SELECTED ASPECTS OF THE INFLUENCE ON THE COVID-19 PANDEMIC ON THE MODERN WAREHOUSE SPACE MARKET IN POLAND

ABSTRACT

Certainly, the Covid-19 pandemic has had a significant impact on various spheres of our lives, including running a business not only in Poland, but also in Europe and around the world. The pandemic period had, among other things, a significant impact on the functioning of various supply chains, and thus also on the market of modern warehouse space, which is one of its elements. This type of space is essential for any logistics chain, as it contributes to its increasing resilience to a number of disruptions, such as dynamic changes in supply and demand, or other negative phenomena, such as disasters – which certainly includes pandemics.

The article presents selected aspects of the impact of Covid-19 on the market of modern warehouse space in Poland. Moreover, the aim of the article is to present how this market has changed during the pandemic – the consequences, opportunities and development caused by pandemic.

The preparation of the article was preceded by a number of multifaceted analyses of professional literature and journals, which consequently enabled the synthesis and formulation of key conclusions that should be developed in the future.

Keywords: economy, logistics, chain of supply, warehouses, logistics infrastructure, pandemic, Covid-19.

INTRODUCTION

In recent period of time, one has the possibility to observe a lot of changes which took place both in the world, and in our immediate surroundings.
Those changes were characterized by the fact that they occurred in a highly dynamic way, and their course was characterized by a significant degree of unpredictability and turbulentness.

The situation was, and still is, caused by the Covid-19 pandemic, which significantly left its mark not only in the social sphere, but also in the economic sphere. Its recurrent waves, numerous changes in the law, and additionally drastic actions taken, such as lockdown, had a negative impact on various branches of the production and service spheres, both in the national and international dimension.

The aim of the article is both to determine how the Covid-19 pandemic has affected the existing market of modern warehouse space in Poland, as well as to identify possible (potential) new phenomena that accompanied it in this aspect. The research problem undertaken to be solved was clarified in the form of a question: Did the Covid-19 pandemic had an impact, and if so, was it positive or negative to the functioning of the modern warehouse space market in Poland?

Solving the research problem presented above, and as a result achieving the research goal in the opinion of the authors, requires solving the following research tasks:

1. Presentation of what logistics infrastructure it is and what role it plays in the supply chain.
2. Enunciation (explanation) of how modern warehouse space in Poland is defined, and what resources Poland has at its disposal.
3. Determining the way a modern warehouse space market in Poland reacts to changes taking place in Poland in connection with the Covid-19 pandemic.
4. Determining whether, due to the Covid-19 pandemic, it has become possible to observe new phenomena (trends), previously not observed, but affecting the functioning of the modern warehouse space market in Poland.

Drawing on the different sources of information, the authors attempted to determine how the modern warehouse space market reacted to the pandemic, and identified new phenomena accompanying this period. For the purposes of validation, the data of a number of Polish companies that undertook operations during the Covid-19 period were used.

Basis on many “dispersed” data, the authors attempted to determine and explain how the modern warehouse space market reacted to the pandemic. What is more, they have identified new phenomena accompanying this period. For this purpose authors used data from a few Polish companies which had operations during the Covid-19.
LOGISTICS INFRASTRUCTURE IN LOGISTICS CHAINS

Moving goods from the places of their creation to the recipients is associated with the need to perform a number of activities, that not only concern transport, but are also connected with the transformation of a given product into another good.

At the initial stage, it will therefore be the acquisition of the necessary raw materials, which will then be subjected to the process of transforming them into the final product, which will be finally delivered to the consumer (recipient).\(^1,2\)

Each activity of this kind is defined as a logistics chain. This term was used in 1991 by D. Bak, who at an international symposium on practical aspects of logistics stated that "logistics is a process of managing the entire supply chain".\(^3\)

By making a kind of synthesis of the content of the different definitions of this concept, it is possible to formulate the thesis, that the supply chain is a some sort of sequence of processes. A result of this sequence generally is the final product which is intended for purchase by the consumer. Accordingly, this chain includes the acquisition of raw materials, transport, production, distribution, storage, marketing, ending with sales.\(^4\) The above statement is illustrated in the Fig. 1.

