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COMPETITION ON THE COURIER, EXPRESS AND POSTAL SERVICES MARKET

Marek SIKORA

Bydgoszcz University of Science and Technology, Department of Management Engineering;
m.sikora@pbs.edu.pl, ORCID: 0000-0001-9773-8527

Purpose: The purpose of the publication is to conduct a comprehensive analysis of the courier services market (CEP) in Poland. The research focuses on identifying the main players in the market, understanding their operating strategies and assessing the impact of innovative solutions on the market. In addition, the aim is to examine the competitive advantages of companies against the background of customer satisfaction levels, the way courier services are delivered, and to analyse innovations in logistics.
Design/methodology/approach: The surveys were conducted in three stages in 2020, 2021, and 2022/2023 in the Bydgoszcz metropolitan area. Conducting the surveys in three stages in different years made it possible to analyse changes over time and the mixed methodology using both online (CAWI) and face-to-face (PAPI) surveys allowed us to reach a wider group of respondents.
Findings: Pandemic COVID-19 has increased the use of courier services. The current market leader is InPost and the high level of customer satisfaction is due to innovative parcel machines, speed of delivery and convenience of tracking parcels. Research shows that courier company customers value timeliness, efficiency and modern solutions such as parcel machines, which is an important area for courier companies to focus on in their quest for customer satisfaction and loyalty.
Research limitations/implications: The results of the study are not representative, but they may be a contribution to a broader and more in-depth analysis of the KEP market and the level of customer satisfaction of courier companies. The limitations of the study include the limited geographical area (Bydgoszcz conurbation) and the small representativeness of the sample, which may affect the generalisation of the results. Research conducted on a larger scale, taking into account different regions of Poland, would provide a more complete picture of the courier services market.
Practical implications: The increase in the use of courier services during the pandemic indicates changes in shopping behaviour. It was also found that older people are less likely to use courier services for online purchases, suggesting the need to educate and adapt offers to this customer group. Courier companies should therefore focus on improving service quality, offering innovative delivery solutions, adapting to changing customer preferences and responding flexibly to changing market conditions.

Originality/value: The article provides information that can be used to make strategic decisions, tailor services to meet customer needs, increase the company's competitiveness in the CEP market, and build a strong reputation based on actual customer preferences.
Keywords: innovation, competitive advantages, postal service logistics, courier service market.
Category of the paper: research paper.

1. Introduction

Around the world, as well as in Poland, the courier services market is one of the fastest growing segments in logistics. Courier services are global, a huge industry with annual revenues exceeding USD 300 billion. Currently, there are about 580 000 courier companies around the world, employing about 4 million employees (Trzupek, 2020), with more than 300 registered in Poland (UKE, 2023). The growth rate of the courier services market is nearly 3 times the growth rate of Poland's GDP, which indicates that despite its already significant value, the Polish postal services market has prospects for further development.

The CEP industry, like the TSL sector, is a barometer of the economy, as the growing demand for transport services is a reflection of market demand for various goods, and thus confirms the increased activity of enterprises. Courier services have a huge impact on the development of the Polish economy, directly by increasing employment, investment and revenue, and indirectly by increasing the competitiveness of Polish companies internationally (Rucińska, 2016). Influenced by two megatrends - urbanisation and e-commerce - demand for last-mile delivery services has increased. Urbanisation has led to massive population growth in urban areas and some studies estimate that by 2050 there will be around 6.3 billion people living in large cities, or around 70% of the world's population (Bretzke, 2013).

The annual increase in shipments is heavily influenced by changing habits of the public, which is related to increasing computerization and easier access to online shopping, as well as the general facilities offered by courier companies for shipping a variety of items. Almost one in five Poles buys all non-food products from online stores. As a result, total retail sales in e-commerce channels in Poland in 2021 exceeded 100 billion zlotys and the Compound Annual Growth Rate averaged 28.1% (LME, 2022). Currently, areas used by the e-commerce industry in Poland occupy nearly 7.5 million square meters, accounting for 30% of the total supply. However, the intensive growth of the e-commerce sector comes with a number of challenges, among which experts most often cite supply chain efficiency and the need to further invest in last mile logistics, including courier, express and postal services. The market for CEP services in Poland in 2019 accounted for only 2.5% of the European market by value, and the forecast for 2023 indicated a slight increase to just 3% (Gawryluk, 2019).

After accelerating during the pandemic period on the back of a sharp increase in courier shipments in 2022 (up 44.2% over 2020), there was a slight deceleration. A report by the Office of Electronic Communications (UKE, 2023) shows that a total of 921.6 million pieces of courier and traditional postal parcels were carried out in 2022 (up 14.5% from 2021), generating PLN 9,934.6 million in revenue (up 15.4% from 2021), which means that 2022 was another year in a row in which an increase in revenue from these services was observed. The "Polish CEP Report 2022" shows that the Polish CEP market is valued at PLN 17 billion (LME, 2022). UKE's forecast assumes that the market will reach 1 billion shipments in 2023 and 1.05 billion in 2024.

1.1. Development of the courier service industry in Poland

The courier market is part of the transportation, freight forwarding and logistics (TSL) services sector. The first courier companies originated in the U.S. where they expanded into Europe and other continental markets in the 1970s. In the 1990s, the main activity of these companies was the delivery of parcels from sender to addressee, and the biggest advantage of these services was reliability. With the development of information and communication technology, courier companies have made improvements, related to better timeliness, precision and higher quality. In the 21st century, these companies are able to offer their customers service packages, based on information management systems and flexibility in performing the services of principals (Rydzkowski, 2011). In Poland, the industry is relatively young, as the first courier companies only appeared in the 1980s (Marcysiak, Pieniak-Lendzion, Lendzion, 2013). This was due to the fall of communism and the change of regulations in international shipping law (Pliszka, 2008).

Courier companies are the main logistics intermediaries that, without acquiring ownership of products, function in a specialized way, which allows them to offer high-quality logistics services (Stojanov, Zhelyazkova, Gramatikova, 2018). There is no clear definition of courier services in Polish law, although it is commonly and in the literature on the subject. Courier service is classified on the one hand as a postal service and on the other as a transportation service (Gulc, 2017). We can define courier service as a service that involves collecting a shipment from a customer ordering a particular service and delivering it to the recipient at a specified address, within a specified time. However, in the Postal Law, amended in 2022, there is a definition of courier service, according to which it is a registered letter or postal parcel, received, sorted, moved and delivered in a manner that ensures recording of the time of posting and delivery, tracking of the route of the parcel, timely delivery of the parcel to the recipient at the place specified by the sender or addressee (parcel redirection). The definition universalizes, among other things, modern technological solutions, including digital services and communications, takes into account service through self-service parcel machines (Prawo Pocztowe, 2012).

