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CONTEMPORARY TRENDS AND CHALLENGES IN INTERNATIONAL TRANSPORT MANAGEMENT

SAVREMENI TRENDovi I IZAZOVI U UPRAVLJANJU MEĐUNARODNIM TRANSPORTOM

JEL CLASSIFICATION: 00, 01, M0, M2

ABSTRACT:

The transport sector has faced a number of challenges in recent years, including a lack of capacity, rising costs and geopolitical instability. However, due to numerous problems there are also great opportunities for the transport sector to adapt to the issues of the modern environment. The challenges of the modern environment for the transport and logistics sector have accelerated the transition to resilience, sustainability and digitiza-

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tion in order to achieve the so-called smart transport and logistics. Despite the relatively high level of development of the transport and logistics industry, the Covid-19 pandemic and the conflict in Ukraine have seriously affected these sectors. Some of the challenges such as the pandemic and the conflict in Ukraine have brought additional costs for logistics and transport, declining demand for passenger travel and high demand for technological innovation. In response to the challenges, the transport and logistics sector has responded by diversifying its supply chains, working with multiple logistics providers, investing in technology and communicating with its customers. The aim of this paper is to analyze the trends and challenges in international transport. As modern trends in international transport are inextricably linked to the global crisis caused by the Covid-19 pandemic and the conflict in Ukraine, so is the goal of analyzing their impact on the transport and logistics sector.

**KEYWORDS:****INTERNATIONAL TRANSPORT, INTERNATIONAL LOGISTICS, COVID-19, CONFLICT IN UKRAINE****APSTRAKT:**

Transportni sektor se suočava sa brojnim izazovima poslednjih godina, uključujući nedostatak kapaciteta, rastuće troškove i geopolitičku nestabilnost. Međutim, usled brojnih izazova, postoje i velike mogućnosti za transportni sektor, kako bi se prilagodio izazovima savremenog okruženja. Izazovi savremenog okruženja na sektor transporta i logistike su ubrzali prelazak na otpornost, održivost i digitalizaciju kako bi se postigao takozvani pametni transport i logistika. Uprkos relativno visokom stepenu razvoja transportnog i logističkog sektora, pandemija Covid-19 i sukob u Ukrajini su ozbiljno uticali na ove sektore. Neki od izazova za transportni sektor koje su pandemija i sukob u Ukrajini doneli su dodatni troškovi za logistiku i transport, opadajuća potražnja za putničkim transportom i velika potražnja za tehnološkim inovacijama. U odnosu na izazove, transportni i logistički sektor je reagovao kroz diversifikaciju lanaca snabdevanja, rad sa više logističkih provajdera, ulaganje u tehnologiju i komunikaciju sa svojim klijentima. Cilj rada je analiza trendova i izazova u međunarodnom transportu. Kako su savremeni trendovi u međunarodnom transportu neraskidivo povezani sa globalnom krizom, izazvanom pandemijom Covid-19 i sukobom u Ukrajini, tako je i cilj analiza njihov uticaja na transportni i logistički sektor.

**KLJUČNE REČI:****MEĐUNARODNI TRANSPORT, MEĐUNARODNA LOGISTIKA, COVID-19, SUKOB U UKRAJINI**

1. INTRODUCTION

Transport and logistics companies are the backbone of modern international trade, facilitating the movement of goods from producers to consumers. Due to its international character, international transport and logistics face many challenges every day, and the last few years have seen an increase in the severity of these challenges, which makes this area particularly specific. One of the key challenges facing transport and logistics companies today are supply chain disruptions, which have consequences for transport and logistics companies, given that international transport and logistics rely heavily on continuous supply chains. When disruptions occur in supply chains, this further affects transport and logistics companies, which in such situations are late in delivery, have increased business costs and dissatisfied customers.

