

Quantitative Analysis of Factors Affecting the Choice of Distribution Channel as a Strategic Supply Chain Function

Stratejik Bir Tedarik Zinciri Fonksiyonu Olan Dağıtım Kanalının Seçimine Etki Eden Faktörlerin Nicel Analizi

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ABSTRACT

In today's competitive landscape, logistics capabilities are considered the most critical factor determining the market performance and competitive abilities of supply chains when competition occurs among supply chains. In this context, the sustainability of distribution channels within supply chains emerges as a strategic element. Therefore, decision-makers need to be extremely cautious in establishing distribution channels and strive to minimize errors. Considering these factors, evaluating the factors influencing the distribution channel and highlighting the features that appear more efficient and important in the selection of distribution channels will support businesses in making the right strategic decisions for distribution channel selection and play a decisive role in their competitive positions in the industry. In this study, with this aim in mind, factors affecting distribution channel choices were determined using data obtained from the literature, and these factors were evaluated by the decision-makers of businesses. The data obtained were analyzed using the DEMATEL method, a multi-criteria decision-making approach. According to the analysis, customer satisfaction was found to be the most critical factor in distribution channel selection. Additionally, value-added factors such as after-sales services, distribution speed, and resource adequacy were prioritized in distribution channel selection, and it was concluded that these features had an impact on customer satisfaction and costs.

KEYWORDS

Distribution Channel, DEMATEL, Supply Chain Management, Multi-Criteria Decision Making (MCDM), Logistics

ÖZ

Rekabetin günümüzde tedarik zincirleri arasında gerçekleştiği düşünüldüğünde tedarik zincirlerinin pazar performanslarını ve rekabet yeteneklerini belirleyen en önemli unsur sahip oldukları lojistik kabiliyetler olmaktadır. Bu doğrultuda tedarik zincirleri içerisinde dağıtım kanallarının sürdürülebilir bir yapıya sahip olması da stratejik bir unsur olarak karşımıza çıkmaktadır. Bu sebeple karar vericilerin dağıtım kanalının oluşturulmasında çok dikkatli davranmaları ve hatayı en aza indirmeye çalışmaları gerekmektedir. Bu hususlar göz önüne alındığında dağıtım kanalına etki eden faktörlerin değerlendirilerek dağıtım kanalı seçiminde diğerlerinden daha etken ve önemli görünen özelliklerin ortaya konması işletmelerin dağıtım kanalı seçimlerinde doğru strateji belirlemelerine destek olacak ve sektördeki rekabet konularında belirleyici olacaktır. Çalışmada bu amaçla, literatürden elde edilen veriler ile dağıtım kanalı seçimlerine etki eden unsurlar belirlenmiş ve bu faktörler işletmelerin karar vericileri tarafından değerlendirilmiştir. Elde edilen veriler çok kriterli karar verme yöntemlerinden DEMATEL yöntemiyle analiz edilmiştir. Analize göre, müşteri memnuniyeti faktörü dağıtım kanalı seçiminde en yüksek öneme sahip faktör olmuştur. Bununla birlikte satış sonrası hizmetler, dağıtım hızı, kaynak yeterliliği gibi katma değer sağlayan faktörlerin dağıtım kanalı seçiminde önceliklendiği ve bu özelliklerin müşteri memnuniyeti ile maliyetler üzerinde etkili olduğu sonucuna ulaşılmıştır.

ANAHTAR KELİMELER

Dağıtım Kanalı, DEMATEL, Tedarik Zinciri Yönetimi, Çok Kriterli Karar Verme (ÇKKV), Lojistik

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INTRODUCTION

Strategic Supply Chain Management (SSCM) has become vital to improving business performance and competitive advantage in today's global market (Madhani, 2020). The conceptual foundations of SSCM were shaped by the work of Geoffrion and Graves. Geoffrion and Graves (1974) presented a network design model for multiple products in order to optimize the annual flow of products from mills to distribution centers to final customers. The study emphasized the integration of operational and strategic dimensions of supply chains, using mathematical modelling to optimize logistics and supply chain decisions. In the 1990s, the shortening of product life cycles and the intensification of global competition led many manufacturers to cooperate with their suppliers to improve product quality and delivery time, and in parallel, businesses forming the distribution channel integrated their logistics functions to increase their competitive advantage. As a result, the evolution of these two functional areas merged into a holistic and strategic approach to materials and logistics management (Tan et al., 2002). Supply chain management was considered as an integrated system that connects each organization in the production and supply processes from raw materials to the end user (New & Payne, 1995; Scott & Westbrook, 1991), and later the system was expanded to include reverse logistics processes (Baatz, 1995).