It should be taken into account that the courier company, in addition to postal services, also provides services under the transportation law. In this case, the carriage service may involve a consignment of goods, which are items accepted on the basis of a single shipping document. However, the carriage service may not include postal items (Prawo Przewozowe, 2000). Courier services are often referred to interchangeably as CEP (courier, express and parcel) services. It is problematic to separate express services from courier or parcel services due to the lack of major differences between them.

A CEP service can be defined as a service that involves the delivery of a shipment from the sender to the recipient or to the recipient's designated location by a qualified company, using an appropriate logistics network, with the ability to both track the status of the shipment and the delivery date. The delivery of the shipment is to be in the shortest possible time, at an appropriate cost, and in accordance with the customer's predetermined expectations (Kawa, 2018).

At the beginning of its development, the CEP market belonged to the Poczta Polska (Polish Post Office) and global integrators: DHL, UPS and DPD. The operators specialized mainly in servicing B2B customers and most of them were just beginning to learn the eCommerce area. The fulfilment of shipments by eCommerce stores consisted of either letter mail or normal postal parcels. CEP shipment processing consisted of simple posting and delivery. There was the possibility of tracking the shipment and additional, but quite rarely used at the beginning of the development of this industry, services such as confirmation of receipt or cash on delivery, which had to be paid extra. The beginnings of the development of services offered by CEP operators were difficult in particular for retail customers, who, when sending a parcel, had to pay a higher price in case of "delivery to" or "pickup from" a private person (Gawryluk, 2019).

In the following years, the development of CEP parcel service offerings for eCommerce customers began. At the beginning of the development of this industry, delivery was door-to-door, but now it is possible to order a shipment to specific pick-up locations, such as grocery stores, gas stations, newsstands and parcel machines. Such solutions have gained a lot of interest among customers, which has been influenced by the increased availability of the Internet in households. More and more Internet users were also interested in eCommerce, generating an increasing number of shipments. Volume dynamics increased, with almost 100 million more shipments in 2014 compared to 2010. The increase in volumes prompted CEP operators to make pricing and communication changes – text messages or emails with information about the status of the shipment and the courier's planned delivery date (and often a contact number for the courier) were introduced, helping to increase the efficiency of order fulfilment.

The financial as well as insurance and telecommunications industries, by offering eSales of their products, initiated procedural services: the courier not only delivered the contract and the goods, but was obliged to check the recipient's data, follow procedures, download attachments, sign and return the parcel to the sender. It became standard to insure shipments (Kawa, 2018).

With advances in technology, companies also introduced mobile apps. Increasing competition and customer expectations have led CEP operators to focus primarily on the quality of their services (Ratajczak, Lorenc, 2015) by investing in infrastructure development, modern technology and human resource development (Krasuski, 2016).

In recent years, courier companies have had to adapt very quickly to market changes. While other industries have had to give up rented premises, lay off employees or forcibly send employees on holidays, the courier industry has seen rapid growth in shipment volumes and companies have been expanding their services and deliveries. In 2019, more than 440 million courier shipments were delivered to Poles - almost 20% more than in 2018. According to many analyses, the courier service industry is one of those for which the global crisis caused by the SARS-CoV-2 coronavirus provided a major boost to development with the continued growth and participation of online commerce. According to Central Statistical Office (CSO) data, April 2020 saw the largest drop in retail sales due to the restrictions. There was also a 27.7% increase in online sales compared to April 2019 (GUS, 2020).

Running an e-commerce business requires an offer tailored to the needs of today's consumers. It is no longer just the quality and price of goods that determine whether a customer decides to buy from a particular shop, but also the speed of delivery. According to data from the Gemius Research Institute, delivery of goods within 8 hours motivates as many as 95% of respondents to buy online. The percentage of internet users who declare that they buy online has stabilised and currently amounts to 77%, with significantly more people shopping on Polish (75%) than foreign websites (32%) (Gemius, 2022).

1.2. Competitiveness of the courier services market

The courier services market is the most competitive market in the postal services market. Between 1996 and 2022, there was a 20-fold increase in the number of non-public operators (Figure 1) and currently there are 302 such operators on the Polish market (as at December 2022).

Unlike Polish Post Office, which as the designated operator is obliged to provide services in domestic and cross-border traffic, alternative postal operators may provide their services nationally, internationally or only locally. The analysis of activity conducted by alternative postal operators indicates that in 2022, 105 of them provided services exclusively in one of the three market segments (including 64 exclusively in the courier mail segment). Only 3 alternative operators were active in all three postal market segments.

The market of courier, express and postal services (CEP) in Poland is one of the most competitive in the European Union, which results mainly from the presence of large players, such as Polish Post Office, courier companies, express services and the emergence of innovative solutions, such as Paczkomaty 24/7 InPost.

