



GENERAL PROBLEMS OF THE MODERN RESEARCH AND INNOVATION POLICY

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DEVELOPMENT OF E-COMMERCE IN UKRAINE IN THE WAR AND POST-WAR CONDITIONS

Introduction. *In the war conditions, when remote work becomes more relevant, an extremely important task is to expand and improve the efficiency of domestic e-commerce.*

Problem Statement. *The Ukrainian e-commerce as an innovative business requires a complex approach to increase its efficiency, especially in the emergency conditions.*

Purpose. *To study the trends in the Ukrainian e-commerce market and, based on the results, to build a descriptive model of its expansion and efficiency improvement in the conditions of uncertainty caused by the Russian aggression.*

Material and Methods. *The study is based on the statistical data of Statista, UNCTAD, and Promodo. The methods of theoretical generalization of information, trend-based forecasting, comparative analysis, economic and statistical analysis, and the construction of a descriptive model have been used.*

Results. *The dynamics of the development of the global and the Ukrainian e-commerce in the period before the pandemic, during the corona crisis and during the Russian aggression have been studied. The threats to the development of e-commerce in Ukraine under the adverse conditions in both cases are similar, namely: declining business activity, increasing unemployment, decreasing income, and threat to life. The polynomial function has been established to give the most accurate forecast with a probability of 97.69%. The main areas of expansion and improvement of the efficiency of the Ukrainian e-commerce have been proposed and combined into three groups. They are aimed at strengthening the position of Ukraine in the international e-commerce market, ensuring the effective operation of Ukrainian enterprises, and protecting the consumers of goods and services in the Ukrainian e-commerce market.*

Conclusions. *The proposed descriptive model of the expansion and improvement of the efficiency of the Ukrainian e-commerce allows the comprehensive analysis of the trends of the studied phenomenon in the situation of increased risks caused by Russian aggression.*

Keywords: e-commerce, descriptive model, exogenous and endogenous factors, forecasting, russian aggression, war and post-war periods.

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E-commerce is a highly competitive environment with constantly changing technologies. It has led to transformation of business, more competitive prices due to a wider offer, product variety, as well as a growth in marketing strategies and made consumers of goods and services more demanding. The further development of e-commerce is significantly influenced by the global pandemic of COVID-19, which has spurred the rapid development of global retail trade. It should be noted that the threats to the development under emergency conditions of the corona crisis and the martial law in Ukraine are similar, in particular: threat to life, a decline in business activity, an increase in unemployment, and a decrease in income. Therefore, the present-day realities, namely the Russian aggression, call for the expansion of product sales channels with the help of e-commerce. This trend is caused by the fact that e-commerce requires smaller financial investments at the initial stage as compared with the classic form of product sales, and is also a more convenient and faster way for the consumer to order and receive goods. Studying the Ukrainian e-commerce and its prospects in the context of the international e-commerce market development becomes relevant in the situation of uncertainty caused by the full-scale Russian-Ukrainian war.

The analysis of the research in the field of the global and the Ukrainian e-commerce [1–27] has made it possible to build a descriptive model of the expansion and improvement of the efficiency of domestic e-commerce, which includes the exogenous and endogenous factors of influence, the forecast, and the main directions of improving the Ukrainian e-commerce efficiency. The first stage of building a descriptive model is the formation of an information base for the development of e-commerce, which contains data on the static and dynamic indicators characterizing the domestic and foreign markets of e-commerce. The second stage is the static and dynamic assessment of the state of the global and the Ukrainian e-commerce market. The next stage is the assessment of the exogenous and endogenous factors that influence the

development of the domestic e-commerce market and the forecast of the development of e-commerce. Based on the results of the forecast and assessment of the exogenous and endogenous factors, a descriptive model has been developed.

The purpose of this research is to study the trends of the Ukrainian e-commerce and, based on the study, to build a descriptive model of its expansion and raising of its efficiency in the situation of uncertainty caused by the Russian aggression. Given the purpose, the following problems have been solved: to analyze the trends of the development of the global and the Ukrainian e-commerce in the period before the pandemic, during the corona crisis and during the Russian aggression; to assess the exogenous and endogenous factors influencing the development of the domestic e-commerce market; to develop a forecast for the development of e-commerce; and to build a descriptive model of the expansion and improvement of the efficiency of the Ukrainian e-commerce in the situation of increased risks caused by the Russian aggression.

