

ECONOMETRIC ANALYSIS OF SUPPLY CHAIN VALUES BETWEEN TÜRKİYE AND G7 COUNTRIES AND ITS REFLECTION IN DIGITAL MARKETING

TÜRKİYE İLE G7 ÜLKELERİ ARASINDAKİ TEDARİK ZİNCİRİ DEĞERLERİNİN EKONOMETRİK ANALİZİ VE DİJİTAL PAZARLAMAYA YANSIMASI

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ABSTRACT

The vast majority of the world's global wealth is found in the G7 countries. The growth of world trade can be seen in many areas from supply chain to production and marketing. The growth in the digital market and Türkiye's geographical position as the world's investment and production center has also improved the supply chain. Türkiye's importance has increased with the demand in the European continent and the development in digital marketing. Digital and e-commerce becoming effective due to digital life. As a result of the value of timely delivery of customer demands in marketing, logistics and digital marketing are starting to develop rapidly together. In this study, it is aimed to determine the econometric analysis of the supply chain, which has increased in importance in businesses, and its reflections on the digital marketing process in G7 countries and Türkiye for the last five years. We will reach important data in our field with the comparison we will make. As a result of our analysis, it will be an important source of data for both businesses and academic studies in the future.

ÖZET

Dünyadaki küresel zenginliğin büyük çoğunluğu G7 ülkelerinde bulunuyor. Dünya ticaretindeki büyüme, tedarik zincirinden üretim ve pazarlamaya kadar pek çok alanda görülebiliyor. Dijital pazarın büyümesi ve Türkiye'nin dünyanın yatırım ve üretim merkezi coğrafi konumu, tedarik zincirini de geliştirdi. Avrupa kıtasındaki talep ve dijital pazarlamanın gelişmesiyle birlikte Türkiye'nin önemi arttı. Akıllı telefonların, sosyal medya pazarlama durumlarının ve e-ticaretin dijital hayata bağlı olarak etkin hale gelmesi sonucunda dijital pazarlama tüm işletmeler için stratejik bir odak noktası haline gelmiştir. Pazarlamada müşteri taleplerinin zamanında teslim edilmesinin değerinin bir sonucu olarak lojistik ve dijital pazarlama birlikte hızla gelişmeye başlıyor. Bu çalışmada son beş yılda G7 ülkeleri ve Türkiye'de işletmelerde önemi artan tedarik zincirinin ekonometrik analizi ve dijital pazarlama sürecine yansımalarının belirlenmesi amaçlanmaktadır. Yapacağımız karşılaştırmayla alanımızla ilgili önemli verilere ulaşacağız. Yaptığımız analizler sonucunda gelecekte hem işletmeler hem de akademik çalışmalar için önemli bir veri kaynağı olacaktır.

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Today, we can see that export activities are of great importance in most developed and developing countries. It is also seen to have an impact on the economic growth of G7 countries. With globalization, world technology is also developing and making its impact felt. The fact that countries that interact with each other are economically interconnected reveals the importance of the supply chain in order for transportation to continue without interruption. Depending on economic growth, businesses need to progress as a whole. Digital technology makes itself felt in the 4.0 industrial revolution (Akkaya, 2022, p.777). With this process, consumers expect to have faster and higher quality products. The increase in the use of social media marketing and similar internet technologies has developed internet marketing, i.e. the digital marketing process (Köse, Yengin, 2018, p.110). With the realization of this by the business sector, it has also necessitated improvements in logistics from the distribution channels that will meet the expectations of the consumer. In addition to the fast supply of the product to the consumer, the importance of the logistics process has also increased. Accordingly, they have entered into a cooperative structure with each other and caused the supply chain to become necessary. They have started to work in cooperation with all parties from the product provider to the retailer by developing the supply chain in order to meet their demands by placing the customer at the center of their activities. In order to be effective in the competitive environment, an integrated supply system is known to be effective in the success of G7 countries (Aksoy & Taşkaya, 2020, p.1190). In Türkiye, which is moving forward by trying to realize the customer's demand directly or indirectly, it will be possible for the chain management to be done correctly in order to ensure the success of the entire ring from producers, warehouses and customers to cover all parties. For Türkiye, gaining a competitive advantage in the field of product or service can be achieved by making the supply chain sustainable.