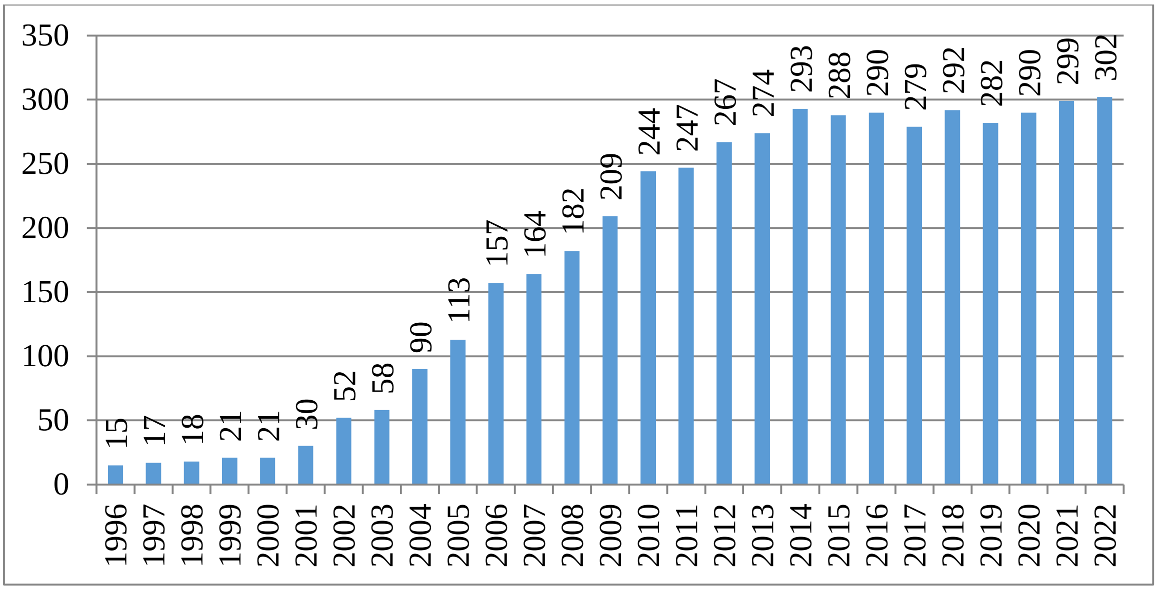

Figure 1. Number of registered alternative postal operators in the period 1996-2022 (as at 31 December each year).

Source: own study based on UKE data.

The CEP market in Poland is dominated by seven players (GS1 Polska, 2020):

- postal operator: Polish Post Office;
- three global integrators: DHL, UPS and FedEx (TNT);
- two companies owned by European post offices: DPD (French Post) and GLS (British Post);
- a national entity with foreign capital: InPost (Advent International).

However, these are not all entities that provide express and distribution and postal services. There are a dozen more companies that have services similar to CEP and many local couriers and service intermediaries.

The Polish Post Office is a state-owned company with a 465-year tradition, which acts as the designated operator, i.e. the operator obliged to provide universal postal services. Polish Post Office has the largest logistics network in Poland, comprising almost 7600 offices, branches and postal agencies and employs approximately 60 000 employees (Poczta Polska, 2023). It enables the collection or sending of parcels in postal outlets, Ruch kiosks, Orlen stations, Żabka shops and parcel machines. In total, it has about 12 000 PUDO (Pick-Up and Drop-Off) points. Poland Post, dominating the CEP market with its low prices and extensive network of post offices and delivery points, has had to adapt its approach to market competition and new innovations that have changed the industry. In addition, it provides parcel post services, courier services, logistics and banking and insurance services. It is also developing the area of digital services provided by the Envelo online platform.

Another major player on the Polish CEP market are courier companies, providing door-to-door delivery services for parcels and other items. The courier market in Poland has been experiencing an influx of new companies since the 2000s, increasing competition and driving down prices. In this dynamic environment, key players include global corporations such as

DHL, UPS, FedEx, European postal companies DPD and GLS as well as numerous local and regional companies competing for market share. Competition is not only about prices, but also about the variety of services offered to customers. Courier companies have an advantage over Polish Post Office due to their ability to provide faster delivery times and more reliable services. However, they tend to be more expensive than Polish Post Office and are not able to provide the same level of coverage as Polish Post Office. Courier companies are trying to differentiate themselves by offering, among other things, express delivery, same-day delivery and door-to-door delivery. Investment in modern technologies such as GPS tracking and electronic signatures allows companies to improve their reception among customers. As a result, competition in the Polish courier market is intense and companies are constantly striving to differentiate themselves with prices, services and technological innovations to benefit customers.

Evidence of the high competitiveness of the courier segment in the Polish postal market was the decline in average revenue per courier parcel, observed for several years. In 2022, the average revenue per courier parcel increased, meaning that some operators decided to moderately increase prices in response to rising operating costs (UKE, 2023).

The largest CEP operator in Poland until recently was DPD Polska. Its position strengthened significantly after the acquisition of Siódemka in 2015, which mainly served smaller customers and the B2C segment. In 2021, the company delivered 226 million parcels. DPD currently works with 10000 couriers and has a network of around 25 000 sending and receiving points including city branches and parcel machines (O DPD Polska, 2023).

In 2022, InPost became the market leader in terms of both volume and revenue. The company has grown by nearly 40% over the past year alone, with its key competitive advantage being the largest parcel machine network in Europe. InPost delivered 507.2 million parcels in 2022 and is now almost twice the size of DPD (255.6 million) and four times the size of Polish Post Office (126.2 million) (LME, 2022).

An analysis of the data shows that the 7 largest courier operators in terms of volume and revenue had a 98.8% share of total volume and 97.6% share of total revenue in this market segment in 2022, respectively. InPost and second-ranked DPD account for approximately 64% in terms of volume and just under 50% in terms of revenue in the CEP market (Table 1).

Table 1.
The largest postal operators in the courier segment in 2022

Ranking position	By volume	By revenue
1.	InPost Paczkomaty sp. z o.o.	InPost Paczkomaty sp. z o.o.
2.	DPD Polska sp.z o.o.	DPD Polska sp.z o.o.
3.	Poczta Polska S.A.	GLS Polnad sp. z o.o.
4.	GLS Polnad sp. z o.o.	UPS Polska sp. z o.o.
5.	UPS Polska sp. z o.o.	FedEX Express Polska sp. z o.o.
6.	FedEX Express Polska sp. z o.o.	Poczta Polska S.A.
7.	DHL Parcel Polska sp. z o.o. i DHL Express (Poland) sp. z o.o.	DHL Parcel Polska sp. z o.o. i DHL Express (Poland) sp. z o.o.

Source: (UKE, 2023).

InPost has introduced Paczkomaty 24/7 as a way of delivering goods to special post office boxes owned by the network. The parcel machines allow customers to pick up a parcel from a convenient location at any time of the day or night, without having to wait for a courier. Their main advantage is their availability 24 hours a day, seven days a week, convenient locations, lack of queues typical of post offices and the competitive price of the service (lower than the door-to-door services of the Polish Post Office and courier companies). InPost parcel machines are becoming increasingly popular among online shops because of their convenience and competitive price. By adapting to the lifestyle and increasing expectations of consumers, the aforementioned courier service has become the most popular delivery option (Żak, Kowalski, 2017).

1.3. Impact of innovative solutions on the market

The emergence of innovative solutions such as Paczkomaty 24/7 InPost has had a significant impact on the Polish CEP market. The introduction of this innovative solution has enabled InPost to gain a competitive advantage over Polish Post Office and other postal services and courier companies in the market (Szewczyk, Trajer, 2017). The total time spent by the user at the parcel machine is reduced to a minimum and the use of a dedicated app on the phone makes it possible to locate the parcel machine, check the status of the parcel, open the box remotely, and pay for the parcel without a label from any parcel machine.

