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IMPACT OF MAJOR CRISES ON CONTAINER SHIPPING IN TÜRKİYE: THE CASE OF THE COVID-19 OUTBREAK*

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ABSTRACT

The Covid-19 outbreak is a recent major crisis with a broad and lasting impact on the economy, health, and society, rather than an immediate and temporary impact. In the first months following the declaration of the pandemic, the container shipping sector in Türkiye was impacted by restrictions and quarantine measures. During this period, there were reductions in ship calls, slowdowns in ship operations, and losses in storage and warehousing services. Although container volumes in Türkiye were less impacted than the global average, the previously stable growth trend came to a halt. This study examines the impact of the Covid-19 outbreak on container shipping in Türkiye as a case study. Relevant literature and statistical data were analyzed to provide a detailed examination of the specific impacts in Türkiye. In addition, the study aims to support national goals and increase resilience to future crises by providing recommendations for the stakeholders and national policy makers. These recommendations include the adoption of digitalization and blockchain technologies, regional expansion of maritime trade, considering storage strategies and developing logistics infrastructure.

Keywords: Covid-19 Outbreak, Container Shipping, Turkish Maritime Sector, Major Crisis, National Goal

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BÜYÜK KRİZLERİN TÜRKİYE'DEKİ KONTEYNER TAŞIMACILIĞINA ETKİSİ: COVID-19 SALGINI ÖRNEĞİ

ÖZ

Covid-19 salgını, anlık ve geçici bir etkiden ziyade ekonomi, sağlık ve toplum üzerinde geniş ve kalıcı bir etkiye sahip olan yakın tarihli büyük bir krizdir. Pandeminin ilanını takip eden ilk aylarda, Türkiye'deki konteyner taşımacılığı sektörü kısıtlamalar ve karantina önlemlerinden etkilenmiştir. Bu dönemde gemi uğraklarında azalmalar, gemi operasyonlarında yavaşlamalar, depolama ve antrepo hizmetlerinde kayıplar yaşanmıştır. Türkiye'deki konteyner hacimleri küresel ortalamadan daha az etkilenmiş olsa da daha önce istikrarlı olan büyüme eğilimi durma noktasına gelmiştir. Bu çalışma, Covid-19 salgınının Türkiye'deki konteyner taşımacılığı üzerindeki etkisini bir vaka çalışması olarak incelemektedir. İlgili literatür ve istatistik veriler analiz edilerek Türkiye'deki spesifik etkiler detaylı bir şekilde incelenmiştir. Ayrıca çalışma, paydaşlar ve ulusal politika yapımcılar için tavsiyeler sunarak ulusal hedefleri desteklemeyi ve gelecekteki krizlere karşı dayanıklılığı artırmayı amaçlamaktadır. Bu tavsiyeler arasında dijitalleşme ve blok zinciri teknolojilerinin benimsenmesi, deniz ticaretinin bölgesel olarak genişletilmesi, depolama stratejilerinin dikkate alınması ve lojistik altyapısının geliştirilmesi yer almaktadır.

Keywords: Covid-19 Salgını, Konteyner Taşımacılığı, Türk Denizcilik Sektörü, Büyük Kriz, Ulusal Hedef

1. INTRODUCTION

In the last century, major global crises that temporarily slowed the growth rate of the global economy included the Great Depression of 1929, the oil crisis triggered by the 1973 oil embargo, and the financial crisis that began in Thailand in 1997 and quickly spread across Asia. However, the 2008 economic crisis, which was one of the major global crises of the 21st century, has had a more lasting impact on the global economy than the crises of the last century (Esmer, 2021). The maritime industry is facing major crises, which are causing temporary disruptions in global supply chain integration (Notteboom et al., 2021).