As globalization has increased in recent years, transport, as the main aspect of logistics, is gaining an increasingly significant role in international trade and delivery. This has been pointed out in some of our previous research papers.⁴ As the logistics and transport sector is one of the key factors of international trade and delivery, the impact of the Covid-19 pandemic and the conflict in Ukraine has put a series of challenges for this sector that transport and logistics companies face. With the outbreak of the Covid-19 pandemic, the movement of goods outside the borders of a country has become more complex, firstly due to the imposed national and international quarantines. This led to disruptions in transportation and logistics operations, which caused delays in the delivery of goods and increased transportation costs worldwide. Therefore, as one of the additional causes of pandemics, there was a decline and lack of logistics service providers in the transport of goods. For example, in global logistics transport, due to the Covid-19 pandemic, the value of lost income is estimated at 1.1 billion euros in 2020.⁵ However, the outbreak of the Covid-19 pandemic is not the only one that has caused problems and imposed challenges on the logistics and transport industry. Transport costs and delivery delays are the consequences of a crisis of newer date caused by the outbreak of conflict in Ukraine. As the conflict continues, transportation costs continue to rise. Additionally, rising fuel prices, labor costs, and regulatory changes in many countries are significantly affecting the cost of transportation in cross-border trade and delivery. These rising costs further reduce the profit margins of transport companies.⁶

The Covid-19 pandemic and the conflict in Ukraine, apart from negative impacts, also had positive impacts on the transport and logistics sector, encouraging companies to adopt innovations. As e-commerce has been on the rise in recent years, it has led to an increased need for innovation in transport and logistics when delivering goods to consumers, and transport and logistics companies have recognized the need to adopt new digitized forms of business.

4 Aćimović, Mijušković, Todorović, (2019); Aćimović, Mijušković, Dinić (2021)

5 Anderson & Berg, (2022)

6 Berman & Smith, (2023)

2. TRENDS AND CHALLENGES IN INTERNATIONAL TRANSPORT DUE TO THE OUTBREAK OF THE COVID-19 PANDEMIC

As a reaction to the spread of the Covid-19 pandemic, national governments around the world introduced certain restrictive measures, which affected the global economy and the operations of almost all economic sectors. Among the affected sectors, thanks primarily to its international character, was the transport and logistics sector.

With the outbreak of the Covid-19 pandemic, the transport and logistics sector has experienced difficulties that have affected their work, such as strict import and export restrictions, reduced travel demand and increased service quality requirements, which have led to additional costs. Also, the Covid-19 pandemic has affected consumer purchasing and spending patterns, leading to market volatility in terms of supply and demand, emergency stockpiling and mismanagement of vital resources and facilities.⁷

Given the imposed movement restrictions, there has been a change in consumer behavior, which has caused a sharp rise in e-commerce and placed high demands on transport and logistics services. The rise of e-commerce has caused an increased demand for logistics and transportation services. As consumer preferences changed during the pandemic, more and more shopping shifted from brick-and-mortar stores to online shopping, which further caused a high demand for express delivery services. It apparently put a lot of pressure on the transport sector and affected the overall performance of logistics and transport.

As a result of the Covid-19 pandemic, the logistics and transport sector has become a key factor in the provision of basic goods and consumer goods, as well as medical supplies and medicines. The increased demand for logistics and transport services has stimulated the transport and logistics sector to invest in more efficient, innovative delivery models and so-called third-party logistics services. Thus, during the pandemic, more and more companies, as part of their business, took on different functions and supply chains, such as providing different logistics services, more efficient order management and warehousing, which allowed the market to recover somewhat and contributed to an increase in overall revenue supply chain.⁸

However, the increase in the activity of the transport and logistics sector was still not at the pre-pandemic level. The impact of the Covid-19 pandemic on certain types of transport is shown in Table 1.

The impact of Covid-19 on cargo volumes in 2020 was unprecedented. Global data on the impact on the volume of cargo, which was stated in its report by the International Transport Forum at the OECD for the period of the Covid-19 pandemic in 2020, shows the following:⁹

7 Carstensen & Helbing, (2022)

8 Georgiadis & Tsiakis, (2022)

9 International Transport Forum, (2020)

▶ **TABLE 1: IMPACT OF THE COVID-19 PANDEMIC ON TRANSPORT**

TYPES OF TRANSPORT	DECREASE IN TRANSPORT IN PERCENTAGE
Global road freight transport	-18%
Rail transport - freight operations	-10-15%
Railway transport - volume of passengers	-80%
Rail transport - international rail passenger services	-100%
Maritime transport	- 4,1%
Air traffic - international passenger traffic	-74%
Air traffic - domestic passenger traffic	-50%

Source: International Transport Forum, (2020). Unprecedented Impact of Covid-19 on Freight Volumes in Second Quarter, available at: <https://www.itf-oecd.org/unprecedented-impact-covid-19-freight-volumes-second-quarter>

