. (2011). A reverse logistics decisions conceptual framework. Computers & Industrial Engineering, 61(3), 561-581.

Lin, C. Y., & Ho, Y. H. (2011). Determinants of green practice adoption for logistics companies in China. Journal of business ethics, 98(1), 67-83.

Mayfield, 2021. https://www.blog.shippypro.com/sustainable-logistics/#:~:text=Sustainable%20logistics%20maintains%20the%20overarching,impact%20of%20all%20logistical%20activities.&text=Sustainability%20logistics%20provides%20mechanisms%20to,tree%2Dplanting%20and%20community%20involvement.

Neto, J. Q. F., Bloemhof-Ruwaard, J. M., van Nunen, J. A., & van Heck, E. (2008). Designing and evaluating sustainable logistics networks. International journal of production economics, 111(2), 195-208.

ois Arvis, J. F., l Raballand, G., & ois Marteau, J. F. (2010). The cost of being landlocked: Logistics costs and supply chain reliability. World Bank Publications.

Özgüvenç, D. (2011). Kalite problemlerinin sınıflandırılmasında çok kriterli Pareto Analizi (Doctoral dissertation, Fen Bilimleri Enstitüsü).

Pazirandeh, A., & Jafari, H. (2013). Making sense of green logistics. International Journal of Productivity and Performance Management.

Rashidi, K., & Cullinane, K. (2019). Evaluating the sustainability of national logistics performance using Data Envelopment Analysis. Transport Policy, 74, 35-46.

WCED. (1987). Our common future. New York: Oxford University Press.

Zhang, G., & Zhao, Z. (2012). Green packaging management of logistics enterprises. Physics Procedia, 24, 900-905.