1. SUPPLY CHAIN

The ability of an enterprise to deliver the product it produces to its customer, the end consumer, at the right time, place and price is possible with the use of supply chain management. Delivering the material to the customer at an affordable price and ensuring the circulation of information flow as well as material and cash flow in the supply chain will be of great benefit in order to gain advantage in the competitive environment. For businesses, the partnerships and meaningful relationships they will establish with other stakeholders that support this, as well as the companies that carry out supply business, will become important (Çelik & Cömertler, 2021, pp. 15-38.). Having the ability to respond to their customers in many areas from speed to quality and cost will offer a significant advantage in order to survive in a competitive environment. In order to ensure this situation, the information sharing between the companies has an important place in addition to ensuring an environment of trust between them. There is a model developed by the supply chain association. Here, they consider the activities carried out within a process;

- Planning,
- Resource Supply,
- Production,
- They put it together as a delivery.

Again, as criteria considered here;

- Supply chain,
- Safety,
- Cost,
- Utilization of assets,
- To be able to respond.

As a result of later studies, performance measurement has also become easier (Ağar, 2010, p.38).

2. SUPPLY CHAIN IN TÜRKİYE

While information is integrated throughout the supply chain process, the elements involved in it can also be managed correctly as performance (Qrunfleh and Tarafdar, 2014, p.345). In Türkiye, there have been studies on the functional development and understanding of the supply chain system. In the early days, there was no situation analysis of how the supply chain in Türkiye was handled as an end-to-end operation with its functions. Today, as a result of the uncertainties and difficulties in the economy with the trade wars in the world economy, business owners have to take some important measures in this direction (Naghdi et

al., 2021, p.12).

In Türkiye, when the supply chain is considered as a functioning process, the planning and purchasing processes are carried out with the enterprises' own resources and in a strategic manner, while the process is handled by using outsourcing and including the costs incurred in the process instead of doing the parts such as transportation and storage itself (Pehlivan et al., 2022, p.270).

Businesses that prioritize customer satisfaction also consider the shipment of their work to be fast and reliable while making it on time. Companies that consider this situation of great importance in the supply chain process, while increasing agility and reducing costs, are obliged to make the necessary process-oriented investments for the functioning of the system. In this process, while adapting to the requirements of the age, it also develops digitalization. It is seen that the first studies in this direction were carried out in relation to areal-oriented operations in production and stock and inventory control (Renz, 2021, p.1).

Uncertain situations in the economy first affect the supply chain in commercial terms. Large firms in the country see this situation in technology as a risk for themselves. When we look at the foreign firms, it can be concluded that all of them and the majority of the firms in Türkiye have a supply chain function. When we consider the companies that carry out transactions with Turkish and foreign partnerships, managerial differences between the material requirements planning, demand process and production functions are seen in the foreground (Rus & Blajan, 2021, p.176).

Managers working in the supply chain in foreign enterprises generally report to the deputy general manager in the enterprise with a directive position, and this is also the case in Türkiye. The vast majority of companies working in partnership with local companies carry out their operations in an integrated manner. They also enter into a strategic situation to differentiate against competition. In difficult economic situations, firms can survive against uncertainties if they provide the basic elements (Van Praag, 2007, p.50).

The priorities of companies in Türkiye in terms of supply chain;

- Reliability,
- On-time shipment,
- Agility is listed as.

Companies such as IBM Business Transaction Intelligence with AI, Anheuser-Busch, Parker Hannifin and Farmer Connect have gained competitive advantage in sales and orders thanks to the supply chain, while providing consumers with the appropriate service (IBM, 2023).

