

# The Impact of the Pandemic (COVID-19) on Globalization – The Perspective of Electronic Commerce

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## Abstract

**Purpose:** The objective of this article is to examine the impact of e-commerce and m-commerce on broadly perceived globalization factors before and during the COVID-19 pandemic in the opinion of customers.

**Design/methodology/approach:** The CAWI method was used with the participation of individual, active internet users from both periods. The differences between the results were analyzed using the distance indices: city distance and Euclidean distance. The data from March 2020 (before the pandemic) and from December 2020 (during the pandemic) were used as the basis for comparisons.

**Findings:** The findings point to increasing diversification in the product/services range and the growing number of goods and services purchased abroad. There occur much smaller differences with regard to infrastructure factors which have a direct influence on foreign e-commerce. Also, in the respondents' opinions, greater popularity and more frequent use of international commerce solutions during the pandemic is treated as a factor which supports the development of globalization. The main observed changes during the COVID-19 pandemic are infrastructure changes (staying at home, remote learning, remote work, etc.) and an extend and standardized approach to e-commerce. The second equally important effect is the shift from desktop computers to mobile devices.

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**Research limitations/implications:** The limitation resulted from the research sample obtained in the academic environment. Students are a group supporting the globalization processes, where e-business solutions are widely used, but their purchases of products/services, including foreign goods, are often limited due to lack of funds.

**Originality/value:** The original value of the article is the identification and specification of the main factors supporting globalization in Poland during the COVID-19 pandemic from the point of view of electronic commerce.

**Keywords:** e-commerce, globalization process, e-commerce impact on globalization, pandemic impact on globalization, COVID-19.

**JEL:** M15, L81, L86, O33

## Wpływ pandemii (COVID-19) na globalizację z perspektywy handlu elektronicznego

### Streszczenie

**Cel:** zbadanie wpływu e-commerce i m-commerce na szeroko rozumiane czynniki globalizacji przed i w trakcie pandemii COVID-19 w opinii klientów.

**Metodologia:** zastosowano metodę CAWI z udziałem indywidualnych, aktywnych internautów z obu okresów (sprzed i w trakcie pandemii). Różnice między wynikami analizowano za pomocą wskaźników odległości: odległości miejskiej i odległości euklidesowej. Za podstawę porównań posłużyły dane z marca 2020 r. (przed pandemią) oraz z grudnia 2020 r. (w czasie pandemii).

**Wyniki:** wskazują na coraz większą dywersyfikację asortymentu produktów/usług oraz rosnącą liczbę towarów i usług kupowanych za granicą. Dużo mniejsze różnice występują w zakresie czynników infrastrukturalnych, które mają bezpośredni wpływ na handel zagraniczny. Również w opinii respondentów większa popularność i częstsze korzystanie z międzynarodowych rozwiązań handlowych podczas pandemii jest traktowane jako czynnik wspierający rozwój globalizacji. Główne zmiany zaobserwowane podczas pandemii Covid-19 dotyczą zmian infrastruktury (pozostawanie w domu, nauka zdalna, praca zdalna itp.) oraz rozszerzenie i standaryzacja podejścia do e-commerce. Drugim równie ważnym efektem jest przejście z komputerów stacjonarnych na urządzenia mobilne.

**Ograniczenia/implikacje badawcze:** ograniczenie wynikało z próby badawczej uzyskanej w środowisku akademickim. Studenci to grupa wspierająca procesy globalizacyjne, gdzie rozwiązania e-biznesowe są szeroko stosowane, ale ich zakupy produktów/usług, w tym towarów zagranicznych, są często ograniczone z powodu braku środków.

**Oryginalność/wartość:** oryginalną wartością artykułu jest identyfikacja i specyfikacja głównych czynników wspierających globalizację w Polsce w czasie pandemii COVID-19 z punktu widzenia handlu elektronicznego.

**Słowa kluczowe:** e-handel, proces globalizacji, wpływ e-handlu na globalizację, wpływ pandemii na globalizację, COVID-19.

## 1. Introduction

The main purpose of the study is to specify the differences between customers' opinions concerning the impact of e-commerce on globalization processes before and during the COVID-19 pandemic. In Poland, the manifestations of the response to the coronavirus pandemic began to be noticed in mid-March 2020. With minor changes in terms of scope, they have

mainly consisted in: no possibility of conducting business, cultural or didactic activities for a specified period, the obligation to wear protective masks as well as restricted travel and commuting in the country and abroad. The latter sometimes appeared to be sudden, unreasonably strict and incomprehensible. On the one hand, these restrictions were supposed to limit the dynamics of the spread of the new virus, and on the other, they could be interpreted as an expression of the powerlessness of the authorities faced with the failure to combat the disease in its initial phases. The other reason might be the intention to observe the same rules and impose similar restrictions which other countries had introduced, without any deeper analysis or consideration for the situation in our country. The economic and social constraints caused by the coronavirus led to the economic crisis. Undoubtedly, its depth would have been even greater had it not been for the possibility of introducing remote work and the use of internet and mobile e-commerce tools. The abovesaid tools support the sale of products and services in line with the rules of social distancing, enabling contactless transactions between sellers and buyers. The ongoing process of homogenization of information technologies and commonly used software applications leads to establishing similar and somewhat standardized purchasing and social behavior related to e-commerce. The latter is translated into the convergence of societies on a global scale: it supports and facilitates globalization processes. It is important to note that the definitions of globalization are indeed changing to emphasize social factors occurring in the above processes; however, it seems that information technology supporting e-commerce still plays a dominant role in this area (Makarova, Makarova, & Korsakova, 2019). The latter is especially noticeable in a period of crisis that prevents or restricts purchases carried out using other methods. The research questions, therefore, focus on determining the impact of information technology, especially e-commerce, on globalization before and during the pandemic since the present situation that forces people to stay at home should support and contribute to e-commerce development. The objective of this study is to examine whether it is so, and what changes took place during the first nine months of the crisis. In the light of the analyzed literature, there emerges a research gap, which some considerations contained in the paper hope to fill, at least to a certain degree.