![Fig. 1. Ideological supply chain scheme](image)

Source: own work by G. Stankiewicz

Therefore, a prerequisite for ensuring the proper functioning of the logistics chain is the creation of a structure covering both the places of temporary

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4 Cf.: E. Gołembska, (ed.), *Kompendium...*, op. cit., p. 18-19.
storage of the entrusted assortment, as well as technical and organizational solutions which will be dedicated to transshipment works and transport.\(^5\) This should ensure the technological connection of storage and transshipment points along with freight transport routes, as well as the organizational and financial coordination of all operations, procurement processes, and also inventory policies of all links in the logistics chain.\(^6\)

At this point, it should also be noted that two streams of activities can be identified within the logistics chain presented above. The first of these should be defined as a supply stream that ensures, first of all, the flow of goods and also services and information. The second of these streams is a kind of discharge (draining) stream, because one must be aware that each supply chain may generate different returns. They, for example, could be incurred from complaints, returns of a batch of goods due to defects, or may be caused by the aging of the product, and consequently its withdrawal from sale. Therefore, the return of goods should be treated as a retroactive flow of products – from the customer to the previous links of the supply chain.

![Fig. 2. Example of division of logistics infrastructure](source:image)


\(^6\) E. Gołęmska (ed.), *Kompendium...*, op. cit., p. 19.
From the point of view of the tasks performed within the supply chain, the key element for their proper implementation is the appropriate (proper) logistics infrastructure, i.e. a kind of technical base of logistics, which fundamentally determines the efficiency and reliability of physical flows of raw materials, materials, goods and services, and the accompanying information streams.\(^7\) An example of the division of logistics infrastructure is presented in the Fig. 2.

In addition, role the well-designed infrastructure in the logistics chain should be guarantee both the possibility of storage materials, and products in a safe way, as well as the protection of finished products against loss of properties. What is more, the collection processing and transmission of information ensuring rational control of logistics processes.\(^8\)

**MODERN WAREHOUSE SPACE IN POLAND**

The demand in Poland for modern warehouse facilities constantly has been growing since the 90s. Current supply for state-of-the-art storages (Fig. 3) is adapting to the contemporary dynamics of industrial and trade development. The location of our country on the map of the continent also contributes to this. This location gives the opportunity to connect the east with the west, and is also a great "base" to, among others, Scandinavian, or southern countries.

In general, a warehouse is a set of organizational and technical measures enabling the storage of goods. It consists of such elements as: a separate space in the form of a warehouse building, technical and organizational equipment, personnel and warehouse documentation.\(^9\)

A characteristic feature of modern warehouse space is the ability to store goods in a primarily safe way. Modern Class A warehouse facilities in the territory of Poland are generally characterized by the fact that they have:\(^{10,11}\)

- easy access (they are located at the main transport hubs, most often in the immediate vicinity of motorways and expressways);
- adequate lighting (minimum light intensity 150 (lx);
- adequate fire protection;

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\(^{10}\) Cf.: *Magazyn klasy A – czym się wyróżnia ten typ magazynu?* [online]. Available at: https://altmasterlogistyka.pl/magazyn-klasy-a-czym-sie-wyroznia-ten-typ-magazynu, [Access of the day 02 April 2022].

\(^{11}\) Cf.: *Czym charakteryzują się nowoczesne powierzchnie magazynowe?* [online]. Available at: https://www.extratimeout.com/pl/biznes/czym-charakteryzuja-sie-nowoczesne-powierzchnie-magazynowe.html [Access of the day 02 April 2022].
appropriate sized parking lots for trucks and maneuvering yards;
− monitoring system;
− minimum height of 10 (m);
− a depth of at least 75 (m);
− no residential buildings near;
− energy-saving construction solutions, making this type of objects environmentally friendly.

In Poland, there is a visible trend of locating warehouses close to large urban agglomerations, which are characterized by huge demand and provide great opportunities for development. At the same time, there is also an increasing preference for locations where highly developed road infrastructure is available. Road transport plays a particular important role, as investors underestimate the possibilities of using rail transport in forwarding and transport services (in occasional situations, modern warehouses are built in the vicinity of railway sidings).12

Accordingly, the warehouse market in Poland is generally concentrated in five main regions – Warsaw, Wroclaw, Upper Silesia, Poznañ and central Poland. In total, these areas house almost 81 (%) of the resources of modern warehouse space. According to experts, Pomerania will soon join the large clusters of logistics centers, including primarily the vicinity of the Tri-City.13

Fig. 3 shows the locations of the five largest concentrations of Class A warehouse facilities in Poland, along with a specification of the currently available storage space.

Warsaw is definitely a record-breaking tycoon in the category of the largest modern warehouse halls in Poland. This is the region where the most diverse products are distributed. In the Warsaw area there are a total of approx. 5,4 million (m²) halls. Another record-breaking region is Upper Silesia, which is a place for large industrial investments. The total area of storage halls in this area is about 4,2 million (m²). In third place is Central Poland, which boasts a result of 3,5 million (m²).14

Studies of numerous source materials indicate that the development of modern point infrastructure in Poland, and in particular modern warehouse space, has recently been characterized by a very high, unflagging growth dynamics.