3. SUPPLY CHAIN IN G7 COUNTRIES

Representing more than half of the world economy in terms of net global wealth, the G7 countries are a grouping of Germany, the US, the UK, France, Italy, Japan and Canada. Although many countries are trying to assert themselves as an economic power today, the most important feature of the G7 countries is that they dominate the world economy. After World War II, the oil crisis emerged as a result of the failure of the Bretton Woods system and the Arab-Israeli conflict in 1973 (Çetin, 2022, p.2). The G7 group, the foundations of which were first laid in 1973, was finalized with the inclusion of Canada in 1976. This group, which was initially united economically, later expanded to include issues such as freedom, democracy and human rights.

With a large network of factories and warehouses all over the world, this group of countries reduces risk and cost in distribution spending. In order to control costs as well as growth, the G7 country community acts together and handles the process in a controlled manner. They are moving forward in a situation that will increase cooperation as a group in order to have a more resilient supply chain in the global economy (Liu, 2009, p.285). As the supply chain is felt on a global basis, the renewal of speed and related digitalization and innovation in payments has the potential to be of great benefit (Ballou, 2007, p.340). They recognize the importance of robust and coordinated sustained and strong improvement of human and economic needs in order to achieve economic growth (Vereshchahina and Shigol, 2020, p:34).

It is critical to handle this community process in a safe and appropriate manner, as it will become the pioneer of the global energy market. It constitutes an important case for regulating costs in the energy and supply system (IEA, 2015, p.380).

In addition to improving sustainability, G7 governments can commit to taking action now to improve the resilience of the global supply chain. Many companies operating in this union can also stay on the agenda of their governments by taking positive steps. The successes and challenges of the remarkable actions taken individually can be committed, albeit comparatively, to their progress. This can improve the environmental, social and food impact of supply chain operations.

They argue that the effective continuity of essential commodities despite global disruptions is crucial to the smooth implementation of the supply chain (Panayides and Lun, 2009, p.38). Coordination through the use of progressive policies and, in particular, the openness of the consultation process before the occurrence of any trade restrictions within the Community. This also prepares for timely cooperation in logistics, transportation procurement, planning and communication. Over the years, this has emerged as a competitive advantage depending on logistics management. The logistics competitiveness of the G7 countries is the expansion of the World Bank's performance power in the supply chain with the inclusion of technological power, environmental concerns and density. Preferences in locations are used with an integrated level decision-making framework by determining proximity levels. This makes countries belonging to the G7 group of countries more competitive than other countries.

The densities at the ports are high depending on the consumer demand for goods and the density of ports and factories in Asia, and the number of container ships arriving at the ports can be monitored through monthly reports from the measurement boards.

In the transportation and supply chain, there is an ever-increasing movement between ports, warehouses and stores due to high demand. The amount of imported loaded containers is one of the indicators of this situation.

Domestic production strategies within countries essentially eliminate risk management options, especially in terms of diversifying sourcing and procurement of essentials. Global sourcing can ensure that products are sourced from the most efficient and cost-effective supplier and provide greater access to meet future global demand. The economic health of the G7 countries can withstand market downturns in today's interconnected world. For supply chains to serve as a source of resilience, governments and the public need to have confidence that markets are and will always remain open and fair. The G7 are renewing their common purpose and commitment to open, well-regulated global markets that support a green transition, inclusive growth and economic resilience, while building for the better, in line with what is seen as the future of the global economy (Ross, 2013, p.288).

By ensuring access to critical raw materials in the supply chain, cooperation ensures that the global market is reliable and predictable (Wu, Chuang and Hsu, 2014, p.128). International agreements between them can increase circularity. They continue to intervene decisively against factors that undermine confidence.

4. DIGITAL MARKETING

Digital technologies, which have started to take place in all areas of human life, have brought radical changes in operations (Ersöz, & Özmen. 2020, p.42). In many countries of the world, consumers, who have become more advanced and accelerated this situation, have transformed from the traditional purchasing process to the digital process we call modern (Köse, & Yengin, 2018, pp. 77-111). Businesses are trying to make their products commercially effective in these channels by realizing that digital marketing is effective in many internet areas. In an effort to deliver their products to the customer at the door, company owners have made changes in the shaping of commercial goods. The rapid evolution in digital marketing has led to changes in advertising and promotions in this field by directing commercial processes to the digital field (Gökşin, 2018). The differentiation of the products consumed by digitalization other than traditional ways has enabled people to become privileged through the internet channel. Businesses that have the opportunity to reach a wide range of consumers quickly and at any time have adapted to the competitor and digital stance in pricing (Kuruca, et al. 2022, p.88-113). Globally influential businesses are trying to develop this process in the retail sector in such a way that there will be continental stores. Global sales are not only limited to the product, but also in the service sector, developing in areas such as tourism and transportation, and processes have started to progress in virtual environments. This marketing field, which develops systematically and consistently, is making potential progress in marketing in parallel with digitalization (Eti, H. S. 2021, pp. 42-52).