The article consists of five parts. After the introduction, the authors have carried out a review of the literature discussing the topic presented in this paper. The next section specifies the research method and describes the research sample. The fourth part presents the findings of the study and discusses them. The last section contains conclusions from the conducted research procedure, limitations of the research and directions for its further development.

## 2. Literature Review

Since the announcement of the COVID-19 pandemic, apart from analyses related to medical research and potential solutions and remedies, researchers have also begun examining the impact of the pandemic on economic and social life. OECD highlights the influence of e-commerce in terms of overcoming some of the consequences of the pandemic (Lopez-Gonzalez et al., 2020). The World Economic Forum (Fan & Gallaher, n.d.) also appreciates the significant role of e-commerce in mitigating the present crisis. However, there are still numerous limitations to e-commerce, which are particularly visible during the pandemic (NielsenIQ, 2020). This is the reason why e-commerce is not developing as fast as it may seem viable under the conditions of the COVID-19 threat. There are also significant regional differences which result from cultural and technological conditionings. For example, the development of e-commerce in South Korea differs considerably from the circumstances in the USA (Cho et al., 2020). Although South Korea is regarded as one of the most technologically advanced countries in the world, the USA has the advantage resulting from the years of “testing” of mobile and website-based purchases during periods of intensive internet use. The awareness of both potential and tangible benefits resulting from e-commerce is also one of the factors differentiating consumer behavior in these two countries.

One of the most significant problems considered during the pandemic is the state and dynamics of the development of the agri-food sector (Hillen, 2021). This applies in particular to small and medium-sized enterprises (SMEs) in this area (Anacleto et al., 2020), sometimes also very small businesses. Some sectors, like the flower industry, are on the verge of collapsing while others, like the food industry, experience the inconvenience of the crisis only in the area of deliveries to restaurants and hotels (Dannenberg et al., 2020), (Hao, Wang, & Zhou, 2020; Thilmany et al., 2021, p. 19). The issue of minimizing the risks related to economic activity is another subject area analyzed under the present circumstances of the pandemic. From companies' perspective, it is connected, on the one hand, with effective marketing applications (Wang et al., 2020), and on the other, with organizational and technological improvements supporting online sales processes (He, Zhang, & Li, 2021; Pantano et al., 2020, p. 19). Less frequently, this risk is analyzed from the point of view of international e-commerce or globalization (Sharma et al., 2020).

Occasionally, there appear articles and other publications concerning the impact of the global pandemic on the environmental economy. The papers present its positive influence such as reducing environmental pollution as well as the negative impact, namely, increasing the amount of waste caused by the disposal of products that help combat COVID-19 (Schumacher, 2020).

The issue of using e-commerce during the pandemic is also considered from the point of view of the consumer (buyer, customer) as well as a manager of e-business. The first one relies on the availability and quality of websites and mobile applications, while the second one focuses on designing them in such a way as to best reflect users' requirements (Paștiu et al., 2020).

In this context, other significant research areas include the impact of the pandemic on the users' behavior under the circumstances of remote work/telecommuting, its potential development and future implications, also after the pandemic (Carroll & Conboy, 2020), the related experiences in this area and their consequences and benefits for their lives (Brem, Viardot, & Nylund, 2021).

However, the issue related to e-commerce development supporting the processes of globalization during a pandemic (COVID-19) from the point of view of an individual customer is rarely considered as a separate research topic. As a result, the conducted analyses are usually fragmentary. This article focuses on filling the relevant research gap, at least to a certain degree.

### 3. Methodology

The primary method used in the study was the CAWI (Computer Associated Web Interview) interview and the survey questionnaire, which was carried out in March 2020 and in December 2020. The research procedure included the following stages:

- selecting the research sample, justifying the selection procedure and carrying out a pilot study,
- constructing a prototype of a survey examining the influence of e-commerce on globalization processes during the pandemic and its verification with the participation of a pilot sample,
- carrying out the study using a verified and tested survey questionnaire, placed on the servers of the University of Warsaw,
- conducting two surveys involving a similar study sample – the first survey questionnaire was circulated before the pandemic, and the second one during the pandemic,
- analysis and discussion of the obtained findings and drawing conclusions from the study.