- During the pandemic, the volume of air and sea freight in the USA and EU27 countries was reduced by more than 15%, starting in April 2020.
- Since air cargo is considered to be one of the main indicators of economic performance and the global economy, during the pandemic the volume of air cargo recorded the lowest volume level, even lower than that during the global financial crisis (7% less than during 2009) and primarily in EU27 countries.
- During the pandemic, a large drop in the export of goods by air was recorded in both the United States of America and the EU27 countries, while exports by the same route in the BRICS and Asian countries remained at the same level during the first months of the pandemic.

According to the data, the impact of the Covid-19 pandemic was very large on air and maritime trade, and therefore on transport and logistics. The volume of air cargo (measured in tons of transported goods), as an indicator of economic growth, compared to June 2008, decreased by 53% in the EU27 countries and by 43% in the United States of America in April 2020.¹⁰ Air cargo exports have fallen drastically as the crisis caused by the pandemic continues to progress in Europe and the United States.

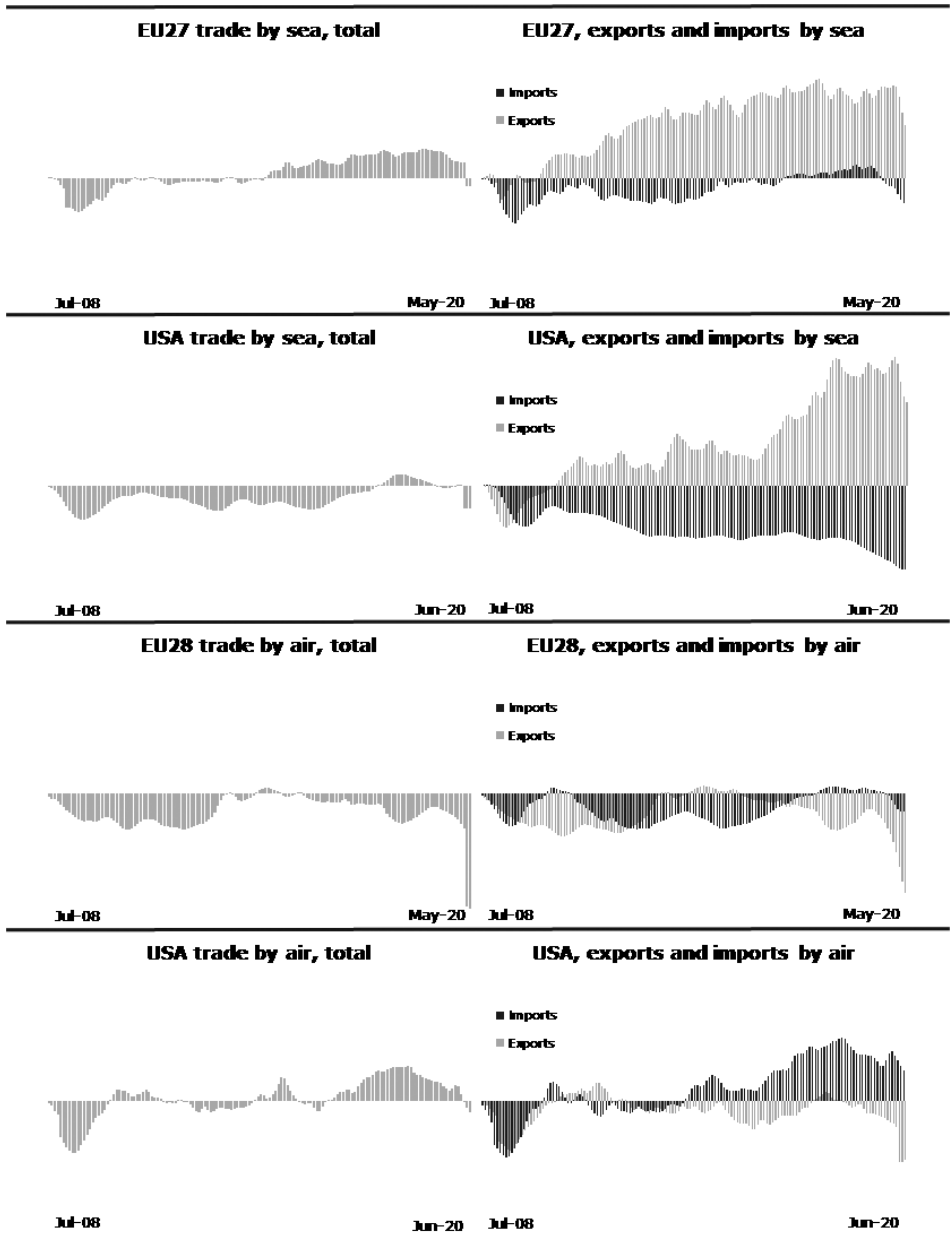
The impact of Covid-19 was very significant when it comes to maritime traffic. The data show that between April and June 2020, the volume of sea cargo decreased by 4% in the EU27 countries, and in the United States of America by as much as 11%, compared to the volume of sea cargo during the global financial crisis in 2008.¹¹

