

Globalization and changes as determinants of logistics development

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Abstract

The article deals with some phenomena of internationalization of economic and social processes, especially in the context of more and more complex supply processes. They got even more complicated during the pandemic. It was emphasized that a very serious situation forces the use of even unconventional solutions or the search for alternative ways to replace what has been strained by the emerging crisis. In a fairly extensive ending, the prospects for a supply chain strategy have been presented.

Keywords: globalization, logistics, transport, supply chain.

1. INTRODUCTION

Contrary to forecasts, the COVID-19 pandemic did not put an end to globalization. However, it most certainly highlighted its weaknesses, especially the inflexibility of stretched global supply chains and their low resistance to supply and demand disruptions.

The rapid development of e-commerce, *chipageddon*, container crisis, geopolitics and random events - created an unprecedented combination of factors that significantly changed our approach to logistics and the directions of its further development.

Among the possible ways to reduce the risk in the future, experts most often point to the diversification of supplier networks, shortening the supply chains and operating closer to the end customers. Global corporations are analysing the possibilities of reshoring and nearshoring, they are trying to give up the Just-In-Time philosophy.

Progressing globalization has been a constant trend in the global economy of the last century. Dynamically developing international trade, suppliers boldly entering foreign markets, a constant increase in the share of foreign sources in supplies for the needs of individual producers, and finally a boom in foreign investments - have become a phenomenon of the world economy in the last few decades. And, of course, they had a huge impact on the transport and logistics sector.

Great geopolitics - and e-commerce - have fuelled the development of the logistics and transport sector in recent years like never before in the world's economic history. The outbreak of the COVID19 pandemic sharply disrupted this process and negatively affected many areas of globalization.

2. THE PILLARS OF GLOBALIZATION

According to the DHL Global Connectedness Index 2020, one of the pillars of globalization - the movement of people - has radically decreased as a result of the pandemic. Almost half of the world's tourist destinations were closed to travellers at the end of 2020. The airlines were grounded for several months. Millions of migrant workers were forced to return to their home countries, students postponed their decision to study abroad. As a result of the lockdown and the introduced restrictions, the number of people traveling abroad fell by 70% in 2020 (in April and May it almost completely disappeared - the decrease reached 98%) and returned to the level from 1990.

The loosening of travel restrictions and the growing number of vaccinated people slightly revived international tourism in 2021. However, we are still not back to pre-pandemic levels. According to data from the World Tourism Organization

(UNWTO), the number of guests coming from abroad in the first seven months of 2021 was 40% lower than in the corresponding period of the previous year and as much as 80% lower than in the pre-pandemic year 2019.

Moreover, 1/3 of UNWTO experts believe that international tourism will not return to pre-pandemic levels until 2023, and almost half of experts are even more sceptical and expect international tourism to recover in 2024 at the earliest.

The results of another area of globalization - capital transfer - also dropped significantly. In 2020, the level of direct expenditure related to new investments, acquisitions of companies or development of operations abroad decreased. According to the data of the United Nations Conference on Trade and Development (UNCTAD), the level of foreign direct investment (FDI) inflow decreased in 2020 by as much as 42%. Interestingly, much larger declines in FDI were recorded in developed economies than in emerging ones.

The pandemic, on the other hand, stimulated the rapid development of two more pillars of globalization: the flow of goods and the flow of information.

Remote work forced by the pandemic, online learning, cultural events available in live streaming, e-commerce as an alternative to closed shopping malls - these circumstances meant that in the first half of 2020, global Internet traffic doubled compared to the previous year.

Trade reacted somewhat differently to the pandemic. While in April-May 2020 there was a significant drop in trade turnover (consumers in the face of the crisis reduced their purchases), growth began already in June. The demand for consumer electronics (home-office, distance learning) and medical devices increased particularly clearly. By September 2020, international trade had almost returned to the pre-pandemic level (only down 2%). Electronic commerce had a large share in it, which, thanks to the pandemic, experienced a rapid development on an unprecedented scale.

E-commerce has been changing logistics for a long time. According to experts, it is the catalyst for the biggest changes in this industry in recent years.

3. THE PANDEMIC AND SUPPLY CHAINS

But let's go back to globalization. The outbreak of the COVID19 pandemic has significantly disrupted the functioning of global production networks and supply chains.