These solutions have also forced other players in the market to be more innovative and have had a positive impact on the entire CEP market in Poland, increasing competition, which has translated into lower prices and better customer service. This has made the Polish CEP market more attractive to customers and allowed it to grow and expand.

One example is the Polish Post Office, which has introduced its own version of the Paczkomaty 24/7 solution called "Postomaty". Internet service Allegro has also launched its own parcel machines under the name "Allegro One Box". Another example is the "ORLEN Paczka" machines, located at Orlen petrol stations, housing estates, service and retail outlets. "Alimaty", on the other hand, are devices operated by Chinese logistics company Cainiao Network, founded by AliExpress website owner Alibaba Group, enabling parcels from Asia to reach Poland faster. The courier company DPD is also developing a network of "DPD Pickup Station" parcel vending machines in Poland's largest cities. DHL is also joining the ranks of competitors with parcel machines under the name "POP Box".

Some competing machines offer fewer boxes, the machines do not have touch screens or scanners and the parcel can only be sent or collected via a mobile app. InPost has more than 19 000 parcel machines in 2022, which fit into the urban and rural landscape. Competitors together have many times fewer machines than InPost alone, but they do not want to give up the fight and are aiming to increase their market share.

At DHL Express Poland, more than half of the shipments involve e-commerce. For parcel recipients, it is very important to organise an efficient and flexible delivery. On Demand Delivery is a service that allows the recipient to change the place or date of collection of the shipment, to transfer the collection of the shipment to another person, to change the method of delivery and, very important since the pandemic, the possibility to deliver without a signature. DHL Express customers have a choice of delivery options thanks to its network of Service Points and POP Box machines. A great convenience is the possibility to easily and quickly pay customs and taxes via a web application and the possibility to pay at the courier - thanks to payment terminals (Michalski, 2020).

In addition to innovative technologies, DPD also focuses on comfort, flexibility and, above all, the convenience of receiving parcels, offering recipients to manage their parcel through Predict interactive notifications, and the MojaPaczka app. This makes it possible to quickly contact the courier, set a date and secure delivery of the parcel. The company's customers have the option of using several payment options, including: the possibility to pay by card at the courier's desk or during purchase via an e-shop form. The "DPD Pickup City Branches" have fitting rooms, where you can try on clothes, check whether the purchased item meets your expectations and, if not, you can immediately send a return. These branches offer the possibility to use special materials to pack the parcels, to make a delivery note and to have a coffee (Markowska, 2020).

Last-mile deliveries involve loads that are stochastic and vary considerably from period to period. A modern approach to such deliveries must therefore be both flexible and scalable (Mohammad, 2023). As an alternative solution in urban areas, pick-up and delivery points can improve logistics efficiency and reduce emissions. Particularly in populated city centres or near high-traffic areas, these points may be preferred by customers. As studies indicate, the future of last-mile logistics will be shaped by technology, innovation and customer demands (Demir, Syntetos, van Woensel, 2022).

2. Methods

The aim of this article is to analyse the CEP market in Poland, identify the main players and their strategies, assess the impact of the emergence of innovative solutions on the market and examine the competitive advantages of the players in this market.

The research problem is to identify the main challenges and determinants of competition in the Polish courier, express and parcel services market, as well as to identify the impact of innovations on this competition?

The study uses a critical content analysis of the available literature: academic publications, industry reports and other materials related to the courier services market to identify the main themes, trends, theories and solutions presented by various authors.

The study is an attempt to fill the cognitive gap related to the impact of the pandemic on the business models of courier companies. It is noted that the COVID-19 pandemic has significantly increased the use of courier services. The research focuses on analysing the changes in business models of courier companies due to the pandemic, including strategy adjustments, logistical innovations and flexibility in handling increased demand.

In order to analyse the courier services market in detail, beyond the available statistics, three different surveys were conducted in 2020, 2021 and at the end of 2022 and the beginning of 2023. The surveys covered: 1. an assessment of customer satisfaction with the use of selected courier companies, 2. an assessment of how courier services are delivered by the selected company, and 3. an analysis of innovations in logistics that solve the 'last mile problem' in courier services. A limitation of the study is that it focuses on the Bydgoszcz conurbation. Another survey extended to different regions of Poland could reveal regional variations in customer preferences, as well as specific challenges and opportunities for courier companies in different areas of the country. Therefore, the next stage will be a broad survey of selected issues across the country, which is planned for 2024.

The aim of the first stage of the research was to assess the level of customer satisfaction with the use of selected courier services in Poland. The survey focused on the quality of courier service provision and the quality of customer service.

The survey was conducted from June to August 2020. A survey questionnaire was prepared which was completed by 130 respondents: 60 in the form of a web survey using the CAWI (Computer-Assisted Web Interview) method, and 70 in the form of a face-to-face survey using the PAPI (Paper & Pen Personal Interview) method. The combination of the online survey method and the face-to-face survey method provides an opportunity not only to reach young, frequent Internet users, but also older and less computer literate people. This made it possible to reach different age groups, which would have been difficult using only the online survey method.

The survey was conducted on customers of courier companies residing in Bydgoszcz and the surrounding area. In the case of this survey, a non-random sample was selected and the method for selecting sample units was quota selection.

The questionnaire was made available several times on Facebook in the group "Bydgoszczanie" and others associating the residents of Bydgoszcz and its surroundings to reach only people affiliated with the Bydgoszcz agglomeration. The printed survey questionnaires, meanwhile, were made available to several institutions whose employees or customers reside in the Bydgoszcz agglomeration. Of the 130 responses collected, there were 66 women and 64 men, representing 50.77% and 49.23% respectively. 88 respondents were from urban areas (67.69%) and 42 lived in rural areas (32.31%).

The aim of the second stage of the research was to evaluate the delivery of courier services at the selected company. This company was DPD Polska, the leader of the courier market in 2021 both in terms of volume and revenue. The research was conducted in April and May 2021 in the form of an online survey using the CAWI method. The questionnaire was shared several times on Facebook with a description that the survey was aimed at online shoppers and those using DPD's services.

The survey elicited 130 views from online shoppers and DPD users. A non-random purposive selection was used. In order to meet the purpose of the study - only those who shop online and use or have used DPD services were invited to take part in the study. 83.1% of the respondents were female, while 16.9% were male. 66.2% of respondents were from urban areas 33.8% lived in rural areas.