Container shipping operations may experience disruptions and a decrease in volume during major crises (Toygar et al., 2023). The largest decline of the 21st century was experienced in global container shipping volumes, in 2009 (UNCTAD, 2022). Global container shipping volumes steadily increased between 2000 and 2009. However, in the first six months of 2009, there was a decline of about 16% due to the 2008 economic crisis (Kalgora and Christian, 2016). Similarly, the Covid-19 outbreak is a recent example of a global challenge with far-reaching economic, health, and

social impacts, unlike other major global crises that have immediate but temporary impacts. In response to the outbreak, companies have had to create work environments that comply with health and safety standards set by authorities to protect their workers while maintaining commercial activities. The outbreak has had a profound impact on the container shipping sector (Huang et al., 2022). In February 2020, global container shipping was down 8.6% year-on-year (ITF, 2020). The outbreak has resulted in a global shortage of containers, leading to increased shipping costs and freight rates, as well as reduced efficiency in port operations (Kuźmicz, 2022; Zhou et al., 2022; Carrière-Swallow et al., 2023). Consequently, container shipping volumes have fallen to their lowest levels since the 2008 economic crisis (Notteboom et al., 2021).

Accurately defining the uncertainties and challenges caused by major global crises is crucial. The uncertainties and fluctuations caused by the outbreak on a global scale have significantly impacted the Turkish container shipping sector. It is therefore of significant importance to gain a clear understanding of the specific impact of the outbreak on this sector and to analyze how the sector has responded to this challenge. The study aims to improve the capacity of container shipping stakeholders to manage similar major crises in the future by providing an analysis of the impact of the Covid-19 outbreak on the container shipping sector in Türkiye. Additionally, it provides recommendations for national policymakers, with a strategic perspective towards national goals for effectively managing the impact of major global crises on Turkish container shipping. This study employs a case study approach, as a comprehensive and context-specific analysis is required to understand the specific impact of the outbreak on the Turkish container shipping sector. This method allows for a focused examination of the challenges and responses to the outbreak within the Turkish maritime context. It plays a pivotal role in the development of effective action plans and recommendations at the national level. Although this study does not involve direct fieldwork for data collection, it has been conducted through the analysis of existing data. Studies and statistical data were reviewed to analyze in detail the contextual conditions and causal relationships within the sector. The studies included an examination of the challenges posed by the Covid-19 outbreak on container shipping, based on a review of relevant literature. Statistical data were provided by the Ministry of Transport and Infrastructure, Republic of Türkiye, the Port Operators Association of Türkiye, the Chamber of Shipping of Türkiye, and the Association of International Forwarding and Logistics Service Providers.

2. CONCEPTUAL AND METHODOLOGICAL FRAMEWORK

2.1. Türkiye-Centered Container Shipping

Strategically located at the crossroads of Asia and Europe, Türkiye is a key crossroads for East-West and North-South trade routes. Türkiye is also an important transit point between the Far East and Europe. It is one of the countries that form part of the Europe-Caucasus-Asia shipping corridor. It also connects the middle corridor of the Belt Road Initiative. Table 1 is based on Türkiye's foreign trade data. This table shows that Türkiye's foreign trade involves many countries in different regions, both near and far.

Over the past decade, maritime has become the mode of transport with the largest share of import and export cargoes in Türkiye's foreign trade, both in terms of value and volume. There are a total of 216 coastal facilities (docks, buoys, dolphins, and platforms) in Türkiye. Of these coastal facilities, 192 have a port operating license (Port Operators Association of Türkiye, 2023). In 2022, the share of maritime transport in the value of imports from these coastal facilities was 65.74%. According to the export transport data of the same year, the share of maritime transport in exports was 59.56%. In terms of volume, maritime transport accounted for 92.22% of imports in 2022. In addition, the share of maritime transport in exports was realized as 80.08% (UTİKAD, 2023). These percentages in Türkiye's foreign trade were reflected in a cargo handling volume of 542,610,283 tons in Turkish ports (MTI-GDMA, 2023). The distribution of Türkiye's foreign trade transport in 2022 was as follows: 32% liquid bulk, 30% solid bulk, 24% containers, 12% general cargo and 2% vehicles (Chamber of Shipping-Türkiye, 2023). Between 2013 and 2022, it was observed that the loading volume in Turkish ports increased from 163 million tons to 250 million tons, and the discharge volume in the same period increased from 225 million tons to 292 million tons (Port Operators Association of Türkiye, 2023).