According to Capgemini in its report "Fast Forward. Rethinking supply chain resilience for a post-COVID-19 world", over 80% of the surveyed companies felt the negative impact of the pandemic on their supply chains. 74% of them struggled with a lack of critical parts and materials. The same number experienced extended lead times and delays in deliveries. 72% of respondents had difficulties in comprehensive monitoring of the supply chain and 71% with switching to online channels. For 69% of companies, the challenge was to adjust production capacity to fluctuations in demand, balance inventories between warehouses, and finally planning in the face of rapidly changing market conditions.

The US industrial production index has dropped to its 2008/2009 crisis level. In Europe, this index has fallen to 1994 levels. However, while global production quickly recovered from the pandemic shock and returned to pre-pandemic levels by late 2020, rebuilding supply chains remains a challenge. As many as 68% of companies declare that they are still struggling with logistics problems. International trade restrictions, dispersed supply chains, and finally transport problems and delivery delays - are still the daily life of many companies around the globe.

The supply and demand disruptions we experienced due to the COVID 19 pandemic have exposed the weakness of global supply chains. They showed their insufficient flexibility and – pun intended - lack of resistance to the turbulences in the world economy caused by the virus.

As reported by the Polish Economic Institute in its report "Globalization in the Time of the Pandemic", the vulnerability of global supply chains to disruptions has become particularly visible in the automotive industry, based on the Just-In-Time production system (without stocking) - the magic formula of modern logistics.

The automotive industry turned out to be, more than other industries, unprepared for:

1. lack of components and subassemblies in the first months of the pandemic, when factories were closed and production in China was frozen, and

2. delays in microprocessor deliveries, which began in the second half of 2020 and intensified in 2021, as Asian semiconductor manufacturers (over 90% of world microprocessor production is produced in Taiwan and South Korea) have shifted to tailor-made production rapidly in the meantime the thriving IT industry, instead of the automotive industry.

Let us add that these delays are still growing due to the cycle of extraordinary, random situations in 2021, such as the winter attack in Texas in February (three microprocessor factories shut down), fires and downtime in Japanese semiconductor and integrated circuit factories in March and finally in June. Taiwan's worst drought in 50 years, causing power and water cuts (8,000 litres of water are used to produce one silicone tile). *Chipageddon* is the right word for the chaos in the market due to the global shortage of computer chips.

4. CRISIS IN DEEP-SEA TRANSPORT

In addition, there were growing problems related to sea transport. According to UNCTAD, 80% of world trade is by sea. The pandemic disrupted the operation of the ports. Ships moored in the roadstead, the crew in quarantine and, as a result, delays in unloading container ships and disturbances in the supply chain – have been the everyday life of the last 2 years.

The situation was even worsened in March 2021 by the blockade of the Taiwanese container ship *Ever Given* in the Suez Canal. The blockade lasted only a week, but turned out to be extremely expensive, as it caused downtime in world trade. 13% of world trade passes through the Canal, including 1/3 of the world container turnover. 98% of the containers traveling between Germany and China follow this route. Every day, 50 ships pass through the canal carrying containers with goods, oil and petroleum products.

The Suez traffic jam immobilized over 420 ships, stopped the transport of 1,600 containers with car parts, 1,500 containers with wood, 470 containers with building materials, 300 containers with pharmaceutical products. There were 18,300 containers aboard *Ever Given* alone. As a result, not only consumers who made purchases through AliExpress waited for their orders, but also large businesses that waited for important components and means of production.

Currently, all industries dependent on sub-suppliers scattered around the world struggle with the availability of components - automotive, furniture manufacturers, household appliances and consumer electronics, the largest producers of new technologies and the IT industry. None of them escaped disruptions in supply chains.

5. ALTERNATIVE MEANS OF TRANSPORT

The increase in sea transport costs resulted in a large increase in orders for inter-modal rail transport on the new Silk Road. From 2020, a record level of transport has been recorded there. According to UNCTAD data, the share of rail transport in the import of goods to the European Union increased by 17% in 2020 (compared to 2019), while the share of rail transport in EU exports increased by 36%. However, we are still struggling with the limited capacity of the Trans-Eurasian routes and congestion at transshipment terminals.

Air transport also has limited options. In the years before the pandemic, regular airlines were rather reluctant to operate a fleet designed exclusively for cargo transport. Usually, space in passenger planes was used for air freight. Meanwhile, COVID19 and restrictions introduced in spring 2020 reduced passenger flights by 90%. In the largest European air transport hubs decreases in the number of flights of 70-80% were recorded. The year 2021 saw a slight improvement, but according to the latest estimates of the International Air Transport Association (IATA), global aviation will not get straight before 2023. This is the deepest crisis in the history of the aviation industry.