The aim of the third phase of the research was to analyse innovations in logistics that solve the 'last mile problem' in courier services. It investigated whether self-pick-up at InPost parcel service points is a good alternative to traditional courier services. The study was designed to test the level of quality of service available at InPost parcel services compared to DHL courier and to diagnose the problems faced by customers using both types of service.

The research was conducted in December 2022 and January 2023 in the form of an online survey using the CAWI method. The questionnaire was shared several times on Facebook and Instagram platforms. 200 responses were obtained from respondents, of which 55.5% were given by women and 44.5% by men. The majority of respondents lived in urban areas (95%) and only 5% of respondents lived in rural areas.

3. Results

3.1. First stage of research

In 2020, of the online shoppers surveyed, the vast majority, as many as 90.77%, used courier services, including 6.92% more than once a week. About 9.23% of respondents do not use courier services at all, two thirds of whom are over the age of 64. Older people often do not know how to use a computer or do not have access to the internet, and are afraid of potential scams when shopping online.

The priority when choosing a courier service is the delivery time with the average of respondents indicating 4.45 on a scale of 1 - 5 (where: 1 - least important, 5 - most important). Slightly less important was the price - 4.36 and the third highest average was the quality of delivery - 4.21. The fourth position was occupied by the proximity of the collection point with an average of 4.12, followed respectively by the quality of service (4.11), the possibility to pick up the parcel 24/7 (3.70) the payment method (3.70) and customisation of the offer (3.43). The least important was recognition of the company (3.14).

In the multiple-choice question, the most frequently indicated courier company used by the respondents was Polish Post Office, with as many as 90.68% of answers. Next, respondents indicated 3 companies almost equally: DPD, which was used by 77.97% of respondents, InPost (76.27%) and DHL (76.27%). This was followed respectively by GLS, used by 50.85% of respondents so far, UPS with 44.92% and FedEx with 30.51% of indications. Other companies had marginal indications.

When asked to rate the quality of courier services on a scale of 1 - 5, respondents rated InPost best (average 4.30). It is the only company with an average above 4.0, which leads significantly over the rest. This was probably heavily influenced by the ability to use 24/7 parcel machines to collect ordered parcels. DHL came second with an average of 3.88 followed by DPD (3.80). UPS was ranked fourth with an average of 3.76 and Polish Post Office was only fifth (3.56). This was followed by GLS (3.55), FedEx (3.36) and other lesser-known companies, with an average of 3.05.

As many as 60% of those taking part in the survey are not attached to one courier company. 19% of those surveyed have no opinion on the subject and for only 21% of people, consistently using one chosen courier company is important. This may mean that, while it is easier to acquire new customers from other providers, it is just as easy to lose such customers to competitors by failing to meet certain expectations.

In as many as 70% of cases, there was a situation where the courier did not find anyone at the indicated delivery location. This indicates the importance of the courier's contact with the recipient before delivery and the company's behaviour in the event that the parcel cannot be handed over to the recipient. Courier companies deal with such a problem in different ways.

When assessing the quality of deliveries on a scale of 1 to 5, the most important factor was the condition of the parcel, which scored an average of 4.75 among respondents. The second most important factor for courier company customers is the timeliness of deliveries with an average of 4.69 and in third place was the short delivery time. Also important were the adequate flow of information about the delivery (4.12) or the staff's handling of problematic situations (4.08), e.g. when a parcel is damaged, when an item does not match the description or when there is a long delay in delivery. This was followed by telephone contact before delivery (mean score of 4.03), the courier's personal culture (4.00) and, in last place, the ability to choose or change the delivery time (3.78). This last indication may come as a surprise in the context of previous statements that in 70% of cases the courier did not find anyone at the indicated delivery location. 75% of the customers surveyed had not experienced a lost parcel, 11% did not remember such situations and as many as 14% had experienced a situation where their parcel was lost, which seems quite a high percentage.

Respondents rated on a scale from 1 to 5 (where 1 - very bad, 5 - very good) the possibility of using 24/7 parcel collection facilities (e.g. 24/7 parcel machines). As many as 85.59% of those taking part in the survey considered such an option to be very good. 10.17% found it good, 3.39% found it average and a marginal number of respondents (0.85%) found it bad.

No one considered this solution to be very bad. These responses clearly indicate that the idea of 24-hour pick-up facilities has been welcomed by parcel recipients, which is, in fact, reflected in the investment of many courier companies in similar facilities.

Respondents were also asked whether they had used courier services more frequently during the COVID-19 outbreak. As many as 62.71% of respondents answered in the affirmative. 29.66% of respondents did not use courier companies more often and 7.63% gave the answer "don't know/don't have an opinion". This allows us to conclude that a significant proportion of people have started to shop online more often during the pandemic period and thus use courier services.

3.2. Second stage of research

Respondents, when asked in 2021 about the frequency of their online shopping, most often indicated the answer 'once a week' or 'several times a month' (63.9%). 14.6% buy once a month and the same number less frequently than once a month, while almost 7% buy online very often, several times a week.

According to the respondents, the most well-known online shopping site is Allegro, mentioned by 92.3% of the respondents and the next most popular brand, Zalando, was indicated by 23.1% of them. This is followed by OLX (21.5%), Aliexpress (20%) and Ceneo (10%). Other responses totalled 16.2%, which included Amazon, Rossmann, Online Pharmacy, clothing shops: Smyk, Vinted, Shein, Born2be, Reserved, House or Sinsay. As the question was multiple choice - the sum of the answers exceeds 100%.

Respondents were also asked which courier companies they choose most often. In the multiple-choice question, the most frequently indicated courier companies were InPost (80.8% of respondents), followed by DPD (76.2%), DHL (40%), Pocztex (18.5%), or GLS (16.2%), UPS (10.8%) and FedEx (5.4%). Other companies had marginal indications.

Respondents rated DPD against other courier companies. The company was rated very good and good by as many as 90.7% of respondents and rather bad and very bad by only 2.3% of respondents (6.9% had no opinion).

Respondents were asked about the impact of selected elements on their assessment of DPD's performance. The most important was the transportation of parcels in undamaged condition, as 83.1% of respondents marked the answer "this is the most important for me", and for 15.4% it was of great importance. The timing of the service is also important in both of these characteristics, 97.7%, and in third place for customers were experience and reliability (91.5% in total). Only in fourth place was the price of services (88.5%) and the least important was the way complaints were handled - 83.1%.