12 B. Galińska, Gospodarka..., op. cit., p. 17.
ASSESSMENT OF THE IMPACT OF THE COVID-19 PANDEMIC ON THE SITUATION OF THE MODERN WAREHOUSE SPACE MARKET IN POLAND

In March 2020, a state of epidemic emergency was declared in Poland, followed by a state of epidemic in connection with the spread of the new infectious disease Covid-19, caused by the SARS-CoV-2 virus.16

The first particularly serious consequence (reaction) of the pandemic spreading in Poland and around the world was the "lockdown", which was introduced in Poland at the turn of March and April 2020. It consisted in closing: borders, shopping centers, restaurants, cultural and sports facilities. Wide-ranging restrictions on the free movement of the population and a ban on the organization of mass events have also been introduced. The result of the actions taken was that a number of sectors of the Polish economy suffered. In particular, these were such industries as: hotel, catering services and transport (apart from the fact that they have a small share in Gross Domestic Product - GDP). It is important that the analysis of a number of data shows a decline in retail sales, which in April amounted to 23 (%) year-on-year. At the same time, small and micro-enterprises, usually with small financial reserves, found themselves in an extremely

15 Developed on the basis of: Największe magazyny w Polsce — co magazynują, do kogo należą? [online]. Available at: https://budownictwoportal.pl/najwieksze-magazyny-w-polsce-co-magazynuja-do-kogo-nalezaj/ [Access of the day 02 April 2022].

difficult situation. Many of them have reduced their current salaries in order to limit short-term losses and thus maintain financial liquidity without having to resort to redundancies. At the same time, it should be remembered that all actions were taken in an unprecedented situation, where it was difficult to predict how long the pandemic would last and what its effects would be.\textsuperscript{17,18}

What is more, one should realize that a number of changes, which have taken place in the global economy (especially in China), have had incredible and direct impact for activity market of lease of warehouse space in Poland. For example, when the production has slowed down significantly due to the coronavirus, resulted in changes in the functioning of global value chains and commodity markets not only in Poland, but around the world. Compared to similar experiences in the past, such as the SARS outbreak in 2003, the world economy has become much more interdependent and China plays a much larger role in it. Significantly longer-lasting and more intense outbreak of the virus could seriously weaken growth prospects – in the extreme case, global GDP could fall to 1.5\% in 2020, which is more than half as much as predicted before the outbreak. What is more, there has been a high level of uncertainty in global trade due to Covid-19. Its effect was, for example, a descend in the volume of commodity trade, which in the whole of 2019 fell for the first time since 2009. At the same time, a decrease in activity in container ports and significant decreases in air freight traffic were observed.\textsuperscript{19}

The difficult, complicated and uncertain situation caused by the spreading SARS-CoV-2 virus has also had a particular impact on changes in customer behavior. The effect of this was (and is) an increase in the number of purchases made via the Internet (in 2021, almost 120,000 companies in Poland expanded their core business with a new sales channel – online trade\textsuperscript{20}). The consequence of this phenomenon was that the companies were forced to secure additional warehouse space for their needs. The actions described above were to secure the necessary space to ensure, firstly, continuity and, secondly, liquidity of business activity, regardless of the changes taking place in their environment caused by

\textsuperscript{17} Skutki Covid-19 dla polskiej gospodarki [online]. Available at: https://www.gov.pl/web/oecd/skutki-covid-19-dla-polskiej-gospodarki [Access of the day 02 April 2022].

\textsuperscript{18} Koronawirus a gospodarka. Skutki i zagrożenia [online]. Available at: https://www.egospodarka.pl/162574,Koronawirus-a-gospodarka-Sikutki-i-zagrozenia,1,39,1.html [Access of the day 02 April 2022].

\textsuperscript{19} Cf.: Wpływ koronawirusa na światową gospodarkę [online]. Available at: https://www.gov.pl/web/oecd/wpływ-koronawirusa-na-swiatowa-gospodarke, [Access of the day 02 April 2022].

\textsuperscript{20} E-commerce rozkwita. W 2021 r. sprzedaż w internecie rozpoczęło 120 tys. [online]. Available at: https://www.egospodarka.pl/175142,E-commerce-rozkwita-W-2021-r-sprzedaz-w-internecie-rozpoczelo-120-tys,1,39,1.html [Access of the day 02 April 2022].
the constantly spreading pandemic. The above was reflected in the growing demand for a modern industrial and logistics space available "on the spot", which during the pandemic maintained the dynamics of the growth of modern warehouse space in Poland area, while maintaining a low vacancy rate, which in the worst period for the market in question was at the level of 7.5 (%). The conducted analyses show that the only slight slowdown in this area is noticeable in 2019. It is shown in the Fig. 4.