It is important to note that the data show that trade with neighboring countries by other modes of transport was not affected to such an extent by the pandemic. Thus, the values of rail trade between the USA and Mexico show growth until June 2020, as well as the trade of EU27 countries with neighboring countries until May 2020.

¹⁰ *Ibidem*

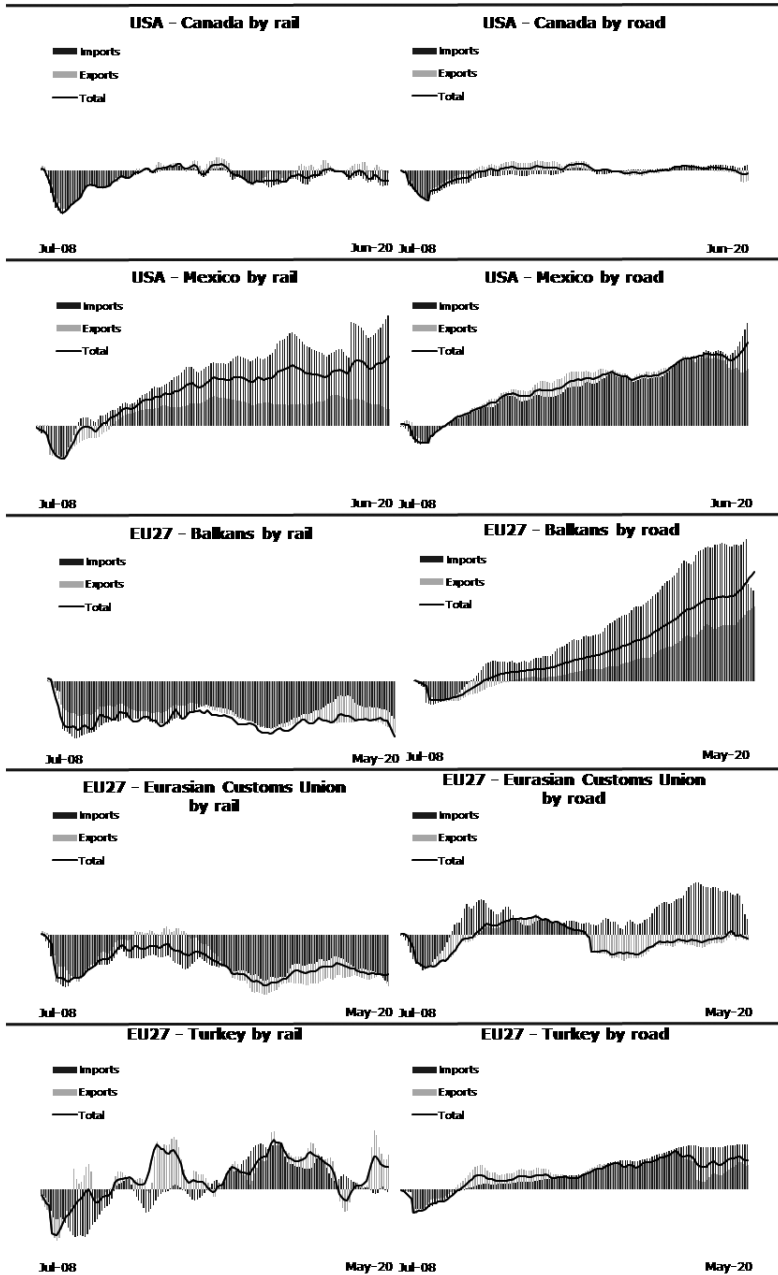
¹¹ Górška, (2022)