When asked to rate the prices of DPD's services on a scale of 1 to 5 (where 1 means bad and 5 means very good), the majority of respondents indicated a good rating (58.5%) and 32.3% even a very good rating. Bad and very bad were perceived by 1.5% and 7.7% of respondents respectively. This may indicate that DPD's prices remain at a similar level to those of its courier competitors.

Although the majority of respondents, 86.2%, did not encounter parcel damage by the company, the remaining 13.8% of those who were affected by such a situation may be concerned. Only or as many as 10% of respondents had made complaints about DPD's service delivery, indicating that this may still be room for improvement for the company.

The option to track a parcel is now available from almost every courier company. It was checked how often this service is used by the respondents and it turned out that only 5.4% of those asked never used this function and 37.7% of the respondents sometimes monitor their parcel. However, more than half of them (58.8%) use the option of tracking a parcel frequently or very frequently, which, for example, may be related to the need to wait at the place of collection for the courier's visit.

When asked about the duration of delivery, the majority of respondents answered that the parcel is delivered on the second consecutive working day as standard - 56.2%. A sizable group of respondents receive their parcel on the next working day using the DPD NEXT DAY service. None of the respondents, on the other hand, used the more expensive DPD TODAY service - i.e. receiving the parcel on the same working day, and no one marked the answer "on a later date" - which may indicate a smooth delivery process.

The form of delivery is one of the most important things that often influences the choice of company. DPD provides delivery by courier or to DPD Pickup points. When asked about the most frequently chosen form of delivery, respondents indicated delivery directly to the home (often and very often - 73.1%) and to pick-up points often and very and often only 23.8%. 42.3% of respondents never used DPD pickup points and only 1 person never used home delivery. Surprisingly, 70% of those asked indicated that they use parcel machines (which DPD did not yet have at the time of the survey). It was not until mid-2021 that DPD started installing DPD Pickup Station parcel machines in Poland's largest cities. This may indicate the strong association of parcel machines with courier services and the prevalence of their use, regardless of the company's brand.

3.3. Third stage of research

When respondents were asked in 2022/2023 how often they shop online, 48% indicated the answer 'several times a month'. Once a month purchases are made by 33.5% of respondents and at least once a week by 16%. Only 2.5% of those asked do not shop online.

In order to compare the services of the two analysed companies InPost and DHL, customers were asked to choose between them. 93% of respondents chose InPost parcel machines, while only 5.5% chose DHL courier. The answer 'none of the above' was selected by 1.5% of respondents.

When assessing factors affecting the quality of courier services, respondents were able to select more than one answer. Among the most highly rated factors, on-time delivery (75.5% of indications), lower cost of services (64%) and reduced paperwork (58.5%) came first. Other factors that influenced the improvement of courier services were increased reach (37.5%), easy contact with the courier (37%) and higher supplier competence (36.5%). In last place were: expansion of the existing offer - 34.5% of respondents and modern rolling stock - 33.5%.

More than half of the respondents (67.5%) are satisfied with the level of service provided by InPost Paczkomaty, with 16.5% of those surveyed rating it good. A total of 8% rate the company very badly and badly, indicating that there is still considerable room for improvement.

Comparatively, respondents were also asked to rate the level of service provided by the DHL courier. The results show the opposite situation to that of InPost. Most people (30.5%) marked the answer "bad" and "very bad" (23.5%), while good and very good were rated by 9% and 7% of respondents respectively. The puzzlingly high percentage of negative ratings may indicate an overall negative perception of couriers.

In a direct comparison of these companies in terms of the selected criteria, respondents could mark more than one answer. The courier company InPost Paczkomaty was rated significantly better, receiving the most indications among criteria such as delivery time (88.8% compared to 11.2% for DHL courier), the ability to track the parcel, 87.9%, or more convenient delivery (84.8%). This was followed by price (83.5%) and timeliness (81.7%).

The survey addressed the usefulness of the innovative parcel service offered by InPost. 82% of respondents believe that self-pick-up of parcels at InPost parcel service points is a better alternative than courier delivery 'to the door', which was chosen by only 14% of respondents (4% had no opinion).

Among the problems encountered by users of both companies' services, delivery delay was indicated by 19% of InPost Parcel Service users and 49.5% of DHL customers. Damage to the parcel was indicated by 16% (InPost) and 42% (DHL) and loss of the parcel by 11% and 40.5% respectively. In contrast, the absence of any problems was indicated by 65% of InPost customers and only 10.5% of DHL courier customers.

4. Discussion

4.1. Factors influencing the development of the courier service industry

The growing demand for online shopping has led to a situation where, in 2019, for the first time ever in Poland, more than half of the value of the postal services market came from the share of courier services (an increase of 11.5% compared to 2018). It is now more than 2/3 because the share of courier services in 2022 was 66.8% (UKE, 2023).

The changing expectations of consumers, who are beginning to demand more personalisation and convenience from e-commerce services, have been exacerbated by the COVID-19 pandemic and the resulting restrictions, which has contributed to increased acceptance of e-commerce practices (Kim, 2020). The increase in courier and parcel shipments compared to 2018 was largely due to the coronavirus pandemic. The pandemic has significantly influenced how Poles shop and how they use different types of services and, over the course of several months, online shops have gained a significant advantage over traditional trade, not least because of the social distance attributed to this channel. This has also been confirmed by studies conducted.

The 2020 lockdown resulting from COVID-19 affected the entire economy, leading to instability in supply chains (Trzupek, 2020), however, the courier industry faced the biggest challenge. The huge increase in shipment volumes as well as the new conditions of sanitary rigour were a drastic change for the CEP industry. The closure of stationary shops drove the growth of e-commerce and in March 2020, parcel postings increased by more than % (Paprocki, 2020). According to the report "E-commerce in a time of crisis 2020" 37 % of respondents considered online shopping to be safer than the traditional form. Some companies saw a decrease in sales, while others recorded record sales, which depended on the industry and the extent to which e-commerce sales contributed to the company's revenue. Increases of more than 70% in shipments were observed in industries such as e-grocery, zoology, supplements and over-the-counter drugs. Declines of over 15% in the clothing and jewellery industries (Sass-Staniszewska, Czuchaj-Łagód, 2020).