![Fig. 4. The amount of warehouse space and the vacancy rate in modern warehouse space in the years 2016 - I quarter of 2022](source)

Source: own work by G. Stankiewicz21

The above considerations are also confirmed by the gradually increasing (especially in particularly attractive locations) rental price of one square meter of modern warehouse space. This is a kind of reaction to the constantly growing demand for this type of warehouse facilities. Particularly interesting is the fact that in the same period an increase in the supply of available warehouse space is observed. At the same time, it should be emphasized, that many of the investments put into use during this period were so-called “speculative investments”. Therefore, they came from initiatives taken by individual developers, in a situation where the investor does not have previous lease agreements. Changes in warehouse space rental prices in 2016-2022 (first quarter) are shown in the figure below.

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21 Developed on the basis of references: [3], [14], [15], [16], [17], [18], [19], [20], [21], [23], [25].
At this point, it is particularly worth emphasizing that the phenomenon presented above clearly testifies primarily to the stability of the market in terms of base rents. However, (in the opinion of the authors) it should be taken into account that in subsequent periods we will be able to observe a decrease in the area available immediately, due to signed long-term contracts.

According to the authors, the previously presented analyses and observations also undoubtedly show that the market of modern warehouse space in Poland during the pandemic, caused by the SARS-CoV-2 virus, has not slowed down the dynamics of its growth in any way, but what is more – since 2020 a further increase in interest in the market of modern warehouse space is visible in our country.

CONCLUSIONS

The analyses which were carried out by the authors and the synthesis of a number of conclusions contained in numerous studies included in the literature on the subject indicate, that the functioning of the modern warehouse space market in Poland during the pandemic was influenced by a number of observable phenomena, which include:

− dynamic development of e-commerce;

Developed on the basis of references: [3], [14], [15], [17], [18], [19], [20], [21], [23], [25].
- "heated" courier services market and last mile Logistics;
- Nearshoring;
- the desire of retail chains to make more stocks.

The results obtained in the process of research authorize the authors to draw a few the following conclusions of a general nature.

First of all, the results of the conducted research indicate that the Covid-19 pandemic has not adversely affected in some particularly negative way to the functioning market of modern warehouse space in Poland. On the contrary, this market recorded a visible upward trend with relatively high rental prices and low vacancy rates.

On the other hand, the last Pandemic has primarily went down in history by the fact that changed a number of previous behaviors observed in fraudsters (speculators) and manufacturers, which has become an important driver of the dynamic development of modern warehouse space due to the gigantic demand for e-commerce services, as well as nearshoring, thanks to which could greater stability of supply is ensured by the proximity of production.

The results of the conducted analyses indicate that Covid-19 has also contributed to the fact that in the region of the largest Polish agglomerations it is increasingly difficult to find an attractive location and price of land. Certainly, it translates into an increase in interest and development of alternative markets, which is why there is an increase in interest in areas, e.g. near the western border, which are conveniently located and communicated.

At the same time, the authors would like to mention that the warehouse space market is a very extensive issue, while the publishing framework limits the scope of this study only to selected and most important issues. The adopted limitations allowed to achieve the assumed goal, while indicating the directions of further research. The specific volume of the article meant that the authors did not in any way refer to how similar markets for modern warehouse space in other countries behaved during the pandemic.

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STRESZCZENIE

Z całą pewnością pandemia Covid-19 miała istotne oddziaływanie na różne sfery naszego życia, w tym także na prowadzenie działalności gospodarczej, nie tylko w Polsce, ale też w Europie i na całym świecie. Okres pandemii miał między innymi istotny wpływ na funkcjonowanie różnych łańcuchów dostaw, a przez to także na rynek nowoczesnych powierzchni magazynowych, które to są jednym z jego elementów. Tego typu przestrzeń jest niezbędna dla każdego łańcucha logistycznego, ponieważ przyczynia się do jego rosnącej odporności na szereg zakłóceń, takich jak dynamiczne zmiany podaży i popytu, czy też inne negatywne zjawiska, takie jak katastrofy (do których z pewnością należą pandemie).


Przygotowanie artykułu zostało poprzedzone szeregiem wieloaspektowych analiz literatury fachowej i czasopism, które w konsekwencji umożliwiły syntezę i sformułowanie kluczowych wniosków, które należy rozwijać w przyszłości.