Table 1: Top 5 Countries for Türkiye's Exports-Imports (2022, USD Million)

Export			Import		
1	Germany	21,141,783	1	Russia	58,848,948
2	USA	16,885,325	2	China	41,354,561
3	Iraq	13,750,276	3	Germany	24,033,074
4	UK	13,004,798	4	Switzerland	15,335,897
5	Italy	12,386,045	5	USA	15,228,078

Source: (TURKSTAT, 2023).

In 2022, Türkiye has forty-six authorized port operations to serve container ships and their cargo. However, only twenty-eight of these operations provide such services. Port Operators Association of Türkiye (2023) reported that container handling is most prevalent at ports located in the Marmara Region, accounting for 62% of all operations, followed by the Mediterranean Region at 22%, the Aegean Region at 15%, and the Black Sea Region at 1%. Notably, the amount of container traffic in Türkiye and its surrounding nations has increased in recent years. Numerous Mediterranean ports are directly connected to the primary service routes linking the Far East and Europe. These ports are developing integrated connection lines with principal container service routes (Polat, 2022). Türkiye's strategic location on important trade routes allows for container shipping from end to end, encompassing numerous countries. Additionally, Türkiye is placed 12th globally for container ship calls with more than one thousand gross tonnages. Upon analysis of container handling in Türkiye, it is evident that containers have a shorter duration compared to the global average, specifically those with an amount of 1500 TEU and below as well as 4000 TEU and above (UNCTAD, 2021). This could potentially prompt global container shipping operators may consider arranging weekly shipping schedules based in Türkiye.

There are seventy-one Harbour Masters in Türkiye. In 2022, container handling services were provided at port operations located within the administrative boundaries of twenty Harbour Masters. Of the containers handled at the ports within the administrative boundaries of these Harbour Masters, 76.9% were foreign trade loads, 6.64% were cabotage loads, and 16.46% were transit loads. The top five Harbour Masters in terms of container handling volume (Ambarlı, Kocaeli, Mersin, Tekirdağ, and Aliğa) reached 10,183,178 TEU, constituting 82.3% of the total handling in all port operations (MTI-GDMA, 2023). Four of these harbour masters are among the top one hundred ports according to the container handling volumes within their administrative boundaries

according to Lloyd's List's 2023 report. These ports are ranked as follows; seventy-four. Ambarlı (2,867,215 TEU), eighty-nine. Kocaeli (2,059,310 TEU), ninety-two. Mersin (1,988,269 TEU), and one hundred. Tekirdag (Asyaport & Ceyport Tekirdag-1,773,148 TEU) (Lloyd's List, 2023). The regional clustering of container shipping in Türkiye and the good operational efficiency of the ports in these regions have also been reflected on the container handling volumes. Between 2012 and 2022, the container handling volume in Turkish ports has increased. In 2012, 7,192,396 TEU containers were handled, but by 2022, this had increased by about 72% to 12,366,382 TEU (UTİKAD, 2023). To gain a comprehensive understanding of the adverse impact of Covid-19 outbreak on container shipping, this study evaluates the repercussions of the outbreak on the container shipping sector in Türkiye.

2.2. Impacts of Covid-19 Outbreak on Container Shipping Centered in Türkiye

During the outbreak, the implementation of quarantine and restriction policies across European Union countries, which conduct the highest volume of foreign trade with Türkiye, has resulted in customs delays at border crossings, leading to the formation of extensive lorry queues. The decline in efficiency at border crossings has resulted in longer shipping processes and less reliable estimated time of arrivals (Tutar et al., 2022). Therefore, challenges caused by Covid-19 outbreak directly impact Türkiye-based commercial activities that provide connectivity features on the world's busiest trade routes. Similarly, to the impacts on a global scale, the Covid-19 outbreak has caused a decrease of between 20% and 30% in logistics services in Türkiye. During this period, disruptions and malfunctions have occurred in logistics systems, and some measures have been gradually taken as awareness of the outbreak increased (Tanrikulu and Odabaş, 2021). In this context, various restrictions have been implemented, including the phased closure of border gates in road transport, entry-exit bans on metropolitan cities, the continuation of intercity transport despite the cessation of passenger transport voyages, the complete cessation of train services in railway transport, the introduction of some new regulations in urban transport, and the reduction of public transport voyage numbers to the lowest level (Bakırcı, 2020).