The study sample included the students of the University of Warsaw. It was selected in a convenient and purposeful manner. It was a case of convenient sampling because contacting the respondents by posting an invitation on the website of the Faculty of Management was relatively easy, and the manner in which the studies were completed seemed useful to be applied as part of future assignments related to seminar projects and diploma topics. This was a purposeful study since this age group included the individuals who most frequently used the internet to do shopping. Moreover,

this group consists of internet users who, due to the present conditions of the pandemic, participate in online lectures and classes. Some of the students also use the internet to work remotely (70% of the students of the Faculty of Management at the University of Warsaw have jobs), and thus they are well familiar with the working conditions which rely on the application of common ICT (Information and Communication Technologies) tools which support globalization processes. Thus, it appears that their opinions on the changes related to the impact of information technologies on globalization processes can be treated nearly as based on professional competence. Thus, it emerges that the survey was completed by the part of the population who tend to use the internet, hardware and software most frequently. They practice and master relevant IT skills using computers, laptops, smartphones and tablets.

In the first examined period in March 2020, the online survey in its full form was filled in correctly by 240 individuals, which constituted a 69% share of the population who had received invitations to complete the questionnaire, in the second case in December 2020, the research sample included 111 individuals (32%).

Among the respondents, there were only minor differences with regard to gender between the surveys conducted in both periods. In March 2020, the share of women amounted to 63%, and there were 37% of male respondents; in December 2020, there were 61% of women and 39% of men. A similar tendency was observed in terms of the age differences: namely, in December 2020, the sample consisted of 98% of individuals from the 18–24 age group, and six months earlier, the share amounted to nearly 97%. The average age of the survey participants was estimated at slightly over 22 years. This is a standard age of BA students and those of first years of MA studies. Thus, in the category of education, the indications related to secondary education (high school, technical school) and post-secondary education were dominant in the group. In the case of both analyzed periods, the respondents mainly came from households consisting of 3–4 persons (28% on average).

The greatest differentiation was recorded in terms of the place of residence. On average, over 56% of the respondents declared that they came from cities with more than 400 thousand residents, over 15% from cities with 100,000–400,000 inhabitants and more than 17% came from rural areas. The share which decreased the most – by nearly 10% in relation to the previous study – included individuals coming from cities with over 400 thousand residents. A slightly lower differentiation – nearly 8% – could be observed in the case of inhabitants of cities with 100–400 thousand residents.

As regards the assessment of students' financial situation, still the largest share of students (54% on average) evaluated their situation or the situation of their family as good, which means that they claimed that they could afford many things without any particular need to save money. In turn, the largest differences (around 4%) occurred at two ends of the ranking. The average number of respondents who perceived their financial situation as

very good decreased, and simultaneously, the share of survey participants who saw their situation as very bad increased.

The differences which occurred between the two research samples were relatively small due to the fact that the survey was conducted in a similar group of respondents, characterized by a similar structure in terms of gender, age, education and social status. This allowed for high comparability of the results in both examined periods, at the beginning of the COVID-19 pandemic and during the pandemic, during which, at the moment of conducting the study, Poland experienced the largest number of occurrence cases in 2020.

#### 4. Analysis and Discussion of the Findings

The verified online survey consisted of twenty-five substantive questions as well as demographic data describing the study sample.

The first question was aimed at identifying the research area. The respondents were presented with five examples of definitions of globalization related to integration, economic and social, cultural dispersion, unification and one related to technological changes (Little, 2016; PIIE, 2018; Chakravartty & Sarikakis, 2006; Makarova et al., 2019; Wani, 2011). The survey participants were asked which of the provided definitions, in their view, best reflects the essence of this phenomenon. Nearly 41% of the respondents found the definition associated with integration to be the one which best describes the phenomenon. This definition presented globalization as *...the entirety of processes leading to increasing interdependence and integration of states, aimed at creating a global society, accelerated by the proper use of information technologies...* (PIIE, 2018). The highest score of this definition increased in the last ten months in 2020 by around 10%. However, the recognition of the [integrational?] unification-related definition stating that globalization can be described as *...the increase in interdependence, interaction and unification in the economic and social sphere globally, which intensifies together with the fast technological progress...* (Chakravartty & Sarikakis, 2006) decreased by a similar value. In the case of all analyzed definitions, the achievement of an appropriate level of technological development, mainly, common access to the internet as well as e-commerce, e-banking and generally perceived social media services is the necessary factor determining globalization processes and contributing to their further development. The subsequent survey questions focused mainly on the economic aspects of globalization processes and the impact of the COVID-19 pandemic on these processes.

Further questions concerned the respondents' assessment of the impact of information technologies on globalization. On average, 54% of the respondents selected the responses pointing to the strong influence related to this factor. On the other hand, the most significant increase (11%) was recorded in the case of the category of decisive influence (currently 51% of



the respondents), mainly at the expense (10%) of the opinion concerning a strong influence (currently 47%). The share of the remaining categories (average or limited influence) does not exceed 3%. The assessment of the most frequent manifestations of this influence appears to be the expansion and deepening of the analysis pertaining to the previous question. 22% of the respondents pointed out that the most important factors, in this case, were diversified access to the flow of goods and services through electronic commerce (both website-based and mobile solutions) and enabling access to world markets offering different prices as well as a diversified product and services range (18%). COVID-19 led to a 4% increase related to both opinions. A greater choice in terms of financial services and payments (both electronic and mobile payments) was the factor which tended to be most appreciated in this period (an increase of 6%). Interestingly, the respondents attach much less importance to the technical aspects of software and hardware standardization related to the globalization of economic activity or the standardization of electronic platforms and channels (a decrease of 2–4%). They also attach little importance to the popularization of languages on a global scale or unified knowledge standards (11%). It is worth mentioning at this point that more and more websites or mobile applications are translated into most popular languages, such as the English language, which facilitates the globalization processes. It also means that this aspect is no longer considered a significant problem in e-commerce.