While progressing in depth in marketing strategies, business managers who want to realize target market studies on a global basis show themselves as an important set of values to use the power of digital marketing (Gedik, 2020, p.63-75). Today, they should create the process in harmony with the latest innovations by growing their business by determining the marketing road map in an integrated manner in the global process (Yeşil, 2010, pp. 22-72 22). This situation will be among the priorities of companies that want to move forward.

5. METHOD AND FINDINGS

In this study, time series data are used to analyze the progress in the supply chain process between Türkiye and the G7 countries in certain periods. With this study, it is aimed to determine the missing and necessary elements of the supply chain process, which has become increasingly important in providing products to customers more quickly, by making a comparison between

both Türkiye and the G7 countries that have rapidly completed their economic development. The data we used in our study were obtained from World Bank sources. Since the data we are dealing with here are in the form of time series, the data must be stationary. Therefore, whether the variables are stationary or not, and if they are stationary, their stationarity levels are tested with ADF (Augmented-Dickey Fuller) unit root test.

When working with data in the form of time series, as in this study, it is important that the obtained series are at the same level and stationary. Otherwise, although there is no real relationship between the variables, a relationship may appear due to the trend of non-stationary variables (Chen and Chen, 2009; 384).

If the degree of integration of the series is not stationary at the same level, it will not be possible to apply both the Engle-Granger cointegration analysis developed by Engle and Granger (1987, pp.251-276) and the Johansen cointegration technique developed by Johansen (1988, pp.231- 254) and Johansen and Juselius (1990).

Because in these approaches, all series are stationary at level $I \Delta Y_t = \beta_0 + \sum_{m=1}^M \beta_m \Delta Y_{t-m} + \sum_{m=0}^M \beta_m \Delta X_{t-m} + \beta_3 Y_{t-1} + \beta_4 X_{t-1} + u_t$ In order to determine the lag length, critical values such as Akaike, Schwarz and Hannan-Quinn are used and the lag length that provides the smallest statistical value is determined as the lag length of the model. However, if the error terms obtained with the selected statistical value contain autocorrelation problem, this model cannot be selected as the appropriate model. If the autocorrelation problem persists in a similar way, this process is repeated until this problem is eliminated (Karagöl E. et al., 2007, pp. 72-80). The series should not be stationary and should become stationary when they are differenced at the same degree, that is, the stationarity orders of the series should not be different (Altıntaş, 2008, pp.15-46).

Especially in multivariate models, this method is used when some of the series are stationary at level $I(0)$ and some are stationary at first differences $I(1)$ (Şoltan, 2009, p.61). The bounds test approach is based on the estimation of an unrestricted error correction model using the least squares method. The unrestricted error correction model can be represented as in equation (1).

6. ECONOMETRIC ANALYSIS OF DATA

In Table 1, unit root tests for the change in Ratio are performed.

Table 1 ADF Unit Root Test Results at Level Values

	ADF	Probability Value
Fixed	-1,26	0,55
With Constant and Trend	-0,20	0,93
None of them	-0,26	0,53
Total		

There is no convergence between Türkiye and G7 countries. The finding here is that the movements depend on the years in the series. It can be interpreted as changing permanently and over time. It would be appropriate to continue working by purifying these series from their dependence on years. They did. If different unit root tests used in this study had been performed, there might have been different time periods considered or how the year-dependent feature of the series was handled.

Table2. Phillips-Perron Constant Model Unit Test Results

	t-statistic	Probability Value
Fixed	-1,05	0,63
With Constant and Trend	1,67	0,99
None of them	-0,27	0,53
Total		

There is no convergence between Türkiye and G7 countries.