The first challenges regarding the impact of the Covid-19 outbreak on container shipping in Türkiye have been the decrease in the share of maritime transportation in foreign trade activities and the shortage of empty containers. In Türkiye's imports, while the value-based share of

maritime transportation was over 60% in the period of 2010-2020, this rate fell below 60% in the first three quarters of 2020. A comparable situation has been observed in export data as well. While the ratio of maritime transportation in Türkiye's exports steadily increased between 2015-2018, it fell below 60% in the first three quarters of 2020 (UTİKAD, 2021).

In container shipping, the failure to position necessary containers in the appropriate regions results in the storage of empty containers in warehouses located in regions with low export demand. This, in turn, leads to a shortage of containers in regions with high export intensity. This situation constitutes a significant challenge that prevents shipping demands from being met effectively and efficiently. Moreover, even if the container volume demand in a region is at a level that can meet the demand, a container shortage challenge can be encountered. For example, 20-foot containers are often preferred in the shipping of heavy cargoes such as marble. If cargoes that require 40-foot containers are imported in a region with a high volume of marble exports, even though the number of containers in the region is adequate, a shortage of containers will arise due to the unavailability of suitable containers. As a result, 20-foot containers that are empty will need to be positioned in the region (Balci, 2020).

Empty container positioning is a common occurrence in Türkiye due to the imbalance between export and import cargo. Furthermore, the global shortage of empty containers has had an impact on shipping operations in Türkiye. As can be seen in Table 2, although there has been a consistent yearly increase in the shipping of empty containers of all sizes (18.33% in 2017, 8.61% in 2018, 7.77% in 2019), there was a decline of 1.75% in 2020. This situation demonstrates that fluctuations in Türkiye's container shipping sector are influenced by global economic factors and the outbreak.

Table 2: Türkiye Container Shipping Volumes by Container Size

	Total Container Handling (TEU)				
	2016	2017	2018	2019	2020
20'	2,163,764	2,498,642	2,613,162	2,594,908	2,527,410
40'	4,589,648	5,143,890	5,665,514	6,262,760	6,414,542
40' Big	41,983	40,950	37,883	10,274	8,559
20'	693,326	784,882	813,693	780,627	735,666
40'	1,267,410	1,534,036	1,704,440	1,933,774	1,930,148
40' Big-	5,843	8,136	9,306	9,495	10,325
Total	8,761,974	10,010,537	10,843,998	11,591,837	11,626,650

Source: MTI-GDMA (2021). Note: Prepared based on the data of the General Directorate of Maritime Affairs 2016-2020.

The Covid-19 outbreak has caused significant disruptions in the global supply chain, including challenges faced by ports in meeting demands (Dirman, 2022). Due to the outbreak, port operations have been affected resulting in extended operation times. In regions with intense quarantine practices, the number of port calls has decreased (Bai et al., 2022). In Türkiye, competent authorities have promptly implemented precautionary policies to mitigate the impacts of Covid-19 outbreak. It is known that intercity transport has been stopped and transportation has been closed in thirty metropolises and Zonguldak provinces. Similarly, in the Turkish maritime sector, measures against the Covid-19 outbreak have been quickly implemented and these measures have been quickly implemented in all ports (Uzun, 2021). Ministry of Health General Directorate of Health for Borders and Coasts of Türkiye and Ministry of Transport and Infrastructure, Republic of Türkiye have made decisions regarding ships scheduled to arrive in Türkiye. In this context, contact should not be allowed without following the free pratique procedure (MTI, 2020). A directive has been prepared stating that the disinfection process will be conducted at all entry-exit points of the country, including ports, and vehicles in international circulation (Chamber of Shipping-Türkiye, 2020a). In addition, various measures have been taken to reduce risks in maritime transportation and minimize contact. In this context, driverless and passenger less trailer loads have been made to ships. Ship agency offices and port operators have conducted contactless delivery procedures, complying with social distancing regulations, and using protective gear. The use of documents such as sea waybills and telex releases has become widespread. If the original bill of lading was in the possession of the owner of the cargo, it was possible to send for the consignment to be sent to the agent via the shipping method or other non-contact methods (Chamber of Shipping-Türkiye, 2020b).