Today, supply chains, which are seen as a system that covers all processes between suppliers and customers in order to produce value that will meet the needs of customers with the least cost, have become very important in our time of global competition (Christopher, 2011, p. 13). Globalisation has also changed the way businesses act strategically and supply chains have turned into complex structures consisting of global networks in which critical connections are tried to be established outside while maintaining the management of internal processes (González-Loureiro et al., 2015, p. 21; Kabadayı & Dağ, 2020, p. 241; Long, 2022). Especially with the recent exponential technological developments, the disappearance of commercial borders on a global basis and the shortening of the lifecycles of the products cause supply chain strategies to gain more importance for businesses (Khan et al., 2020, p. 2; Seçmen et al., 2015, p. 69). In order to achieve sustainable competitive advantage, businesses have to establish an integrated system and manage this system effectively by solving the design problems of the supply chain network consisting of business actors such as suppliers, manufacturers, distributors, wholesalers and retailers (Paksoy, 2005, p. 435). The importance of strategic management of the supply chain has been concretely demonstrated by the fact that when a major supply chain problem occurs, the value of the business decreases by approximately 10 per cent (Hendricks & Singhal, 2003). In this case, it is seen that the success of a supply chain can be possible by ensuring the integration of all the businesses that make up the supply chain and their co-operation based on mutual trust on the basis of common goals. It has been proven that strategic supply chain management of the relationships between businesses leads to superior performance results, and the importance of implementing strategic management at the global level has also been demonstrated (Cheung et al., 2011). Strategic Supply Chain Management (SSCM) focuses on the development of dynamic capabilities such as responsiveness, resilience and reliability to improve supply chain efficiency and effectiveness. These capabilities enable them to meet customers' demands quickly and reliably while managing risks and balancing cost pressures (Madhani, 2020). With a well-integrated supply chain, the risks of co-operation between businesses are reduced and unnecessary redundancy in the chain is eliminated. A successful supply chain, on the other hand, will lead to more efficient and cost-effective operation and increase customer satisfaction, sales volume and market share (Kabadayı & Dağ, 2020, p. 241).

Strategic supply chain management involves the development of close relationships with both suppliers and customers. The most comprehensive strategic problem here is the coordinated optimization of the entire supply chain, and the determination of distribution channels in the strategic design of a supply chain is one of the most critical decisions that managers must make (Vidal & Goetschalckx, 1997, p. 2). Businesses whose main purpose is to provide benefits to customers (Acar & Köseoğlu, 2014, p. 46), if they cannot deliver their products to customers or are inadequate in distribution, producing a good product or carrying out promotional activities will not be beneficial (Öztürk, 2017, p. 182). This situation necessitates the effective design of the distribution channel, which is defined as the system (Segetlija et al., 2011, p. 788) that provides the flow of goods, services, information and financing from the producer to the end user by bringing together one or more businesses within the supply chain. Considering that logistics costs generally exceed 10 per cent of business turnover and occupy an important place among cost items (Gümrah, 2022, p. 353), it is seen as an important factor that the distribution channel structure, which is also referred to as exit logistics and seen as an important cost element, is flexible and agile enough to adapt to innovations and developments (Eroğlu et al., 2008, p. 95). Effective coordination between the parties will reduce costs and provide competitive advantage through approaches such as just-in-time (JIT) delivery, electronic data interchange (EDI) and early supplier

involvement (ESI). With these new approaches, international applications of distribution channel strategies are also diversifying. Global retail giants are striving for more flexible, agile and efficient distribution channel design by integrating innovative technologies such as data analytics and artificial intelligence into their systems to optimize their logistics networks. In addition, especially the efforts of developing countries to develop regional logistics centers are important initiatives for businesses to adapt to global trends. All supply chain and distribution channel strategies should be determined to improve customer service quality. The ultimate goal is customer satisfaction (Ceyhun, 2020; Czinkota et al., 2021).

There are various points to be emphasized on the design and management of distribution channels, which are seen as the customer-facing face of businesses (Eroğlu et al., 2008, p. 95). This is because the products should be offered to the end user with the comfort, cheapness and quality demanded under the most favorable conditions (Blythe, 2009). Businesses that invest in analyzing distribution channels for the right system succeed in gaining competitive advantage by gaining cost advantage (Dent, 2011, p. 11). Properly designed distribution channels and the presence of the required number of intermediaries in the distribution channel will prevent the increase in product costs and provide an effective flow of information and efficiency. For these reasons, businesses are turning towards flexible and profitable distribution channel strategies (Kaya, 2003, p. 2). In order for businesses to create an effective distribution channel system, determining and evaluating the factors affecting distribution channel choices will support businesses to determine their priorities correctly and will be decisive in their competitive position in the sector. This study aims to reveal the factors affecting the selection of the distribution channel, which is seen as a strategic supply chain function, and to investigate the interaction between the factors. The study also differs in terms of the methodology used. The results obtained will contribute to the literature and help businesses to determine their strategies correctly.

The study consists of four sections. In the first section, the existing literature is reviewed and the factors affecting the distribution channel are presented. In the second section, the purpose of the study and methodological details are explained. In the third section, the findings obtained as a result of the application are presented. In the final conclusion and recommendations section, theoretical and managerial implications and suggestions for future research are presented.

1. LITERATURE REVIEW

Research on distribution channels can be said to have begun in the 1950s. During this period, alongside studies on channel structure, physical distribution studies gained significant momentum. Especially in the 1970s, research on physical distribution intensified (Eroğlu et al., 2008, p. 96). Furthermore, in recent times, an increasing number of researchers are focusing on how distribution channel strategies in supply chains can be designed and how a product quality control strategy can be determined (Zhu, 2020, p. 2).