In 2020, Polish entrepreneurs registered nearly 11.8 thousand new online shops. At the beginning of January 2021, the number of registered e-stores in Poland was close to 44.5 thousand. This represents an increase of 21.5% compared to the same period last year. The mass emergence of e-stores means a drastic increase in competition in search results. According to an analysis by PriceWaterhouseCoopers, 90% of Poles declared that they would maintain their level of online shopping after the pandemic, globally it is 86 %. As indicated by data from the Chamber of Electronic Commerce, 3% of consumers declare combining online and offline shopping (PwC, 2020).

E-commerce largely drives the courier industry and the number of Poles buying online continues to grow. According to the report E-commerce in Poland in 2022, already 77 % of Internet users have once shopped online, 75 % of Internet users buy from Polish e-shops and 32 % buy from foreign e-shops. The survey conducted in December 2022 and January 2023 shows that only 2.5% of respondents do not buy online. As only social media users were asked, online shoppers may be overrepresented here. Nevertheless, such a large percentage of e-consumers clearly includes all groups of internet users. Nevertheless, online shoppers are more likely to be residents of large cities, people with a higher education and those with a good opinion of their household's financial situation. The report also shows that the most well-known e-commerce sites are Allegro, mentioned by 85% of the respondents, followed by OLX, mentioned by 36%. This is followed by Zalando 19%, Amazon 17% and Aliexpress 15% (Gemius, 2022). Similar results were shown in the 2021 survey, where Allegro also came first, indicated by 92.3% of respondents, Zalando was indicated by 23.1% of them and OLX received slightly fewer votes (21.5%).

Thanks to the growth of online shopping, the development of courier companies will continue. The report 'E-commerce in Poland 2022' shows that in 2022, the value of online retail in Poland is PLN 92 billion, of which e-stores account for 61 %, with the remainder going to shopping platforms (PMR, 2022). As recently as 2018, e-commerce in Poland was worth around PLN 50 billion and over 230 million parcels were delivered to customers, confirming that the growth rate for e-commerce in Poland is one of the highest in the entire EU.

The ever-growing development of e-commerce is influenced by the increasing mobility of society and the growing popularity of mobile devices. Customers are more likely to order goods at their convenience, e.g. at night, when stationary shops are already closed, and expect their order to be processed quickly. From the 'Polish CEP Report 2022', it can be concluded that the dynamic growth of the e-commerce and CEP market will continue, despite the difficult economic situation and that related to tensions between countries (LME, 2022).

4.2. Problems and barriers to the development of courier services in Poland

However, there are barriers that limit the possibility of developing the courier services market in Poland. The main impediment includes the lack of adequately developed road network infrastructure in some areas of Poland, which affects the efficiency and speed of deliveries. This includes limited access to roads, bridges and other necessary transport infrastructure. Carriers have to deal with a constant increase in road traffic, which makes it difficult to transport goods efficiently via courier services. The distribution of modern logistics centres in Poland is also uneven, which may limit the possibilities to optimise routes and storage.

The costs of using courier services in Poland are relatively high compared to other European Union countries and the increasing costs of transport activities are related to the ever-increasing fuel prices. Also, strict transport and delivery regulations as well as the complicated process of obtaining relevant licences and permits may hamper courier company operations and increase operating costs.

Many logistics companies are experiencing a shortage of qualified staff, the result of which can be a delay in the delivery of parcels and therefore a lower quality of service. A survey conducted by ManpowerGroup and the Institute of Logistics and Warehousing in 2021 shows that the reasons for difficulties in filling jobs with new employees are mainly due to too high financial expectations of potential employees (61 %), lack of available candidates (58 %) and their insufficient work experience (44 %) (ManpowerGroup, 2021).

One of the biggest problems for haulage companies is the fluctuating demand for their services. It's not just the fashion for certain products or their seasonality, but also the mass of orders on certain days of the week or seasonal peaks. The aforementioned peaks, such as Black Friday, Cyber Monday, Free Delivery Day, result in a flurry of orders during a particular period only, which it is difficult for companies to handle in a satisfactory time for the customer. Also seasonal is the Christmas period, which is a huge challenge for courier companies every year.

E-commerce is also often associated with high order fragmentation, which forces companies to ship small batches of products. Companies involved in such online sales and logistics companies then have to develop dedicated solutions for individual customers. The expectations of e-commerce customers also have non-standard characteristics compared to other areas of the economy. In the case of e-commerce, for logistics companies the customer is both the seller of the product and its customer, i.e. the final recipient. CEP companies therefore have to adapt to two 'their customers' in the case of one shipment. For the sender of the product, quality, system integration, reliability or easy dispatch of the order are important. For the recipient of the order, on the other hand, price, convenience, flexibility and the quality of the service provided are important. Shippers also expect extended shipping times and receivers expect flexibility in delivery times.

All CEP operators that deliver within a maximum of two working days have a chance to enter the market and compete with other companies. However, e-stores cooperate with many courier companies so that their customer also has a choice and can choose what suits them best (GS1 Polska, 2020). Customers are most likely to use companies they know well, whether from their own experience or from recommendations from relatives and friends. A well-known carrier will not cause concern to customers and they are more likely to decide to place an order. It is also presumed that interactive channels of communication with customers will become increasingly important.

4.3. The last mile problem and an innovative solution - parcel machines

Online shopping, unlike traditional commerce, involves delivery to the final customer, a process that is time-consuming and costly. This is known as the last mile - the final stage of delivery to the recipient. It most often starts at the CEP operator's sorting facility or branch and ends at a specific location (at the recipient's door, Pick-Up and Drop-Off points, parcel machine or other location (GS1 Polska, 2020). The problem of the last mile can in fact be as much as tens of miles or kilometres, and the name is only customary and refers to the final stretch of the route from the moment the product leaves the warehouse to reaching the end customer. The last mile delivery is both the most expensive and the slowest part of the shipping process. Urban last-mile logistics is a significant source of traffic and air pollution. The impact of commercial vehicles on traffic can vary depending on the methodology and the area studied, but accounts for more than 20% of the total vehicle kilometres travelled within a city

(Bachofner et al., 2022). In the supply chain, last-mile logistics is the least efficient stage and causes as much as 28% of the total cost of delivery (Wang et al., 2016). According to analysts Frost & Sullivan (2018), as much as % of global logistics spending in will be generated by transportation and 40% by the last mile, which offers potential major optimisation opportunities and can be a source of great savings.