The survey participants pointed out that more accessible individual cross-border e-commerce and e-banking services (24%, an increase of 5% by December 2020) were the main advantages of information technology as a stimulus of globalization processes.

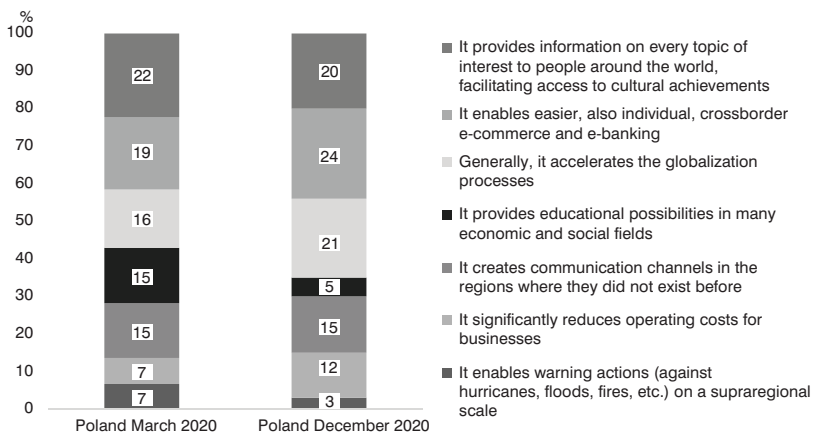


Fig. 1. The comparison of advantages of information technologies as stimuli of globalisation processes in Poland during the pandemic (March and December 2020). Source: Own work.



The second place was taken by the general acceleration of globalization processes (21%, a 5% increase by December 2020), and the third position was taken by providing information on every topic of interest to people around the world, facilitating access to cultural achievements (20%). After nearly a year, remote education is not greatly appreciated (5%, a decrease of almost 10% in relation to previous findings). The results of the comparison are shown in Figure 1.

The distribution of opinions concerning the main obstacles to globalization processes posed by information technology during the pandemic was as follows: the sole dependence of economic activity on technological development (20%), the dissemination of cultural patterns, originating mainly from the most technologically developed societies (19%) and the perception of development only by the primacy of technology (15%). In all these categories, the share of opinions increased by around 5%, at the expense of the previous average variation at the level of 14%. The share of opinions on underdeveloped countries used as a technological landfill, i.e. the market for used old information technologies, decreased the most and was estimated at 5% (the difference amounts to 10%). This view does not seem to be as true as before. The results are presented in Figure 2.

Similarly to the case of information technologies, the respondents were also asked about the strength of the influence of e-commerce on globalization phenomena. And thus, when assessing the strength of the impact of e-commerce on globalization processes in December, 96% of respondents evaluated this impact as decisive or strong, which is 10% more than at the beginning of the examined period. The number of opinions associated with an average impact on globalization also decreased, and no one assessed it as none or weak. This is undoubtedly the result of constant difficulties in doing shopping in a traditional way, closing shopping malls, etc. The greatest impact on the phenomenon of globalization during the pandemic is manifested by the increased availability of goods and services unavailable in the country, marked by 25% of respondents (2% more than previously), and greater choice of domestic and foreign products and services available at the most attractive prices – an average of 24% of responses (an increase of almost 7% in relation to the previous period). The third place was taken by the possibility of comparing prices and characteristics of goods and services in Poland and abroad – 14%. The respondents attach much less importance (over 9%) to the possibility of buying and selling to countries using the internet network. It already seems so obvious, especially during the pandemic, that the respondents do not consider this to be a particular manifestation of the impact of electronic commerce on globalization.

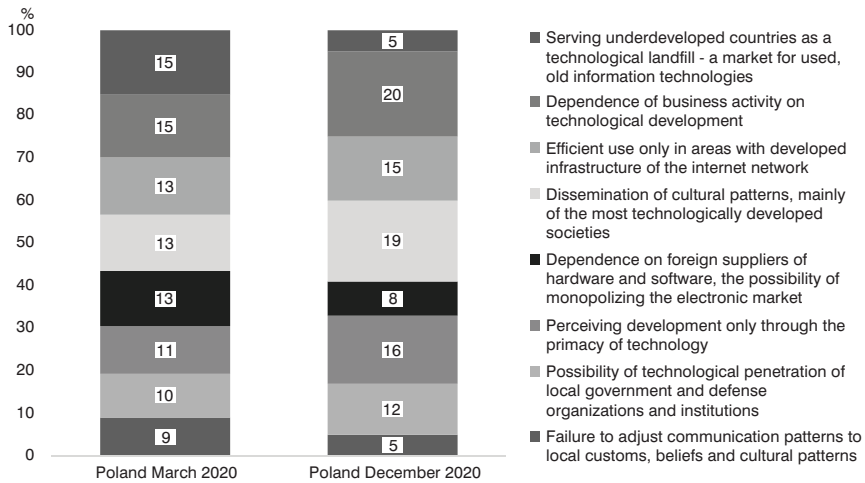


Fig. 2. The comparison of the specific disadvantages of information technologies as barriers to globalisation processes in Poland during the pandemic in Poland (March 2020 and December 2020). Source: Own work.