The literature indicates that the first study on distribution channels was conducted in 1962 by Aspinwall, and this study was expanded upon by Miracle in 1965 and Bucklin in 1966 (Rangan et al., 1992, p. 71). Another significant study on distribution channel selection was conducted in 1971 by Mallen. This study thoroughly examined the distribution channel selection process, emphasizing the need to minimize costs, increase sales, and consider control factors to achieve optimization in distribution channel selection (Mallen, 1971, p. 56). Lilien (1979, pp. 191–204), in a study focusing on Fortune 500 companies, particularly investigated the relationships between products and distribution channel structures influencing firms' channel selection decisions. Brasch (1981), in a study where a model for distribution channel selection was developed, stated that decisions depend on a company's resource adequacy, products, and targeted profit levels. Rangan, Menezes, and Maier (1992), in an applied study, researched channel systems that could be successful in distribution channels and highlighted the importance of effective communication within the channel as a key success factor.

Tam and Tummala (2001) emphasized in their study on supply chain network design that, in addition to operational costs, maintenance, technical support, and development elements should also be considered, defining network design as a problem with parameters such as performance, cost, quality, and technology. Ho (2007) used the AHP and goal programming models to determine warehouses to be used in distribution channel network design, taking into account cost and speed factors. Dağdeviren and Eraslan (2008) used the PROMETHEE ranking method in their study evaluating supplier selection in supply chain network design. In their research, they considered factors such as quality, price, supply performance, flexibility, technology, and distance. Serbest and Vayvay (2008) conducted research on the selection of the most suitable distribution channel within the supply chain using the fuzzy AHP (Analytic Hierarchy Process) method. In their study, factors influencing the choice of the distribution channel were considered to be risk factors, costs, and quality. Risk factors were evaluated at a macro level and were divided into geographical location, terrorism, political

stability, economy, and climate. Costs included freight costs, tariff and customs costs, and technology costs. Quality was assessed based on sub-factors such as on-time delivery, damage-free transportation, performance history, product acceptance rate, response to changes, and the quality of the shipping region.

Supçiller and Deligöz (2018), in their study on supplier selection in supply chain design, weighted quality, price, delivery, and management criteria using the AHP method. The study concluded that the quality criterion was the most prominent, followed by the price criterion.

Amiri, Salehi Sadaghiyani, Payani, and Shafieezadeh (2011, pp. 279–288) identified 11 factors under four main factors based on the Balanced Scorecard model to determine distribution center priorities in the supply chain. These factors included shareholder value increase, profitability, investment cost, delivery cost, inventory reduction, customer satisfaction, market share increase, proximity to customers, reaching new customers, customer loyalty, sales volume, quality improvement, new product development, equipment, on-time delivery, documents, and culture.

Czinkota and Ronkainen (2013) created a qualitative model that influences industrial channel options in their study, identifying factors that determine channel design and intermediaries as customer structure, business objectives, culture, competition, mission, cost, capital, continuity, market share, control, and communication.

Andrejić & Kilibarda (2015) used PCA-DEA approach for the selection of distribution channel types based on the main characteristics of the distribution channel such as delivery time, service quality, throughput, error rate and other different cost categories.

Saral (2017) made distribution channel choices in his applied study in a food company to determine the most suitable route to reach customers. The criteria for distribution channel selection in the study included safe delivery, delivery speed, type of reporting, after-sales services, and resource adequacy (personnel, storage services, etc.).

Küçük (2021) expressed that the healthy and correct selection of distribution channels would be the fundamental determinant of speed, cost, and customer satisfaction in reaching customers. According to Küçük (2021), factors affecting the effectiveness of distribution channels generally included market and consumer characteristics, producer characteristics, product characteristics, environmental factors, and sales and market characteristics.

Indap and Kocaoglu (2022, p. 223) stated in their study that there are four fundamental factors to be considered in distribution channel selection. These factors, which have 12 sub-factors, include market-related factors (potential customer structure, regional distribution of customers, and order size), product-related factors (product durability, unit value of the product, and technical structure of the product), intermediary factors (service and compliance with manufacturer policies), and business-related factors (financial strength, management skills, desire for channel control, and company contribution). In their research, they emphasized the need to optimize decisions, maximize responsiveness, and minimize operational costs in distribution channel selection using data envelopment analysis and the AHP method.

Stević, Mujaković, Goli and Moslem (2023), based on the hypothesis that effective management of distribution channels is a critical determinant of commercial success, investigated the most effective distribution channel strategy to improve business operations. They conducted their research on 6 factors affecting the distribution channel. These factors are; product characteristics, financial position of the business, consumer habits, costs, geographical concentration and the breadth of the production programme.

Andrejić, Pajić, and Kilibarda (2023) used FUCOM and ADAM methods in their study to develop practical decision support system (DSS) tools that can help decision makers make optimal decisions even under uncertainty in distribution channel selection. The criteria affecting distribution channel selection are inventory costs, distribution costs, delivery speed, service level, market coverage, product availability, order consolidation capability, reverse logistics and order tracking.