► FIGURE 1: FOREIGN TRADE, PERCENTAGE CHANGE SINCE JUNE 2008 (TONS, MONTHLY TREND, SEASONALLY ADJUSTED)



Source: International Transport Forum, (2020), Unprecedented Impact of Covid-19 on Freight Volumes in Second Quarter, available at: <https://www.itf-oecd.org/unprecedented-impact-covid-19-freight-volumes-second-quarter/>

► FIGURE 2: US AND EU27 EXTERNAL TRADE BY RAIL AND ROAD, PERCENTAGE CHANGE SINCE JUNE 2008 (VALUES IN USD/EUR, MONTHLY TREND, SEASONALLY ADJUSTED)



Source: International Transport Forum, (2020), Unprecedented Impact of Covid-19 on Freight Volumes in Second Quarter, available at: <https://www.itf-oecd.org/unprecedented-impact-covid-19-freight-volumes-second-quarter/>

Because of the previously stated, the Covid-19 pandemic has provided transport companies with new opportunities to use different types of transport and smart technology, thus becoming a stimulating factor for the improvement of the logistics and transport industry. The positive implications of the Covid-19 pandemic on the logistics and transport sector include:¹²

- Improvement of digital knowledge and skills: the pandemic has increased the use of digital technologies in logistics and transport, thus improving the knowledge and skills of employees in this sector.
- Increase in e-commerce and e-logistics services: as the demand for e-logistics services has increased, more and more e-commerce/e-logistics companies, such as DHL and UPS, have focused on providing this type of service. On the other hand, the growth in logistics services has encouraged many companies to set up e-commerce warehouses, such as Walmart.
- Increasing outsourcing of supply chain services: due to supply disruptions, various strategies have been developed and used to make logistics and transportation as efficient as possible. This has resulted in the creation of multiple supply chains/procurement channels.
- Increasing logistics alliances and partnerships: in order to effectively maintain the supply chain, through diversification and integration with other sectors, the transport and logistics sector has achieved its business growth. Examples of such logistics merchants are Alibaba and Amazon as e-market leaders.

Based on the above, it can be said that Covid-19, apart from the negative ones, also had certain positive effects on the logistics transport sector. An example of positive effects is the increase in demand for logistics and transport services caused by the growth of e-commerce/e-logistics, the development and use of digital innovations, such as artificial intelligence, the introduction of automation in transport services, the increase in income due to the growth of e-commerce and the like.

During the Covid-19 pandemic, the transport and logistics sector faced numerous challenges and in that context several concepts gained importance. In order to adequately respond to the crisis, companies in supply chains oriented themselves towards resilience, sustainability and digitization as basic business concepts. Facing the temporary closure of many countries to international transactions, as well as disruptions and disruptions to sea, land and air transport, disrupting the entire supply chain, transport and logistics companies have had to show resilience in order to survive. Thus, the rise of e-commerce and changes in consumer buying habits have forced companies in the supply chain to increase inventory building, which further increased trade flows at the international level. The aforementioned influenced the concept of resilience to gain importance.

During the pandemic, there was also a change in sustainability, i.e. the transition to low-carbon battery-powered vehicles (electric) and hydrogen-powered vehicles, as an alternative to fossil fuels in transport and logistics. Since the transport sector is one of the main contributors to carbon emissions, there has been a tightening of standards in the application of sustainability-based technology in this sector. International organizations

12 Dовбiшчук, (2022), pp. 501-503.

have responded in this regard with new standards in transport and CO2 emissions, such as the European Green Deal.¹³

The Covid-19 pandemic has forced supply chain companies to accelerate digitization and innovation. Automation and digital innovations have been introduced into their operations at an accelerated pace by transport companies in the performance of their operations. Digitization in transport and logistics means the use of new information technologies, such as the Internet of Things (IoT), block chain technologies, artificial intelligence and the like, which has affected the improved operations of the supply chain.