The international e-commerce market started developing rapidly even before the start of the pandemic, due to improving access to the Internet worldwide. As a result, the number of online shoppers has been increasing every year. The rapid development of information and communication technologies has contributed to the development of e-commerce. Expanding the capabilities of the existing platforms for communication, in particular Facebook, Instagram, Viber, WhatsApp, the online conference platforms (ZOOM, Skype, GOOGLE MEET) has made it possible to improve communications between business entities, to acquire new knowledge, skills, and competencies for consumers. During the COVID-19 pandemic, the Internet became one of the important means of electronic business around the world [1, 41–42].

In 2021, worldwide, the e-retail sales exceed USD 4.9 trillion. An important trend in e-commerce is the spread of mobile commerce (in 2020, 64% of Internet visits were made from smartphones) [2, 33]. The sales in the mobile e-commerce market have been increasing rapidly in recent years.

This growth is the result of a large smartphone penetration worldwide rather than of the pandemic [3]. In 2019, the mobile phone users worldwide totaled 5.6 billion people, while in 2021, they reached 6.4 billion. In 2021, the mobile means of communication, mostly represented by smartphones, accounted for almost 70% of all visits of retail websites worldwide [4, 102]. The share of the e-commerce retail sales in the total sales increased within the reporting period from 13.6% to 19%, this growth was facilitated by the pandemic and, as a result, the shift of a large number of stores online. Having analyzed the expert data [5], we conclude that the online retail sales grow by an average of 20% annually, while the retail sales increase by as few as 3.5%. This is due to the fact that more and more people in the world have got access to the Internet and can use it to buy goods and services online (Fig. 1).

The rapid growth of e-commerce caused by COVID-19 has resulted in increasing share of the online retail sales in the total retail sales worldwide (Table 1).

The efficiency of e-commerce is characterized by the following indicators: the rejection rate, the average number of website visits per session, the average time spent on website, the share of unviewed content, the average site scroll rate, and the conversion rate.

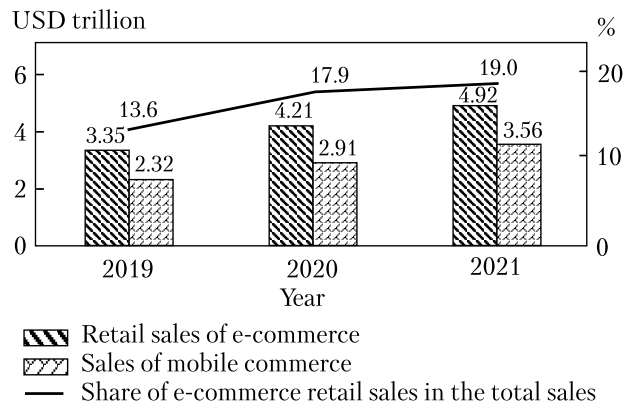


Fig. 1. Retail sales in e-commerce and mobile commerce worldwide

Source: prepared by the authors based on materials [6].

One of the criteria for the efficiency of e-commerce is the rejection rate, that is, the share of transactions that do not end with payment. The industry average rejection rate is 47% in 2020, which means that almost half of visitors do not purchase a product or service. The main reasons for the rejections include: inconvenient site design, insufficient information, slow download of page, hidden payments, long or expensive delivery, inconvenient payment methods, lack of trust in the seller, etc. The average time spent on viewing the page is 54 s. It shows the satisfaction of site visitors with the existing content. The share of un-

Table 1. The Retail Sales of International e-Commerce, 2018–2020

Country	Online retail sales, USD billion			Total retail sales, USD billion			Share of online retail sales in total sales, %		
	2018	2019	2020	2018	2019	2020	2018	2019	2020
Ukraine	2.4	2.9	4.0	34.3	42.0	45.5	7.0	6.9	8.8
China	1060.4	1233.6	1414.3	5755.0	5957.0	5681.0	18.4	20.7	24.9
USA	519.6	598.0	791.7	5269.0	5452.0	5638.0	9.9	11.0	14.0
UK	84.0	89.0	130.6	565.0	564.0	560.0	14.9	15.8	23.3
Korea	76.8	84.3	104.4	423.0	406.0	403.0	18.2	20.8	25.9
Canada	13.9	16.5	28.1	467.0	462.0	452.0	3.0	3.6	6.2
Australia	13.5	14.4	22.9	239.0	229.0	242.0	5.6	6.3	9.4

Source: estimated by the authors based on [7, 8].