Most of the studies on distribution channels in the literature have focused on determining the channel structure, distribution network design, cost optimization and performance improvement. Since the 1950s, the foundations of physical distribution and channel structure have been laid, and especially since the 1970s, channel selection processes and optimization-oriented research have come to the fore. Most of the studies conducted in this period focused on minimizing costs, increasing sales and efficiency of logistics processes. Since the 2000s, studies on distribution channels have gone beyond the traditional approach and started to offer a broader perspective. In particular, distribution network and channel selection criteria have been analyzed with multi-criteria decision making methods. In addition, current issues such as customer satisfaction, environmental sustainability and risk management in the supply chain have started to find more space in the literature.

Studies on the factors affecting the selection of distribution channels have traditionally focused on cost and efficiency-oriented approaches. However, developing technology and transforming customer demands have expanded the scope of these factors and increased their strategic dimension. In particular, factors such as customer satisfaction and speed, supported by technological solutions, have started to create competitive advantage for businesses. In line with the current trends in the literature, this study addresses both traditional cost factors and factors such as customer satisfaction and after-sales services, which have gained importance in today's conditions. Thus, today's market dynamics, where customer expectations are increasingly personalized and service quality is decisive in competitive advantage, are also reflected, and it provides both theoretical and methodological contribution to the literature by supporting practical applications for decision-making processes.

In this study, which evaluates the factors influencing distribution channel selection in manufacturing companies, the necessary factors have been determined based on the information obtained from the literature, in accordance with the study's objectives, as presented in Table 1. When identifying the factors, care was taken to select simple and understandable factors that reflect the overall picture, rather than a large group of factors, as seen in some examples in the literature.

Table 1. Factors Affecting Distribution Channel Selection

CS	Customer Satisfaction	(Ceyhun, 2020; Küçük, 2021)
TC	Transport Costs	(Amiri et al., 2011; Bucklin, 1966; Serbest & Vayvay, 2008)
SC	Storage Cost	(Bucklin, 1966; Tam & Tummala, 2001)
LC	Labor Cost	(Andrejić & Kilibarda, 2015; Pedersen et al., 2010)
DS	Delivery Speed	(Andrejić et al., 2023; Küçük, 2021; Saral, 2017)
RA	Resource Adequacy	(Brasch, 1981; Huang et al., 2008; Saral, 2017)
ASS	After Sales Services	(Baki & Abuasad, 2020; Saral, 2017)

In a supply chain, the sustainability of distribution channels emerges as a strategic element. Therefore, decision-makers need to be very careful when establishing distribution channels and strive to minimize errors. Considering these aspects, evaluating the factors influencing distribution channels and identifying the features that appear more efficient and important than others in distribution channel selection will assist companies in making the right strategies for their distribution channel choices. This study is also unique in terms of the method used in evaluating factors, and it will contribute to filling the gap in the literature and shed light on future research endeavors.

2. PURPOSE AND METHODOLOGY OF THE RESEARCH

2.1. Research Purpose

In today's context, where competition is perceived to occur among supply chains, it is asserted that logistics capabilities are the most crucial factor determining the market performance and competitive abilities of supply chains (İyigün, 2019, p. 95). Indeed, ensuring that goods and services are readily available to customers at the desired place and time is of paramount importance for customer satisfaction. Accordingly, the establishment of an effective distribution channel will ensure that products and services are in the right place at the right time (Öztürk, 2017, p. 183). This study aims to explain the factors influencing business decisions regarding distribution channel choices and their respective degrees of influence and importance. It is believed that the findings obtained from this research will assist businesses in making informed decisions regarding their distribution channel strategies.

2.2. Methodology

Multi-Criteria Decision Making (MCDM) methods are widely used when it comes to making choices between multiple options, prioritizing options, determining criteria weights, or assessing interactions when multiple factors are involved (Pekkaya & Dökmen, 2019, p. 931). In this context, the identification of interactions among factors influencing distribution channel selection in the supply chain can also be achieved using MCDM methods. With MCDM, analyses can be conducted by obtaining expert opinions, and studies

can be shaped based on the opinions of a single expert or a group of experts (Korucuk, 2021, p. 145). One of the MCDM methods, the Decision Making Trial and Evaluation Laboratory (DEMATEL) method, utilizes matrices and diagrams to visualize the structure of complex causal relationships (Amiri et al., 2011, p. 281).

The DEMATEL method is a multi-criteria decision-making approach that analyzes variables to determine effective factors (Li & Mathiyazhagan, 2017, p. 3). The method has been widely and successfully applied in various disciplines such as decision-making in management (Tsai et al., 2015; Yazdi et al., 2020), e-learning (Tzeng et al., 2007), air transportation (Battal, 2018), intelligent systems (Chang, 2020), sustainable supply chains (Gandhi et al., 2015; Li & Mathiyazhagan, 2017), halal supply chains (Khan et al., 2020), distribution center location selection (Amiri et al., 2011), dealer performance evaluation (Kabadayı & Dağ, 2020), reverse logistics (Gürbüz & Çavdarıcı, 2018), operations research (Yang et al., 2008), and the acceptance of technological innovations (Öz & Kamacı, 2021). This method is considered one of the most effective analysis methods, as it determines the direct and indirect dependencies among criteria and identifies which factor is influencing and which is influenced, based on their importance levels (Diyadin & Koçak, 2018; Li & Mathiyazhagan, 2017).