The financial results of the industry giant - Lufthansa Group - show this very clearly. The group recorded a net loss of over EUR 6.7 billion in 2020. Almost all group entities were in the red. The only segments that made a profit were Lufthansa Cargo and Lufthansa IT Services.

The limitation of passenger flights, along with the constantly growing e-commerce trade, resulted in an increase in the demand for cargo transport. IATA estimates that in 2021 cargo transport will be higher than those from before the pandemic by almost 8%, and in 2022 by over 13%. Already in February 2021, the volume of cargo transport was only 1% lower than a year earlier. Therefore, it can be said that air cargo has returned to pre-COVID-19 levels.

Unfortunately, the fleet adapted to freight is too small. In order to increase the transport capacity, Lufthansa decided in July this year to convert 2 passenger AirBuses into freighters. According to the IATA report, the size of the freight fleet increased by 12% from January to July 2021 compared to the same period of 2019. This is a lot, but still much too little to meet the market needs.

The result of higher costs of maritime transport and the limited capacity of rail and air transport is, of course, the increased importance of road transport in international trade. According to the data of the Polish Economic Institute, the import of goods to the European Union by road increased in 2020 by 25% compared to the previous year, while exports by this route increased by 38%. At the same time, the value of goods delivered to the Union by sea fell by 23% and by air by 24%. However, road infrastructure and the availability of drivers remains a big problem for road transport, especially in the context of restrictions related to COVID-19.

6. SUMMARY

Undoubtedly, the pandemic has made us aware of the need to rethink traditional supply chain models. Unpredictability and changes have become our everyday life. You could say that constant change is the only constant thing in our lives.

The process of globalization seems irreversible, we have come too far in this way. However, the pandemic has reversed the course of globalization - at least in the realm of global supply chains. The COVID-19 crisis made us realize how stretched global supply chains are, showed how vulnerable they are to disruptions only because of the physical distances between suppliers and recipients.

How should logistics change after a pandemic? What can be done to better prepare for future turmoil and make supply chains more resilient? Experts indicate several aspects.

First of all, the idea of localization and regionalization is gaining popularity. Reshoring (relocation of production to the home country) and nearshoring (relocation of processes to a neighbouring, close country) are considered by many manufacturers who have opened production facilities in far, cheap Asia in recent decades.

The challenge is to diversify supplies - developing a local network of partners and suppliers, reducing excessive dependence on Asian supplies. This requires the transfer of part of the production of global concerns from Asia to Europe - and such decisions may turn out to be a great opportunity for Central and Eastern Europe, including Poland, which has been a leader in attracting foreign investments for years. Lower Silesia, with its exceptionally advantageous border location and developed communication network, can also benefit from this.

Many experts also point out the need to seriously redefine the philosophy of delivery planning. The Just-In-Time concept and delivering goods only when they are needed means huge savings. But in the event of problems - such as those caused by a pandemic or a blockade of the Suez Canal - it risks disrupting the entire supply chain. It seems that companies have to approach the planning of the necessary inventory levels differently than before. New trends are the constant maintenance of the so-called the safety of parts and components in warehouses close to the factory, and higher inventory levels of finished goods close to the target market - all to avoid costly downtime and shortages in the future. This trend must lead to the emergence of more logistic nodes at the regional level. Lower Silesia, with its huge warehouse facilities, can easily cope with the challenge.

Updating the supply chain strategy also means shortening it - so as to ensure faster delivery of products to endpoints. Ever shorter product life cycles require faster product rotation. Small logistic installations located in urban areas close to end consumers can be the last mile solution.

Moving supply chains closer to the consumer, operating companies closer to end customers is not only a reaction to the pandemic experience - it is also a response to the changing preferences of consumers in recent years. Already 68% of them declare that they want to buy local products - it is a conscious, pro-ecological and pro-social choice.

The market and operating conditions of enterprises are constantly changing, and logistics are changing with them. Robotization in warehouses, digitization in the transport industry (both management systems and the cars themselves), big data in logistics - these are the areas of great opportunities. Smart and dynamic supply chains are becoming more resistant to disruptions. The pandemic continues, globalization is in a temporary retreat - logistics must continue to look for solutions that will allow it to reduce risk and better prepare for difficult situations in the future.

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