3. TRENDS AND CHALLENGES IN INTERNATIONAL TRANSPORT DUE TO THE OUTBREAK OF CONFLICT IN UKRAINE

The transport and logistics sector started to recover during 2021. During 2022, the global economy continued its post-Covid-19 recovery. Global real gross domestic product (GDP) grew by 3.4% between 2021 and 2022, 2.7% in developed economies and 4% in developing markets. World trade volume increased by 2.3%, although air transport ton kilometers (tkm) decreased by 8% in 2022 compared to 2021.¹⁴

However, while the world was still recovering from the pandemic crisis, it was hit by a new crisis caused by the conflict in Ukraine, which affected and still affects almost all economic sectors, including transport and logistics. Because of the disruptions, Ukraine's transportation networks are suffering continuous destruction, and global supply chains are experiencing severe disruptions. Consequences of the conflict in Ukraine for transport and logistics also include damaged transport infrastructure and a huge influx of refugees, who need transport to the EU. With the closing of the Ukrainian borders, many truck drivers were also captured.

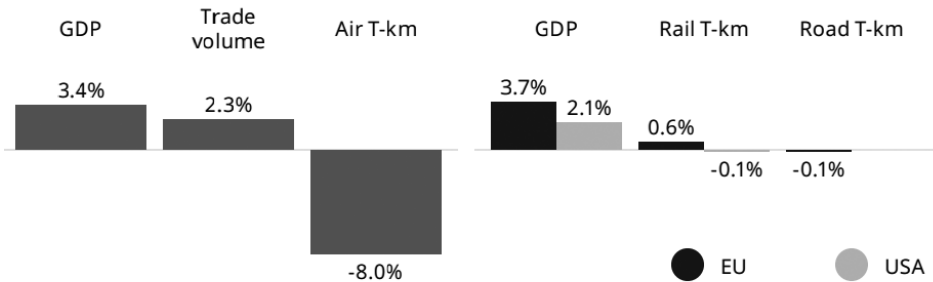
Air transport was severely affected during 2022 by the conflict in Ukraine and the closure of Russian airspace. According to the data, in 2022, the growth of air transport slowed down, while maritime trade remained at the post-pandemic level. The outbreak of conflict in Ukraine, 2022 represents a step back for the EU27 in relation to the recovery levels registered during 2021, when air transport was 20% higher than in February 2020. The United States reported a similar trend, falling from 31% in 2021 to 13% in 2022. Green bars are related to the global level¹⁵

13 European Commission, (2020)

14 International Transport Forum, (2022), p. 1

15 International Transport Forum, (2022), p. 1

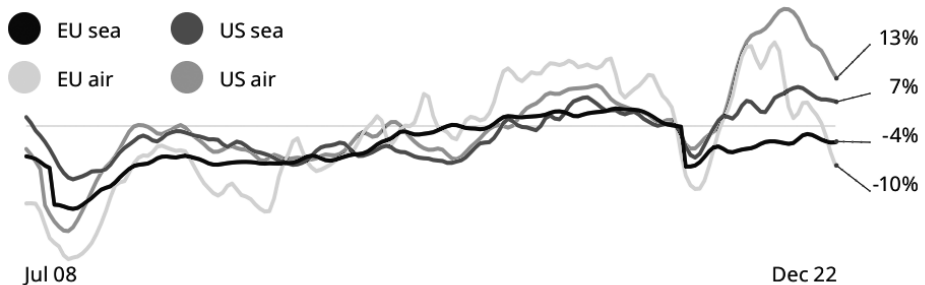
► FIGURE 3: GDP, TRADE AND FREIGHT TRAFFIC IN 2022 (% CHANGE COMPARED TO PREVIOUS YEAR)



Source: International Transport Forum, (2022), „Key transport statistics“, International Transport Forum, Paris, p. 1

Cargo volumes in the EU27 (measured in tons of goods transported) were 10% lower in December 2022 compared to their pre-pandemic levels in February 2020. Maritime trade in the EU27, which has not yet fully recovered to pre-pandemic levels, reported a 4% decrease in December 2022 compared to February 2020 due to the conflict in Ukraine. In the United States, sea freight recovered during 2020 and has since remained above pre-pandemic levels, with an average 6% increase.¹⁶

► FIGURE 4: FOREIGN TRADE BY SEA AND AIR, PERCENTAGE CHANGES COMPARED TO FEBRUARY 2020 (TONE, MONTHLY TREND, SEASONALLY ADJUSTED)



Source: International Transport Forum, (2022), „Key transport statistics“, International Transport Forum, Paris, p. 1

The conflict in Ukraine has directly affected maritime transport in the Black and Azov Seas, including the disruption of activity in Ukrainian ports and the export of agricultural products across the Black Sea. After the complete halt of Ukrainian maritime activities in the Black Sea, the implementation of the Black Sea Grain Initiative in early August 2022 enabled an export corridor for certain agricultural products and partial resumption of shipping activities from Ukraine. However, the agreement was terminated in July 2023.