The DEMATEL method facilitates the interpretation of complex relationships among factors by allowing decision-makers to visually observe the strength and direction of interactions among factors. It enables the analysis of how factors in the influenced group can be improved by decision-makers. Moreover, the method guides decision-makers to focus on factors that impact the solution (Kabadayı & Dağ, 2020; Tsai et al., 2015). Therefore, in this research, the DEMATEL method has been used to better understand the relationships among factors and to create a diagram based on factor weights. As in MCDM methods, data required for the evaluation of factors in this method were obtained from expert opinions and experiences.

The stages of the DEMATEL method are as follows:

Stage 1 - Creation of the Direct Relation Matrix: In the first stage, the relationships between factors are assessed in terms of their impact degree using a binary comparison scale by experts or decision-makers, creating the direct relation matrix. Although the binary comparison scale may vary, a four-level scale was used in this study, as shown in Table 2. Experts or decision-makers assign numerical values to indicate to what extent one factor influences another. In this way, the direct relation matrix (D) is obtained. D is of size $n \times n$, and it is obtained by averaging the relation matrices created by experts or decision-makers.

Table 2. DEMATEL Comparison Scale

Score	Meaning
0	No Influence
1	Low Influence
2	Medium Influence
3	High Influence

Stage 2 - Creation of the Normalized Direct Relation Matrix: In order to minimize the degradation of the integrated decision matrix, all values in the direct relation matrix are normalized by dividing them by the largest values in the row and column totals.

Stage 3 - Creation of the Total Influence Matrix: The normalized direct relation matrix is used to create the total influence matrix by subtracting it from the identity matrix and then multiplying it by itself.

Stage 4 - Evaluation of Influencing and Influenced Variables: Using the total influence matrix, calculations are made such that the sum of rows (D) and the sum of columns (R) are determined. This results in the values d_i , indicating the strength of influence of factors, and r_j , indicating the degree of being influenced.

Variables with high values of $d_i + r_j$ are considered to be more closely related to other variables, while variables with low values of $d_i + r_j$ are considered to be less related to other variables.

Variables with a positive value of $d_i - r_j$ belong to the influencing group, whereas variables with a negative value of $d_i - r_j$ belong to the influenced group.

Stage 5 - Creation of the Influence Diagram and Relationship Map: In the fourth step, the values of $d_i + r_j$ and $d_i - r_j$ calculated along with a predetermined threshold value are used to create an influence diagram. The threshold value can be determined by experts or decision-makers or obtained by averaging the total influence matrix. When creating the influence diagram, the $d_i + r_j$ values are placed on the horizontal axis of the coordinate plane, while the $d_i - r_j$ values are placed on the vertical axis.

2.3. Ethical Dimension of the Research

This research has obtained ethical approval from the Karamanoğlu Mehmetbey University Scientific Research and Publication Ethics Committee (Meeting Date: 29.03.2021, Decision: 02-2021/32).

3. FINDINGS

In this study, the DEMATEL method was utilized to analyze the relationships and interactions among factors influencing the choice of distribution channels. The application of the study was conducted using data obtained from businesses, including those with extensive dealer networks and engaged in export activities. To facilitate easy access due to time and cost constraints, the focus of the study was on the feed and dairy production sector in the city of Konya. In this research, individuals in decision-making positions, including at least bachelor's degree holders, were preferred with the assumption that they would be knowledgeable about the research subject, including some with master's degrees. The sample sizes in studies using the DEMATEL method typically range from 1 to 10. In this study, data were collected from 6 decision-makers holding positions such as general manager and department manager who agreed to complete the survey form.

During the application phase, a question matrix consisting of 42 questions was created based on the factors influencing the choice of distribution channels as indicated in Table 1. The factors in the matrix, as shown in Table 3, were validated by the participants, and numerical values, as indicated in Table 2, were filled in to obtain the necessary data for analysis.

Table 3. Sample Question

No Influence (0), Low Influence (1), Medium Influence (2), High Influence (3)		
Affecting Factors	Influencing Factors	Degree of Impact
Influencing Distribution Channel Selection of Customer Satisfaction (CS) ;	Impact on Transportation Cost (TC)	

The implementation of the research was carried out in line with the stages mentioned in the previous section as follows:

Stage 1: In this stage, the arithmetic average of the numerical values entered by the participants in the impact degree of the question matrix was calculated to create the direct relation matrix as presented in Table 4. The sum of rows and columns in the direct relation matrix was computed, and the largest value among these sums was determined.