In the analyzed period, there were changes in the approach to the existence of restrictions imposed on international e-commerce as a factor of increasing globalization. As in previous articles, the authors have listed six possible barriers to international e-commerce connected with economic, organizational, legal, technological, cultural and security-related aspects. During the pandemic, the attention of respondents moved from security-related barriers (22% in the present study) to purely economic barriers (25%, which represents an over 8% increase). The approach to legal barriers remained almost unchanged, with a slight decrease in terms of awareness of these barriers. However, the issue of their importance is slightly different. Here, the order is changing: security barriers are still considered the most important (45%), followed by economic and legal aspects; however, the fourth position is occupied by psychological restrictions, exceeding 10%. Perhaps the reason for such a tendency is related to the fatigue of the continued constraints enforced by the pandemic.

Thus, a question arises: what do the respondents see as the most significant barrier in terms of purchasing products/services of foreign origin using e-commerce solutions? The first places appear to reflect the standard limitations related to:

- the high price of a product/service combined in the case of a product with a high price of delivery, especially from a foreign country (an increase during the nine months of the pandemic of almost 5%, estimated at 20%),

- no sense of security in the case of using foreign websites and doubts regarding filing complaints (an increase of 3%, amounting to 18%),
- local regulations imposing customs duties or other preference for domestic products/services (an increase of nearly 3%, reaching the level of 17% until March 2020),
- no sense of security resulting from the use of software and hardware – a greater possibility of transferring viruses from abroad (an increase of 3%, amounting to 12%),
- worse price/quality relations in the case of products/services of foreign origin in relation to domestic goods (an increase of nearly 3%, to 11%),

The general tendency that occurs in this comparison is an increase of about 3% of the indications related to the factors which were seen as the most essential factors even before the pandemic; however, infrastructural, cultural or psychological factors do not appear to be important.

However, the responses concerning the frequency of purchases tend to be closer to the values associated with higher frequency average. In December 2020, 35% of the respondents gave the answers indicating very often and often, which is 10% more than in March 2020. A similar increase was observed in the case of the sometimes category, and the increase occurred at the expense of the 21% decrease related to rarely responses.

The information concerning foreign products and services available on the internet is consistently obtained mainly from forums and social media platforms (31%, which constitutes a decrease of 4% in comparison with the situation recorded before the pandemic), from online shop websites (28% of responses, an increase of 5%) as well as the manufacturer's websites (25%, which constitutes an increase of 4%). There was also a 5% decrease in internet advertising as a source of information about goods and services. At the same time, the information published in newspapers and magazines, including specialist and trade magazines, or radio and television commercials and programs became almost entirely irrelevant. Information shared by friends and family is scarce, and this share further decreased by 3% during the pandemic (currently 5% of opinions).

When they already have information about foreign goods/services, 41% of respondents (3% more than at the beginning of last year) use comparison websites. These solutions are used to find the most attractive price as well as the website or location where the product/service can be purchased. A 6% smaller share of respondents find information about a product/service online, and they also try to purchase it online (3% increase). On the other hand, fewer people (22%, 3% less) postpone their purchasing decision until they visit a traditional, brick and mortar store where they check the quality of the goods/service and decide whether the product/service would meet their needs. In total, also a 3% smaller share visit specialist shops and showrooms. During the pandemic, it emerges that the mobility inducing

the respondents to search for products/services both on the internet and in physical locations has decreased.

One can also assume that during the pandemic, the awareness among customers with regard to the origin of foreign goods/services according to brands (21%) and the Made in... label (47%) has increased (an increase on average by 2%).

Among all the factors which determine the online purchase of foreign goods/services rather than domestic ones, two of the characteristics came to the fore. These were: the reputation or prestige of the brand (11%) and the price-quality ratio (14%, an increase of 6%). Opinions of social media (9%) and friends and family (5%, a decrease of 5%) are still important, but one can observe that sales of foreign goods/services are constantly being rationalized as the importance of factors such as price, quality (compared with the price, quality of domestic goods/services) increases.