Structural breaks may occur in export and import cargoes during periods of crisis in Turkish ports (Açık, 2021). When examining the volumes of container shipping in Türkiye in recent years, a more optimistic picture is formed compared to the world in general. However, it is evident that the stable increasing trend of past years has been disrupted. Table 3 shows that there were significant increases in the volumes of container shipping in the period before 2019. In 2020, although an increase of 0.3% is observed in container volumes, it is seen that this increase is behind the past periods.

Table 3: Container Shipping Volumes in Türkiye According to Regimes

Year	Export	Import	Cabotage	Transit	Total
2016	3,543,804	3,607,086	738,312	872,772	8,761,974
2017	3,866,874	3,975,205	935,521	1,232,937	10,010,537
2018	4,160,124	4,259,029	935,661	1,489,184	10,843,998
2019	4,594,647	4,540,201	753,267	1,703,722	11,591,837
2020	4,618,225	4,480,472	731,352	1,796,601	11,626,650

Source: MTI-GDMA (2021). Note: Prepared based on the data of the General Directorate of Maritime Affairs 2016-2020.

Upon examination of Table 3, it is apparent that there has been a decrease in imports and cabotages compared to the previous year. However, the stable increases in transits that occurred in previous periods did not occur. Consequently, several sectoral institutions and academics have conducted numerous studies to examine the impacts of Covid-19 outbreak and provide solutions to the challenges. The study examining the hinterland connectivity of Mersin Port categorizes the Covid-19 outbreak as a global economic crisis and a threat (Zeybek, 2021). İncaz and Karaköprü (2021) conducted a study based on the ports in the Ambarlı region, which has the highest container handling volume in Türkiye, in order to determine the negative impacts of Covid-19 outbreak. Ayaz et al. (2022) conducted a study to determine and prioritize strategies for the impacts of Covid-19 outbreak on port operator located in Türkiye. The study conducted by Kurt (2023) examines the impact of Covid-19 outbreak on port operations in both micro and macro contexts and evaluates these impacts on Turkish port operations. The collaboration between the university and the logistics sector in Türkiye aimed to evaluate the potential impact of Covid-19 outbreak being declared outbreak over a three-month period. In the study participated by 104 experts serving in the sector, 95% of the participants (83% very much, 9% medium and 3% less) stated that Covid-19 will have negative impacts (Okumuş, 2020). In the Covid-19 outbreak impact analysis report prepared by the Port Operators Association of Türkiye (POAT), the reflections of Covid-19 outbreak, which was declared a pandemic in March 2020, on port operators in Türkiye were evaluated based on data obtained from thirty-six different port operators. Representatives of all participating port operators stated that ship calls had decreased by at least 5%. In addition, data collected from participants showed that ship operations stopped at 11% of ports serving Ro-Ro ships and 33% of ports serving cruise ships. According to the report, negative impacts also occurred in bonded warehousing and storage services. According to the representatives of the port operators participating in the research, the volume losses in bonded warehousing and

storage services reached 25% in packaged food cargoes, 22% in dry bulk cargoes and 8% in liquid bulk cargoes (Port Operators Association of Türkiye, 2020a). In the study conducted to determine the situation in port operators in the first months (March and April) when Covid-19 outbreak was declared an outbreak, thirty-nine port operators' officials located in different regions of Türkiye participated. All participating port operators reported a significant decrease in the number of ship calls compared to the previous month. Regarding the present study, the report indicated a 50% decrease in container ship calls. During the same period, it was understood that the national authority made intense restriction decisions for ships calling and these decisions were between 50-100% depending on the type of ship (Port Operators Association of Türkiye, 2020b). In the report where 42 port operators located in different regions of Türkiye participated, according to the statements of the participants, it was determined that container ship calls decreased the most in ports in the first four months after the pandemic declaration (March 8%, April 50% and May 47% and June 38%) occurred (Port Operators Association of Türkiye, 2020c).