Table 4. Direct Relation Matrix

Factors	CS	TC	SC	LC	DS	RA	ASS	Line Total
CS	0	2,33	1,83	1,83	1,83	1,67	2,50	12
TC	2,67	0	1,67	1,50	2,33	1,50	1,50	11
SC	1,50	2,00	0	2,33	1,50	2,50	1,67	12
LC	1,83	2,17	1,67	0	1,83	1,83	1,67	11
DS	2,67	2,50	1,83	2,00	0	2,00	2,33	13
RA	2,17	2,00	2,67	1,67	2,50	0	2,00	13
ASS	3,00	1,67	1,67	2,17	2,50	2,33	0	13
Column Total	14	13	11	12	12	12	12	

Stage 2: The numbers in the direct relation matrix were divided by the largest value in the sum of rows and columns, which is 14, to create the normalized direct relation matrix as presented in Table 5.

Table 5. Normalized Direct Relation Matrix

Factors	CS	TC	SC	LC	DS	RA	ASS
CS	0,000	0,166	0,131	0,131	0,131	0,119	0,179
TC	0,191	0,000	0,119	0,107	0,166	0,107	0,107
SC	0,107	0,143	0,000	0,166	0,107	0,179	0,119
LC	0,131	0,155	0,119	0,000	0,131	0,131	0,119
DS	0,191	0,179	0,131	0,143	0,000	0,143	0,166
RA	0,155	0,143	0,191	0,119	0,179	0,000	0,143
ASS	0,214	0,119	0,119	0,155	0,179	0,166	0,000

Stage 3: Initially, the values in the normalized direct relation matrix were subtracted from the identity matrix, and the inverse of the obtained value was calculated. This value was then multiplied by the values in the normalized direct relation matrix to create the total influence matrix, as presented in Table 6.

Table 6. Total Influence Matrix

Factors	CS	TC	SC	LC	DS	RA	ASS
CS	0,947	1,017	0,904	0,914	0,978	0,923	0,968
TC	1,051	0,824	0,848	0,847	0,951	0,863	0,867
SC	1,003	0,964	0,760	0,909	0,924	0,936	0,888
LC	0,990	0,943	0,837	0,737	0,912	0,869	0,861
DS	1,199	1,111	0,981	0,999	0,945	1,018	1,038
RA	1,150	1,066	1,012	0,966	1,077	0,879	1,003
ASS	1,221	1,072	0,978	1,014	1,101	1,042	0,903

Stage 4: The values of D_i+R_j and D_i-R_j were calculated by summing the rows (D) and columns (R) in the total influence matrix, as presented in Table 7. Thus, factors for which D_i-R_j was less than 0 (zero) were determined as influenced, while the others were considered influencers. Furthermore, by taking the average of the total relation matrix, a threshold value of 0.96 was obtained. Variables above this threshold value in the total influence matrix were highlighted in Table 8.

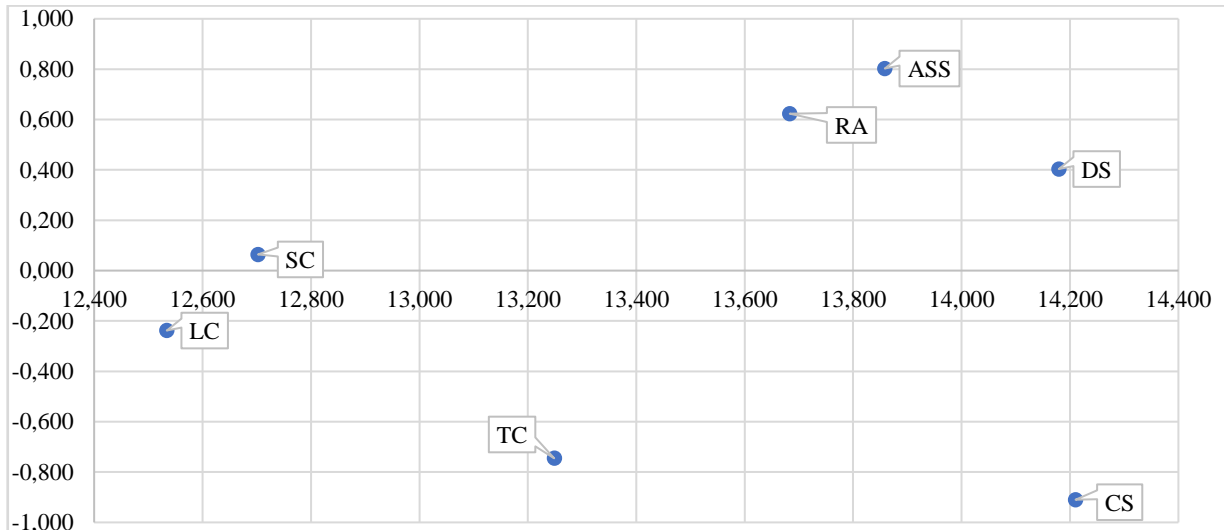
Table 7. Influencing and Affecting Variables