Apart from maritime transport in the Black and Azov Seas, the conflict has also indirectly affected the maritime sector through international sanctions imposed on Russia on transport. Sanctions imposed on Russia and individuals were aimed at Russian ship owners and shipbuilders. They have also led to restrictions on Russian ships entering ports in various OECD countries.

► **FIGURE 5: TRANSPORT SANCTIONS AGAINST RUSSIA IMPOSED BY THE EU**



Source: Cekerevac, Z. P. (2023), „Impact of Covid-19 and Ukraine-Russia war on the international trade and logistics“, MEST Journal, Vol. 11, No. 1, p. 23

The maritime sector and ports have been hit hard by the conflict, with increased traffic seen in EU ports to maintain supply chains. This increased volume of transport may further lead to congestion at some port terminals. As more and more companies operating in Europe and Asia seek to switch from the China-Europe rail route to the sea route, this may also lead to congestion at port terminals, which further increases the cost of transportation.

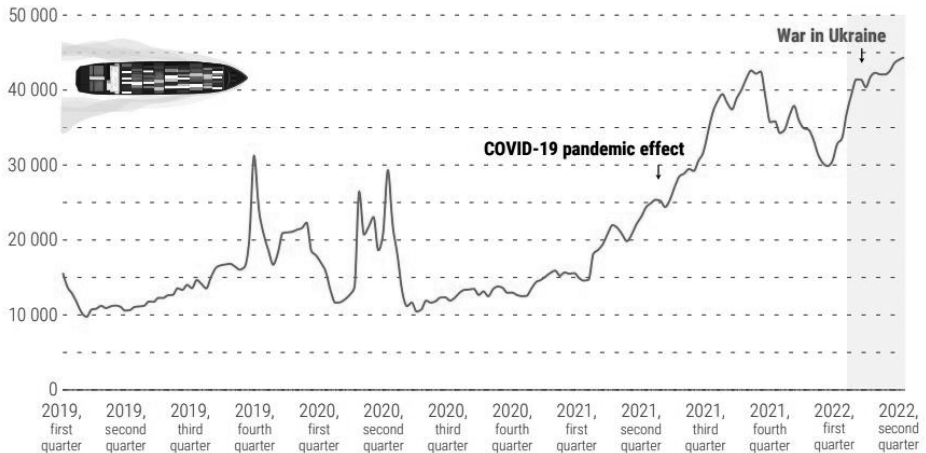
The closure of Ukrainian airspace affects air passenger and cargo traffic. Therefore, bypassing Ukraine and Russia increases flight time, increases fuel consumption and personnel costs, aircraft depreciation, and transportation costs. Air fares have soared up to 120% above pre-conflict levels. Sanctions imposed on Russia are reducing transport capacity, especially between Europe and Asia. As many transport and logistics companies transporting goods between China and the EU avoid transit through Russia for security reasons, this leads to increased use of the Middle Corridor which causes longer journeys and increased transport costs.

Therefore, the conflict in Ukraine has seriously disrupted transport and logistics, and we can mention the following as basic trends:¹⁷

- growth in delivery costs;
- fewer deliveries over longer distances lead to higher freight rates and higher product prices;
- container shipping and global supply chains are also disrupted;

- the search for alternative routes increased the demand for land and sea transport infrastructure and services, which in turn increased transport costs;
- higher energy costs have increased transport costs for all sectors.