2.3. Methodological Framework

The study examines the impact of the major crisis periods on the sector and considers potential strategies for mitigating these impacts. The case study approach allows for a comprehensive analysis of all aspects of a complex crisis such as the Covid-19 outbreak. It allows a detailed examination of the impact on container shipping at different periods of the outbreak. Therefore, this study employs this approach to examine in depth the impact of the Covid-19 outbreak on container shipping in Türkiye. The principal rationale for employing the case study approach is the necessity for a context-specific analysis to comprehend the impact of the Covid-19 outbreak on the Turkish container shipping sector. While other approaches may generalize results across different contexts, the case study approach allows for a focused examination of the challenges and responses. This specificity is paramount in providing actionable insights and recommendations for the national context.

This study did not involve direct fieldwork, but rather analysis of existing data. The study conducted a comprehensive review of relevant literature and regional data sources to gain a detailed understanding of the contextual conditions and causal relationships. The relevant literature reviewed includes studies on the impact of the Covid-19 outbreak on container shipping Türkiye. Regional data sources include shipping volumes and port operations statistics provided by the Ministry of Transport and Infrastructure, Republic of Türkiye, the Port Operators

Association of Türkiye, the Chamber of Shipping of Türkiye, and the Association of International Forwarding and Logistics Service Providers.

3. RESULTS AND CONCLUSIONS

The Covid-19 outbreak has had a dramatic impact on the container shipping sector in Türkiye. Its geographical location and economic structure gave rise to a distinctive dynamic within this sector during the outbreak. A comprehensive analysis of the impact of the Covid-19 outbreak on container shipping in Türkiye contributes to a broader understanding of the impact of major global crises on national industries and supports the development of specific strategies for crisis management and policymaking. This study employs a case study approach to provide an in-depth examination of the impact of the Covid-19 outbreak on container shipping in Türkiye. By closely examining the specific conditions and measures taken in Türkiye's container shipping sector, the study highlights the differences between general trends and their specific impacts.

Although Türkiye's container shipping volumes have showed a more positive outlook globally, the steady growth trend of previous years was broken (MTI-GDMA, 2021). The impact of the Covid-19 outbreak on container shipping in Türkiye became apparent in the first months following the declaration of the pandemic. The imposition of restrictions, quarantines, and the reduction of ship calls, and the loss of storage services, resulted in a significant disruption to the sector. Restrictions imposed by national authorities, a decrease in ship calls, a slowdown in ship operations, losses in bonded warehousing and storage services are among these impacts (Port Operators Association of Türkiye, 2020a, 2020b, 2020c). This impact has led to disruptions and efficiency losses in the container shipping process.

This study has several limitations. The study primarily focuses on Türkiye and does not provide a comprehensive comparison with similar impacts in other countries. Future studies could benefit from a comparison of the impact across different countries and regions, which would provide a broader perspective.

Secondly, this study is based on an analysis of existing literature, which also reflects the limitations of these studies. A substantial proportion of research conducted during the Covid-19 outbreak was constrained by limitations and challenges in data collection processes, necessitating the use of limited data sets. This may prompt questions about the generalizability and accuracy of some results. Consequently, post-outbreak research utilizing broader and more in-depth data sets may

provide more reliable and comprehensive insights into the issues addressed in this study.

Third, as the study is based on findings from existing literature, it may not fully reflect the rapid changes and new developments in the container transportation sector. Given the dynamic nature of the sector, conducting studies with regularly updated data and analysis would better capture the current state of the sector.

The study also provides recommendations to sectoral stakeholders and national policymakers on achieving national goals concerning the sectoral impacts of the Covid-19 outbreak.

4. RECOMMENDATIONS

4.1. Recommendations for Sectoral Stakeholders and National Policymakers

Article 83 under the title Interaction of Global Developments with Türkiye in the Eleventh Development Plan emphasizes the importance of measures for international problems that emerged after the major crises. Article 84 indicates the importance of utilizing opportunities that may arise in future periods in favor of Türkiye by pointing out the change in global productions and trade channels. Also, the goals under Article 508.3 in the Policies and Measures section show that there are studies related to the objectives of widespread use of blockchain applications in transportation and customs services (Presidency of the Republic of Türkiye, 2019). This study has the potential to contribute to the development of strategies to build a more resilient and sustainable sector in the future. Additionally, the following recommendations are provided for national policymakers to support national goals for container shipping in Türkiye and to provide resistance against future global crises:

- Adoption of digitalization and blockchain technologies in shipping and customs services: Digital transformation to minimize the negative impact of major global crises is a critical necessity. The Covid-19 outbreak underscored the urgent need for such innovations, as rapid and adaptable decision-making became paramount. In accordance with Article 508.3 of the Eleventh Development Plan, successful transformation in the container shipping sector requires companies to adapt their shipping processes, focus on digital applications, and hire professionals capable of coordinating data flows through blockchain networks. During the outbreak, the adoption of electronic contracts and blockchain technology showed resilience in the container shipping sector. These technologies ensured continuity and efficiency in

operations despite widespread disruptions. The use of blockchain technology can automate administrative processes in container shipping, such as customs clearance and documentation. This technology reduces dependence on manual processes, which can be slow and prone to human factor, especially. This not only accelerates operations but also improves their resilience to disruptions caused by major crises. Investing in these technological advances will significantly contribute to developing a more efficient and sustainable container shipping sector in Türkiye.

- Regional expansion of maritime trade in Türkiye: In Türkiye, 192 coastal facilities with port operating licenses are located in the same regions. The selection of locations for port operations highlights the need for a more balanced and effective regional distribution of maritime trade in Türkiye. Therefore, it is considered that the coastal regions should be used more effectively in maritime trade to make better use of Türkiye's strategic position. To enhance the sector's resilience to major global crises, it is crucial to increase the number of container terminals and expand regionally. Such an expansion policy would provide the basis for strategic policies to exploit the full potential of coastal regions. It can also increase the resilience of the sector by mitigating the impact of challenges that arise in specific regions during major global crises.
- Considering storage strategies: Upon arrival at their destination ports, container ships may be subject to customs procedures or new outbreak-related measures. Quarantine measures, container demurrage, and detention charges at the discharging port may lead to increased storage and port charges. To achieve this, container shipping operators could provide low-cost storage facilities in various regions of Türkiye as part of their door-to-door services for customers.
- Developing logistics infrastructure: Türkiye's strategic location, along with infrastructure initiatives such as the Marmaray and Baku-Tbilisi-Kars international railway, provides a competitive advantage. In the near future, a comprehensive supply chain network will be established by creating rail connections among Mersin, Iskenderun, Samsun, Filyos, and the ports of Alsancak and Çandarlı in Izmir (Türe, 2021). Modernizing and increasing the capacity of logistics infrastructure elements, such as ports, warehouses, and storage facilities, can also help Türkiye gain a competitive advantage in the container shipping sector.

4.2. Recommendations for Future Studies

The following academic suggestions are presented to evaluate the opportunities and research areas that emerge during major crises:

- Investigating the impacts of customs procedures on container shipping: Focusing on various areas of the sector allows for addressing topics such as port operations, logistics, shipping costs, security measures, and risk management. It is important to note that problems and solutions in the container shipping sector may be related to other relevant sectors. The Logistics Performance Index report for the year 2023, published by the World Bank, shows that Türkiye's lowest performance value is in the customs category. Türkiye ranked 47th among 139 countries in the customs category with a score of 3.0 (World Bank Group, 2023). A detailed examination of the flow of cargo and information before and after customs procedures in the container shipping process can provide a holistic and improved logistics approach.
- Monitoring the impacts of post-Covid-19 outbreak: Container shipping is vulnerable to supply and demand global crises due to its fragile structure. Therefore, it is crucial to evaluate and monitor problems causing global crises in real-time and find effective solutions. Current studies should cover topics such as the changing impacts of global crises over time and how they can be balanced with new developments and measures.

YAZAR KATKISI

KATKI ORANI	AÇIKLAMA	KATKIDA BULUNANLAR
Fikir	Araştırma fikrini geliştirmek ve hipotez oluşturmak	Yazar 1
Literatür Taraması	Araştırmanın literatür taramasını gerçekleştirmek	Yazar 1
Araştırma Tasarımı	Araştırmanın yöntemini ve ölçekleri belirlemek	Yazar 1 & Yazar 2
Veri toplama ve editleme	Veriyi toplama, editleme ve analiz etmek	Yazar 1
Tartışma ve sonuçlar	Bulguların tartışılması ve sonuçların yazımı	Yazar 1 & Yazar 2

Declaration of competing interest

There is no conflict of interest between the authors in the study.

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