Factors	D_i	R_j	D_i+R_j	D_i-R_j	Impact Group
CS	6,650	7,560	14,210	-0,909	Affected
TC	6,252	6,997	13,249	-0,746	Affected
SC	6,383	6,319	12,702	0,064	Influencer
LC	6,148	6,386	12,534	-0,238	Affected
DS	7,291	6,888	14,179	0,403	Influencer
RA	7,153	6,530	13,683	0,623	Influencer
ASS	7,330	6,528	13,858	0,802	Influencer

Table 8. Values Above the Threshold

Factors	CS	TC	SC	LC	DS	RA	ASS
CS	0,97	1,02	0,90	0,91	0,98	0,92	0,97
TC	1,05	0,82	0,85	0,85	0,95	0,86	0,87
SC	1,00	0,96	0,76	0,91	0,92	0,94	0,89
LC	0,99	0,94	0,84	0,74	0,91	0,87	0,86
DS	1,20	1,11	0,98	1,00	0,94	1,02	1,04
RA	1,15	1,07	1,01	0,97	1,08	0,88	1,00
ASS	1,22	1,07	0,98	1,01	1,10	1,04	0,90

Stage 5: In this stage, an impact-relationship diagram and a relationship map were created based on the calculated values of D_i+R_j and D_i-R_j , along with the determined threshold value of 0.96. In the impact diagram, the horizontal axis featured D_i+R_j values, while the vertical axis featured D_i-R_j values. In the diagram, the horizontal axis indicates the level of relationship between variables, while the vertical axis represents the level of impact of variables.

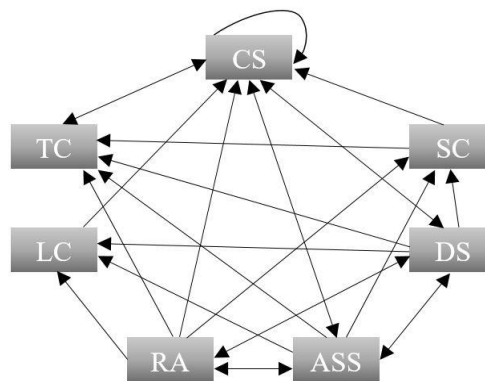
Figure 1. Influence-Relationship Diagram

According to the Impact-Relationship Diagram in Figure 1: Based on the D_i+R_j value on the horizontal axis, the factor with the highest value, CS (Customer Satisfaction), is more related to other factors and is of high importance. Following CS, the DS (Distribution Speed) factor also has a value close to it, indicating a high level of relationship with other factors. Following these, ASS (After-Sales Services) and RS (Resource Sufficiency) factors are also closely related to other factors.

On the vertical axis, the factor with the highest positive D_i-R_j value, ASS (After-Sales Services), has the most influence and priority over other factors. Following SS, RS (Resource Sufficiency) and DS (Distribution Speed) factors are also influential. However, the factor with the highest negative D_i-R_j value is CS (Customer Satisfaction), indicating that it is most affected by other factors. The factor closest in influence to CS is TC (Transportation Cost).

The relationship map depicting the relationships among factors influencing distribution channel choice is created based on the values above the threshold, as presented in Table 8.

Figure 2. Relationship Map



In the relationship map shown in Figure 2: The one-way arrows indicate the influencing factor pointing towards the influenced factor. In contrast, the two-way arrows represent the mutual interaction or influence between factors.

The results of the analyses are summarised in Table 9 below.

Table 9. Analysis Results

Factor Code	Factors Affecting Distribution Channel Selection	d_i-r_j (positive)	d_i-r_j (negative)	d_i-r_j (Impact Level) Order	d_i+r_j (Effect Level) Order
CS	Customer Satisfaction		X	7	1
TC	Transport Costs		X	6	5
SC	Storage Cost	X		4	6
LC	Labor Cost		X	5	7
DS	Delivery Speed	X		2	2
RA	Resource Adequacy	X		3	4
ASS	After Sales Services	X		1	3

CONCLUSION AND SUGGESTIONS

The factors influencing the selection of the distribution channel, a crucial function in a strategic supply chain, have been analyzed using the DEMATEL method, and the findings have been evaluated based on impact and relationship data as follows:

Theoretical Implications

According to the D_i+R_j values, which indicate the level of relationship between the factors influencing the choice of distribution channel, the factor with the highest value is CS (Customer Satisfaction). This result demonstrates that customer satisfaction (CS) is the most important factor in the selection of the distribution channel. Among the factors influencing the choice of the distribution channel, DS (Distribution Speed) is also considered highly significant due to its D_i+R_j value being close to CS. Other factors in high relationship with the factors influencing the choice of the distribution channel are ASS (After-Sales Services) and RA (Resource Adequacy), respectively. These factors also have the highest positive D_i-R_j values, indicating that they are the most influential factors in the selection of the distribution channel. On the other hand, factors with relatively lower D_i+R_j values, such as Transportation Cost (TC), Storage Cost (SC), and Labor Cost (LC), are in weaker relationships with other factors. Although cost elements are considered in the selection of the distribution channel, they have relatively less importance compared to other factors.