► **FIGURE 6: GROWTH OF TRANSPORT COSTS**



Source: Bell, E., (2022), How the war in Ukraine has disrupted trade and logistics and increased shipping costs worldwide, available at: <https://clearitusa.com/war-ukraine-disrupted-trade-logistics-increased-shipping-costs-worldwide/>

The global logistics and transportation industry is therefore facing unprecedented challenges from the start of the Covid-19 pandemic in 2020 to the outbreak of the conflict in Ukraine in 2022. One of the biggest challenges that the transport and logistics industry will face during this period is a lack of capacity, due to a number of factors, including:¹⁸

- Congestion at ports: Ports around the world experience heavy congestion, causing delays in shipping and unloading goods.
- Transport capacity: The trucking industry is also facing capacity shortages, due to driver shortages and rising fuel costs.
- Air cargo capacity: Air cargo capacity has also been reduced due to the pandemic, as airlines have grounded planes and reduced schedules.

The aforementioned capacity shortages lead to longer delivery times and higher transportation costs, and rising costs put pressure on businesses and consumers and make it difficult to transport goods around the world. Due to the conflict in Ukraine, the following costs have increased in particular:¹⁹

- Fuel costs: fuel costs have increased due to the conflict in Ukraine, which affects transport costs.

¹⁸ *Ibidem*, pp. 26

¹⁹ Muñoz, Gálvez-Gamboa & Sánchez Dávila, (2024)

- Labor costs: Labor costs are also rising as businesses compete to attract and retain workers.
- Inflation: inflation increases the price of goods and services, including transport and logistics services.

Despite the aforementioned trends and challenges, there are also some opportunities for the transport and logistics industry to include in this crisis period. New opportunities give logistics and transport companies a chance to develop their business and provide new and innovative services to their clients. Among the most important opportunities for the transport and logistics sector, we can single out:

- E-commerce growth: E-commerce growth is driving demand for transportation and logistics services, as more people shop online.
- Adoption of new technologies: The logistics and transportation industry is increasingly adopting new technologies, such as automation and artificial intelligence, to improve efficiency and productivity.
- Expanding into new markets: The logistics and transportation industry has begun to rapidly expand into new markets, such as Africa and South America.

In order for international logistics and transport activities to provide stakeholders with optimized solutions for the exchange of goods and the transport of people between different countries, during the conflict in Ukraine, international logistics and transport companies must follow the best practices in each of the operational elements, in order to adapt to changing circumstances. Digitization is an inevitable trend that transforms international logistics and transport activities. With the rapid advancement of technology, logistics and transportation companies are using digital platforms, artificial intelligence (AI) and robotics to streamline their operations and improve efficiency. A key aspect of digitization is the adoption of advanced management systems for both transportation and the entire supply chain.

4. CONCLUSION

Findings based on the literature review revealed both negative and positive effects of the pandemic in the transport sector, the most important of which include the increase in demand for logistics and transport services due to the growth of e-commerce/e-logistics, automation and digitization, and the development of logistics services through business alliances and diversification. The results also indicate a significant acceleration of digitization in transport and logistics during the post-Pandean period as well. Furthermore, the results show that attention to the resilience of the transport sector has steadily increased over time, especially during the Covid-19 pandemic and the conflict in Ukraine.

Further development of the transport and logistics sector should include the automation of processes and the use and harmonization of smart technologies. Therefore, transport and logistics companies can adapt to the challenges by:

- diversify their supply chains: Companies should diversify their supply chains to reduce reliance on any one supplier or delivery route.
- working with multiple logistics providers: businesses should work with multiple logistics providers to ensure they have access to capacity and avoid disruptions.
- investing in technology: Businesses should invest in technology to improve their logistics and transportation operations and visibility.
- communication with customers: businesses should communicate with their customers about any potential delays or disruptions.

By taking these steps, logistics and transportation companies can minimize the impact of the challenges they face from the Covid-19 pandemic to the conflict in Ukraine.

The trends and challenges facing transportation and logistics companies are therefore diverse and complex, ranging from supply chain disruptions to rising transportation costs, labor shortages, regulatory compliance issues, intense competition, and the like. However, with proactive strategies and a commitment to adaptability, transportation and logistics companies can overcome these challenges. By diversifying suppliers, optimizing routes, investing in technology, ensuring regulatory compliance, improving customer service and keeping a close eye on global trade dynamics, transportation and logistics companies can thrive in an ever-evolving industry. Success in the international transport and logistics sector requires a combination of innovation, resilience and access, which ultimately contributes to the smooth flow of goods and services in the global economy, and at the core of any breakthrough is the increasing adoption of modern technology in managing complex international transport and logistics.

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