The PP test developed by Phillips and Perron (1988), which is included and frequently used in the literature, was used. Before determining whether the values in the supply chain in Turkey and G7 countries move together, the stationarity of our data must be tested. In order to ensure reliability in the study, the data taken by province must be stationary at the first level. In order to determine the stationarity of the series, Phillips Perron Unit Root test, which is frequently preferred in the literature, was performed. Before starting the cointegration analysis, Phillips Perron Unit Root test was performed using non-parametric methods and the results are shown in Table 2. According to the results shown in Table 2 of ADF and PP unit root tests, the null hypothesis of a unit root cannot be rejected. Accordingly, there is no convergence in logistics performance indices between G7 countries and Türkiye.

7. CONCLUSION

Supply Chain, once used only for the business logistics team situation, is now used as a unit located there. It covers all areas from cars to refrigerators and from sweaters to bread, from delays and backlogs. It is the unit that is problematic from producing materials to arranging them on shelves in warehouses and again from transporting these products to the customer's door. Again, this is largely handled by the private sector. This area, whose impact is felt in all areas from the local to the global, must move forward undisturbed. The supply chain system, which is incomprehensible in its presence, but its lack is obvious in its absence, should continue to be implemented in a more coordinated and digital way.

In today's competitive environment, warehouses are an important part of supply chains. In parallel with the developments in technology, customer expectations are increasing, especially in the e-commerce sector. In order to meet small orders placed over the internet, high service levels, fast and error-free delivery, e-commerce warehouse storage racking systems must also enable fast and accurate picking and delivery. To improve order picking efficiency, fast-moving items should be stored close together; pallets should be divided into bins or smaller quantities and stored near the order fulfillment area. E-commerce storage racking systems should allow for the storage of many small items.

Economic growth in exports and imports also regulates the supply chain activities of the G7 countries. These positive activities bring competitive advantage to companies in the business world. In the supply chain where cost, quality and efficiency are constantly gaining value, businesses develop their activities in this direction and guide the companies they receive service from to act in this way. Thus, as a result of the mutual trust to be developed with the seller and retailer along the chain, significant advantages will be gained for the competitive situation. Here, it can be ensured by the appropriateness of the information flow process.

Consumer expectations and demands have also changed thanks to science and technology. Gaining advantage over their competitors is among the important efforts of today's global businesses. The logistics k process, which will ensure that it is safe as well as being fast and cheap, which is among the expectations of customers, is one of the necessary conditions for today's business world to hold on to the global dimension. This situation of digital marketing has also caused a change in the global logistics system. The change in digital marketing and supply chain has caused businesses to create innovative business models.

In the majority of similar studies conducted to date, many periodic relations between Türkiye and the G7 countries have been stated. In addition, when the causality relationship between countries regarding the supply chain is examined, it has been determined that there is progress in the causality process towards the G7 countries with which Turkey has been compared over time. The differences in the process were tried to be determined by researching the comparison of the supply chain with the goods, which has become increasingly important in recent years and is one of the important elements of marketing. As a result

of the analyses, long-term predictions are made that there are some relations between Turkey and the G7 countries depending on the years and that Turkey can reach the levels of these countries with some arrangements.

As a result, some suggestions are made for similar studies to be carried out in this manner regarding the situation of the supply chain. It is suggested that the differences mentioned here can be corrected over time and that it would be appropriate to conduct a similar study for re-evaluation in order to evaluate the result. In addition, it is recommended that the scope of this research be expanded and other topics be addressed. For the other values discussed, it is recommended to investigate causality relationships between countries.

Based on the analysis results, recommendations can be made for businesses that will export and import based on this study to digitalize themselves regarding the supply chain and evaluate their capital and investments in this field. Academically, it is suggested that similar studies be carried out by stating that the value of the supply chain as a distribution element in the field of marketing is increasing.

AUTHOR DECLARATIONS

Declarations of Research and Publication Ethics: This study has been prepared in accordance with scientific research and publication ethics.

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