The last mile problem affects all industries that deal with direct delivery to the end customer, including:

- courier companies primarily engaged in the transport of goods ordered online,
- couriers delivering goods on demand,
- couriers operating locally,
- companies offering their own delivery service (restaurants, boxed diets, clothing, furniture, florists, grocers, etc.).

This is mainly influenced by factors such as an incorrectly stated address, difficulties in finding the location, the absence of the addressee of the parcel. It is the different working hours of courier companies and the hours of availability of private recipients at their place of residence that is the biggest problem of the last mile. One solution to this problem is to adjust the delivery time of parcels to the time when the recipient can be found at the residence (afternoon and evening hours). Therefore, for B2C e-commerce, one of the main challenges is to reduce the number of delivery failures on the first delivery attempt. This failure rate, estimated to be around 20 per cent in European cities (Van Duin et al., 2016), forces the driver to repeat the delivery without charging the customer extra (Bachofner et al., 2022). Last-mile delivery and collection are usually operational in nature and involve the knowledge fields of transport, economics and operations research. The main focus in this field is the distribution of costs and benefits for companies and society. Variables include vehicle capacity utilisation, number of kilometres travelled, fuel consumption, number of stops, loading costs, operations time and environmental measurements (Cardenas et al., 2017).

The cost of parcels not delivered the first time relates to the cost of couriers, fuel and dispatchers. The high percentage of parcels that cannot be delivered on the courier's first visit disorganises the courier's work, as well as causing additional work to be done in the dispatch centre and dissatisfied customers who have not received a parcel (Chodak, Łęczek, 2014). In some cases, the courier has to visit the recipient 3 times. The problem of repeat delivery affects about 20-30 % of all recipients.

However, not all e-buyers are willing to change their habits to make the system more sustainable. In Germany, even though the parcel network is dense and efficient, 90% of customers prefer to have their parcels delivered at home (Morganti et al., 2014).

According to EFT research, 48% of consumers request next-day delivery and 23% of same-day delivery (EFT, 2018). In urban centres though delivery times are increased by traffic jams, road accidents and parking problems. These factors are forcing logistics companies to implement solutions that minimise the costs incurred. For last-mile technical solutions, the possibility of using drones is increasingly being discussed, however, this is still a distant prospect with the larger-scale introduction of such devices. The use of bicycles in the case of large cities, where there are large traffic jams and car access is limited, has great potential in ecological practical terms. Such a courier bicycle is used in Krakow - it was specially designed for parcel delivery (Markowska, 2020).

Last-mile delivery also faces other challenges: it must meet the demands of globalised trade and meet environmental requirements. In this context, innovation is a key theme to enable the transition from current configurations of logistics systems to more sustainable ones (Ranieri et al., 2018).

One of the most frequently suggested alternatives to streamline the entire delivery process is the use of pick-up points. In order to change the state of a sector, it is necessary to introduce a surprising innovation; in the case of the last mile problem, InPost introduced Parcel Machines 24/7 and thus gained a huge competitive advantage. Initially, parcel machines were only available in a few major cities, but over time their number grew very quickly. The original idea for the parcel machines was born in 2008 and since then the company has been growing rapidly and this solution is popular with both online shops and consumers. Currently, InPost operates in several European countries, and its parcel machines can also be found in the USA. According to statistics provided by InPost, customers are keen to take advantage of the 24-hour service and 58% of parcels are collected between 6pm and 8am. This solution is also supported by the fact that, thanks to the convenient location of parcel machines, the number of delivery points in a given city can be increased.

Another interesting alternative seems to be Amazon's project created in cooperation with General Motors and Volvo, which allows for the delivery of goods to customers in their boot (in-car delivery). By entering a special code, the courier will be able to open the boot of the vehicle and leave the parcel inside then securely lock the car.

5. Conclusions

E-commerce is a dynamic phenomenon that is constantly evolving through technological developments, access to newer technologies and legal considerations. Companies providing e-commerce services are racing to meet the expectations of existing users and to attract new ones. The pandemic has not only influenced the development of e-commerce, but also the development of the Polish courier services market.

The courier, express and postal (CEP) services market in Poland is one of the most competitive in the European Union. This is mainly due to the presence of large players such as Polish Post Office, courier companies, express services and the emergence of innovative solutions such as InPost's Paczkomaaty 24/7. The Polish Post Office has been the dominant player in the CEP market for many years, but the emergence of innovative solutions and strong competition has forced the market to change to a more innovative and customer-oriented approach. The publication analyses the CEP market in Poland, identifies the current major players and their strategies, describes the impact of the emergence of innovative solutions on the market and examines the competitive advantages of the players. The emergence of innovative solutions has had a significant impact on the CEP market in Poland, as it has allowed InPost to gain a competitive advantage over Polish Post Office and other postal services and courier companies in the market.

An analysis of the KEP market in Poland has shown that the innovative solutions implemented by InPost have had a key impact on increasing the competitiveness of the industry. InPost has gained an advantage over traditional postal services, while forcing its competitors to be more innovative. This rapid growth in the industry translates into benefits for customers, such as lower prices and better service. The COVID-19 pandemic has only accelerated this process, increasing the use of courier services, and customer preference surveys have shown that timeliness, lower cost, efficiency and modern solutions such as parcel machines are important factors.

Research into customer preferences and experience of courier services has shown the COVID-19 pandemic has increased the use of online shops and, consequently, courier services. Factors influencing the evaluation of courier services include timeliness, lower cost, efficiency and modern solutions such as parcel machines, which is an important area for courier companies to focus on in their quest for customer satisfaction and loyalty. Despite a preference for specific companies, as many as 60% of respondents were not attached to a specific courier company.

In order to cope with the demands of ever-increasing scale, courier companies will have to introduce new solutions. Modern technology can contribute to greater flexibility and efficiency in courier services and ultimately increase throughput. Changes may involve broader solutions and include courier management systems, as well as route optimisation software or more innovative solutions (Trzupek, 2020).

A new challenge facing operators in the coming years is the further development of e-commerce. Factors that will determine the further dynamic development of the CEP industry in Poland will be transparent and simplified legal regulations favouring the establishment of operations in the country, expansion of the existing road and air network, optimisation of labour costs and investment in the development of professional qualifications of personnel (Gulc, 2020).

Research indicates a dynamic change in customer preferences in Poland, with a marked increase in the popularity of online shopping and the use of innovative solutions. Courier companies are responding effectively to these changes, but the market still poses challenges, especially related to delivering parcels in a convenient manner for customers.

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