The subsequent questions of the survey concerned the range of goods purchased abroad using stationary (computer, laptop) and mobile equipment (smartphone, tablet). In times of crises, clothing and footwear goods always take the first position in the ranking (Chmielarz, 2016). The abovesaid tendency is visible also in the present study. At the end of 2020, in the analyzed group of users, they accounted for the most (22%) purchases made using desktop computers. At the same time, this group recorded the largest decline in purchases, which amounts to over 8%. Similarly to previous studies, subsequent places were taken by cosmetics – 17% (always popular), as well as home electronics and household appliances – 14%. A nearly 4% increase in this area results mainly from the lockdown of internet users in their homes. If such a requirement existed, then users wanted – similarly to the case of Polish products – to stay in the most favorable environment. The fourth such group were gifts and gadgets, which were estimated at 12% (an increase of over 2%). Food products had an unprecedented share of 8% (an increase of over 4%) in the ranking. Until the end of that year, consumers bought mainly domestic products. Perhaps it was a result of fear related to possible shortages of some items on the market, especially in the first months of the pandemic and the first lockdown. In December 2020, the demand for books and sports goods bought abroad also decreased. These trends are illustrated in Figure 3.

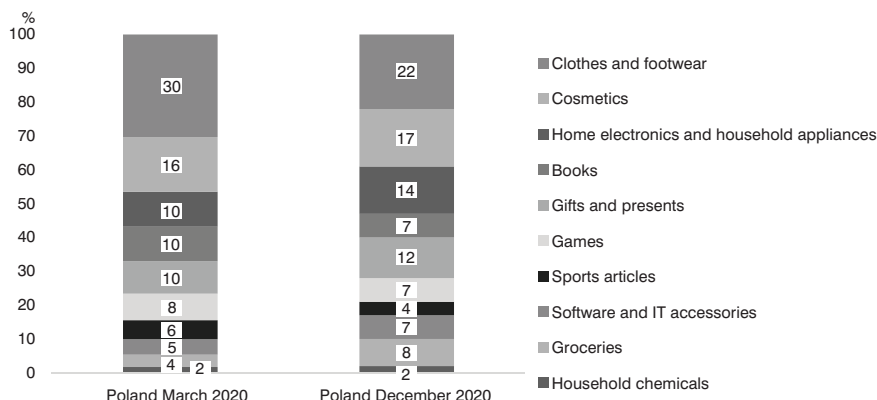


Fig. 3. Comparison of the assortment of purchases in foreign e-commerce in Poland in March and December 2020 using desktop and mobile devices. Source: Own study.

On the other hand, major changes took place in terms of the selection of foreign services purchased abroad. The biggest shift took place in the case of sale of airline tickets (a decrease of 20%, amounting to 2%). There was also a drop of more than 10% in the area of tourist services (over 10%) and cultural services (12%). The demand for banking services increased from over 12% to 26%, similarly to insurance, medical and telecommunications services. The tendencies related to the demand for services before and during the pandemic via stationary devices is shown in Figure 4.

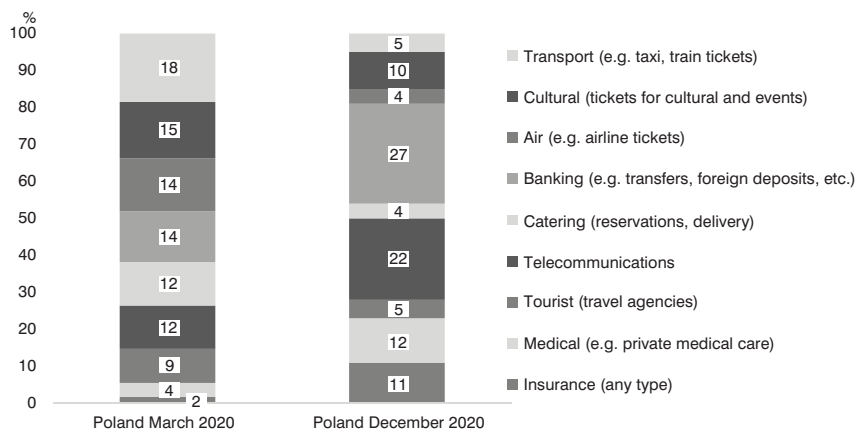


Fig. 4. Comparison of the selection of services in foreign e-commerce in Poland in March and December 2020 using mobile devices. Source: Own work.

The same tendency applies to services purchased using mobile tools. The greatest decrease in terms of interest was recorded in the case of the sale of airline tickets (over 10%) and transport tickets (13%). However, an increase was recorded in the case of banking (a rise from 14% to 27%) and telecommunications (a shift from 12% to 22%). A comparison of the situation in international mobile services in March and December 2020 is presented in Figure 5.

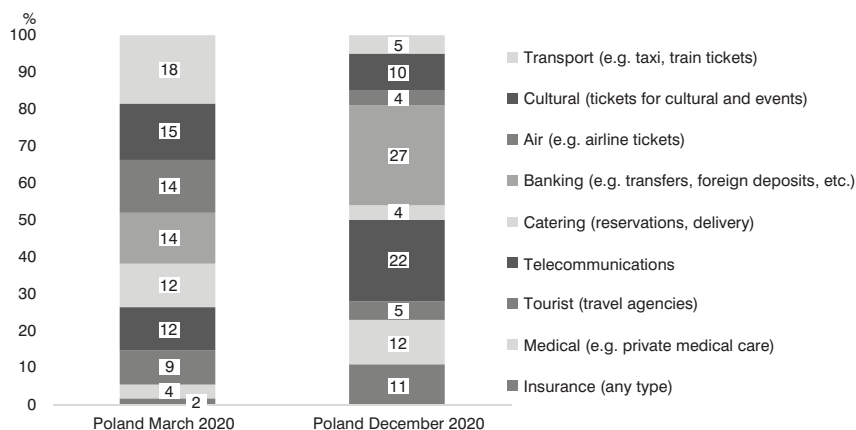


Fig. 5. Comparison of the selection of services in foreign e-commerce in Poland in March and December 2020 using mobile devices. Source: Own work.