According to the D_i-R_j values, which indicate the level of impact among the factors influencing the choice of the distribution channel, ASS (After-Sales Services) is the factor with the highest value, signifying the strongest influence. Other highly influential factors include RA (Resource Adequacy) and DS (Distribution Speed), which are prioritized by businesses in the selection of the distribution channel. Although slightly limited in impact, the factor SC (Storage Cost) also holds a positive D_i-R_j value, making it an effective factor. However, the factor with the lowest D_i-R_j value, which indicates the highest level of being influenced by other factors, is CS (Customer Satisfaction). Other influenced factors with negative D_i-R_j values are Transportation Cost (TC) and Labor Cost (LC), respectively.

According to the results of this study, which analyzed the factors influencing the selection of a distribution channel, it is evident that factors such as post-sales services, distribution speed, and resource adequacy have a significant impact, particularly on customer satisfaction. Furthermore, customer satisfaction demonstrates a high level of correlation with all other factors. These findings underscore the preference for a customer-centric approach in the selection of a distribution channel, with a focus on elements that add value to the product, including post-sales services, distribution speed, and resources, such as employees, stores, vehicles, and technology. Additionally, the results indicate that these factors not only affect customer satisfaction but also have a considerable influence on transportation costs, with transportation costs being the most affected apart from other cost factors such as storage costs and labor costs. However, storage and labor costs are interrelated, with their values being quite close. These results are in line with the perspective put forth by Ho, Lee, and Ho (2010) that achieving a sustainable competitive advantage for businesses relies not only on cost minimization but also on maximizing the fulfillment of customer expectations within a customer-centric supply chain. It's important to note that the option that contributes the most to profits and general expenses doesn't always serve as the sole determinant in channel selection. Therefore, when making decisions regarding the choice of a distribution channel, prioritizing customer satisfaction and maintaining product quality throughout the entire supply chain is deemed crucial (Luo et al., 2022). Peker, Korucuk & Baki (2019) also emphasised that the most important obstacle to the smooth execution of logistics activities is the uncontrollable structures of customer attitudes and constantly changing expectations. The assertion made by Bucklin in his 1966 work titled "A Theory of Distribution Structure," stating that transportation and warehousing costs are significant factors affecting the choice of distribution channel, is noteworthy (cited in Indap and Kocaoglu, 2022, p. 224). This observation suggests that, in light of the developments up to the present day, paradigm shifts are occurring in the decision-making process for distribution channel selection.

The study reveals that post-sales services have emerged as the most influential factor in the choice of the distribution channel. Öz and Yılmaz (2016) have also noted that the degree of fulfilling post-sales services plays a significant role in the selection of distribution channels for businesses. Luo, Zhong, and Nie (2022) emphasize that when making distribution channel decisions for a manufacturer, the sustainability of product-related service quality is essential. This suggests that ensuring high-quality post-sales services is crucial for businesses in their distribution channel choices. Baki & Abuasad (2020) also stated that service quality has the highest impact on performance measurement. Andrejić & Kilibarda (2015) stated that delivery time has a significant importance in distribution channel efficiency along with service quality.

According to the results, in the context of distribution channel selection, the factor of distribution speed stands out for its differentiation in terms of both its impact on other factors and its interaction with them. In today's context, the speed and traceability of distribution processes have become crucial in distinguishing supply chains. Distribution speed is also seen as a process highly important to customers and influencing their purchase decisions (Indap and Kocaoglu, 2022). The prioritization of the distribution speed factor by businesses in the selection of distribution channels confirms that speed is one of the critical links that provide added value in the supply chain (Gültepe & Yılmaz, 2022, p. 265). The findings obtained also coincide with the results of Andrejić & Kilibarda (2015).

Managerial Implications

As a result of this study, examining the factors that influence the selection of a distribution channel, the following recommendations have been made:

- Customer satisfaction should be the primary focus in the selection of a distribution channel.
- Elements that provide added value to the product are more influential on customer satisfaction than cost factors.
- Simply delivering products to customers through the distribution channel may not be sufficient, especially sustainable distribution channels that also support post-sales services should be prioritized.
- Flexibility and agility are also effective in achieving customer satisfaction, so choices emphasizing distribution speed should be made in distribution channel design.
- In the selection of a distribution channel, intermediaries should possess adequate resources such as labor, technology, vehicles, and more.

In conjunction with all these recommendations, it is essential to assess the factors influencing the distribution channel not in isolation but as a whole. Furthermore, it is important that these factors should be evaluated in harmony with the elements of the marketing mix and in alignment with the other functions of the business.

Suggestions For Future Research

Competitive conditions drive businesses to embark on various endeavors, pushing them towards the necessity of establishing an effective distribution system with the lowest costs and the highest value. This study aimed to provide guidance to businesses in the critical realm of distribution channel selection, which is one of today's most significant competitive factors. In recent years, there haven't been many studies directly investigating distribution channel design. Therefore, this study, conducted using the DEMATEL method, not only stands out due to its unique methodology but also contributes to filling a gap in the existing literature. However, since this study was limited to Konya province and dairy and feed-producing businesses, it is recommended that future research should expand and enhance comparative studies using different locations, industries, and methods.

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