A comparison of changes regarding the most popular types of foreign online services carried out via a smartphone (tablet, phablet) in March–December 2020 points to substantial differences. The largest decrease (over 13%) occurred in the case of the transport sector (train tickets, taxis) and air tickets (over 10%). The largest increase (above 13%) was recorded in the area of banking and telecommunications services (over 10%). The pandemic also caused an increase in insurance (9%) and medical (8%) services. However, a decrease was observed in the case of foreign tourist services (over 4%) and catering services (4%). These trends are illustrated in Figure 6.

The analysis of changes regarding foreign purchases related to specific sectors is carried out according to specific types of foreign products/services acquired via mobile devices in the period of six months of the study. The continued high position (23%) of purchases of clothes and shoes or cosmetics (16%) of foreign origin is an interesting phenomenon to be considered. The declined interest in online sales of domestic products related to these industries during the pandemic, signaled in the media (related to the fact that customers do not leave their homes and women use fewer cosmetics

because of the masks), is not confirmed by the present research concerning foreign purchases. However, an over 7% increase in the purchases of books, films and music (21%) seems natural considering greater demand for entertainment in the periods of lockdown. Also, buying household appliances could be explained by the fact that people staying at home notice the shortcomings of their equipment. The level of computer games sales remains unchanged and stands at 7%. However, remote work requires additional equipment and computer accessories, and thus an increase of 4% to the level of 10% related to foreign purchases may be observed in this regard. The largest decrease was recorded in the case of the purchase of plane, rail and bus tickets (a decrease of 10% to 5%) and tickets for entertainment and cultural events (of nearly 9%, amounting to 4%).

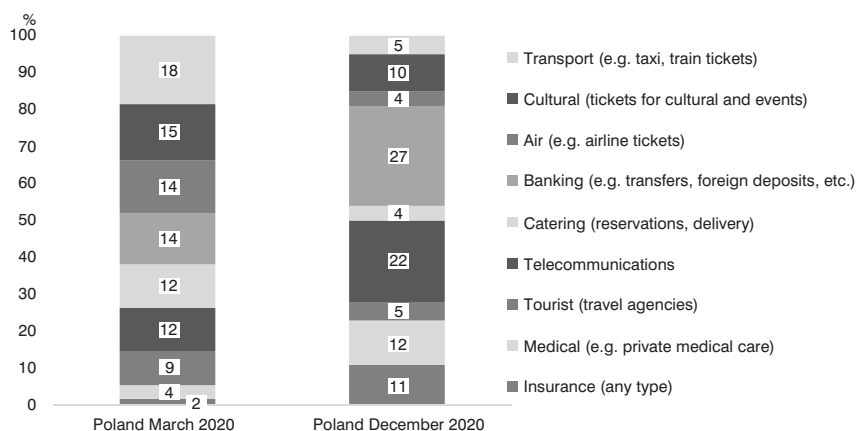


Fig. 6. Comparison of the services range in foreign e-commerce in Poland in the period March-December 2020 using mobile devices. Source: Own work.

The attitude towards products and services of foreign origin that respondents were ready to buy using a smartphone also changed. The COVID-19 pandemic significantly expanded the desire to use this method to purchase a wide range of products/services, also from other countries. While in the earlier period the respondents stated that they were not willing to make high-value purchases using m-commerce solutions, at present, they would be more open to considering this option. And while in March 2020, 14–20% of the respondents declared that they would not buy household appliances, IT equipment or tourist trips abroad this way, after nine months of 2020, the level of such indications decreased by half. In the case of other products, both goods and services, e.g. transport tickets, clothing and footwear, tickets for cultural events, there occurred a significant rise in the share of responses rejecting the possibility of making purchases



via mobile devices. However, in the comments section, the respondents tend to justify these claims with the fatigue caused by the general lack of variety in terms of available products/services, both in the case of online and traditional commerce. Interestingly, the opening of bookshops after the first lockdown period caused, for example, traditional sales of books and other products to double.

Another feature that differentiated online purchases abroad in this period was the method of payment. The structure of payments slightly changed, probably due to the increased necessity to shop online for products previously bought in a traditional way or using desktop devices (computer, PC). Also, the extension of the payment offer to other, often more convenient forms of electronic payment led to the abovementioned shift. As regards more expensive products/services, payments are still made mainly by card and by transfer (31% and 29% of transactions, respectively), while other purchases are mainly paid for with various forms of electronic money (amounting to 16%, an increase of 11% from March 2020). On the other hand, the rapid development of delivery services in the case of products ordered electronically caused a specific renaissance of traditional payments (18%).

The subjective assessment of the problems associated with the availability of foreign products/services has also changed significantly. More than 35% of respondents now believe that buying services/goods is very easy (a 10% increase), and a quarter of the survey participants state that it is as accessible as buying domestic goods. However, 29–30% of the respondents claim that the purchase of goods/services of foreign origin is slightly more difficult. Only 3% of the surveyed population consider such purchases to be difficult or too difficult and in need of promoting. It follows that in the analyzed period, the interest in international e-commerce grew and clients are now convinced of its relative ease and accessibility compared to domestic e-commerce.

Similarly to previous studies, the claims presented above may be seen as the confirmation and the evidence for the growing and accelerating globalization during the pandemic from the perspective of website-based and mobile e-commerce.

The results presented above, analyzed in terms of the differences between the findings obtained as part of the surveys conducted in March and December 2020, were supplemented with the Euclidean distance and city distance indicators. The indicators for the key questions contained in the survey are included in Table 1.

Distance indicators	City	Euclidean
Types of foreign products/services used on the internet via a smartphone (tablet, phablet)	81.9%	8.3%
The strength of the influence of IT on globalization	47.2%	8.1%
The frequency of purchases of products/services of foreign origin on the internet	42.0%	5.8%
Types of foreign products/services purchased using a computer (PC, desktop computer)	20.8%	4.3%
Types of payment used in e-commerce transactions in the purchase of foreign goods	41.6%	3.9%
Types of foreign products/services recently purchased using mobile devices	44.5%	3.2%
The degree of difficulty in buying products/services of foreign origin	30.8%	3.1%
Disadvantages of information technologies in globalization processes	38.2%	2.3%
Advantages of information technologies in globalization processes	31.2%	1.9%
Types of foreign products/services preferred in the case of mobile purchases	36.2%	1.9%
Premises of the greatest impact of electronic commerce on globalization	32.6%	1.8%
Types of foreign products/services preferred when making purchases using a computer (PC, desktop computer)	35.7%	1.7%
Manifestations of the influence of IT on globalization	33.4%	1.5%
The strength of the influence of e-commerce on globalization	19.5%	1.5%
Types of barriers to the development of international e-commerce	24.7%	1.3%
The basis for the decision concerning the purchase of goods/services of foreign origin instead of domestic products via the internet	32.6%	1.1%
The source of information on foreign products/services available on the internet	24.5%	1.0%
Types of articles of foreign origin purchased via mobile devices	25.9%	1.0%
The main obstacles in purchasing products/services of foreign origin using e-commerce solutions	32.4%	0.9%
The significance of barriers to international e-commerce	18.2%	0.7%
The clients' reactions after obtaining information from any source about foreign goods/ services	12.0%	0.3%
Distinguishing features of foreign products in e-commerce	6.8%	0.2%

Tab. 1. Indicators of the Euclidean and city distance for the results in March and December 2020. Source: Own work.

## 5. Conclusions

The findings presented in Table 1 lead to the following conclusions:

- the largest Euclidean distance (8.3%) occurs in the case of three indicators: the types of foreign products/services used on the internet via a smartphone (tablet, phablet), the strength of the influence of information technologies on globalization (8.1%) as well as the frequency of purchases of foreign products/services on the internet (5.8%);

- the smallest Euclidean distance occurs in the case of the following indicators: distinguishing features of foreign goods in e-commerce (0.2%), clients' responses after obtaining information about foreign products/services from any source (0.3%) as well as the significance of the barriers in international e-commerce (0.7%).

Thus, the most significant changes occurred in the case of the products/services range purchased abroad via the internet, the frequency of their purchase as well as the scope of their impact on globalization. These were changes either enforced directly by the limitations caused by the pandemic or indirectly – resulting from the need to stay at home or the desire to modernize one's immediate environment. On the other hand, one may observe the greatest consistency in terms of the simplest characteristics of foreign trade via the internet related to the recognition of a foreign product, as well as the way of and barriers to accessing it.

The changes that took place during the COVID-19 pandemic due to the relevant infrastructure changes (staying at home, remote learning, remote work, etc.) also extend and standardize the approach to e-commerce. The second equally important effect is the shift from desktop computers to mobile devices. Unfortunately, it is too early to establish whether this effect is permanent or temporary. After emerging from the crisis, a reverse trend or a specific counterreaction might occur. After the pressure to expand online activities decreases, we may be witnesses to a sudden reduction in the use of electronic commerce. The experience so far leads to the conclusion that in some fields of activity, following the period of using online services out of necessity for several weeks or months, some customers may want to turn away from the internet, considering it a meager substitute for reality. However, it does not seem to have any impact on the globalization processes as such.

The results of this article are intended for anyone interested in the impact of e-commerce on globalization in the era of the COVID-19 pandemic.

This study was subject to two types of limitations. The first limitation was due to the limited research sample described in section 3. Students are a group supporting globalization processes, where e-business solutions are widely applied. However, their purchases of products/services, including foreign goods, are often limited, especially when they are dependent on their parents' support in this regard. Nevertheless, they are usually pioneers in penetrating the internet, e.g. Chinese electronic markets.

Taking all the above into consideration, in order to increase the reliability of the results, the research sample should be extended in future studies to include representatives of other age groups. The research should also be internationalized and cover internet users from other countries. Hence, the direction for further development of the study is to carry out a comparative analysis of the attitude to globalization from the point of view of e-commerce customers in selected countries.

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