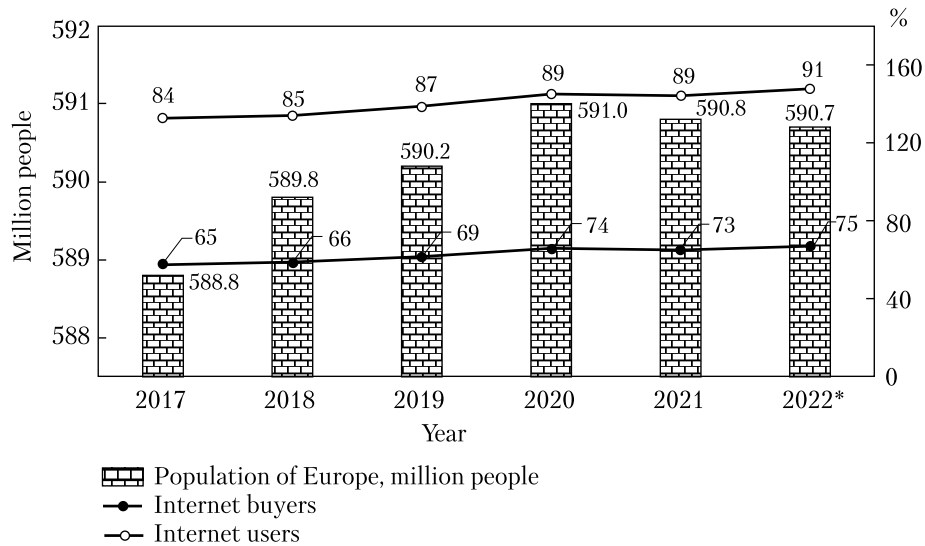


Fig. 2. The share of Internet users and Internet buyers in the population structure of Europe: * is a predictive indicator

Source: prepared by the authors based on materials [12].

viewed content is the percentage of the amount of unviewed information to the total amount of information on the site (in 2020, on average, it accounts for 45%). In 2020, the page scroll rate is 56.8%, which means that the pages should be optimized so that users do not stop halfway through the page and miss content that could be valuable. The most influential indicator characterizing the efficiency of e-commerce is the conversion rate (CR). It is calculated as the ratio of the number of people who do a targeted action on the site to the total number of site visitors. In the analyzed e-commerce sectors (communication services, travelling, luxury goods, food, consumer electronics, beauty and health, clothing), the average conversion rate is 1.82%, in 2020 [2, 35].

All e-commerce efficiency indicators have been adversely affected by the Russian aggression, but the studies conducted by Promodo [9] have shown that in Ukraine the conversion rate almost returned to normal levels as soon as a month after the invasion. The exception is automotive products, where the CR has increased significantly earlier due to seasonality.

As for Europe, the e-commerce grew exponentially during the COVID-19 pandemic, in 2020.

In these countries, the share of consumers who do online shopping today more often than before the pandemic is significant: 42%, in Poland; 38%, in Austria; 33% in Germany; 30%, in Switzerland; 24%, in Finland; 22%, in Norway; 22%, in Sweden; and 19%, in Denmark [10]. According to the survey, in 2020, Internet users spent on online shopping EUR 23.2 billion in Austria; 13.1 billion in Denmark; EUR 162 billion in Germany; EUR 16.4 billion, in Norway; EUR 21.3 billion, in Sweden; EUR 27 billion in Switzerland; EUR 22.2 billion in Poland; and EUR 11.8 billion in Finland [11].

Figure 2 shows the share of Internet users and Internet buyers from Ukraine by regions of Europe.

The share of Internet users and Internet buyers depends on the region of Europe. The analysis of Figure 3 has shown the prospects for attracting new Internet buyers even without increasing the number of involved Internet users. For example, in 2021, in Ukraine, there were 65% of Internet users, with only 44% of them being Internet buyers. According to the forecast for 2022, it is expected to increase their number to 67% and 48%, respectively. That is, both in Ukraine and in any

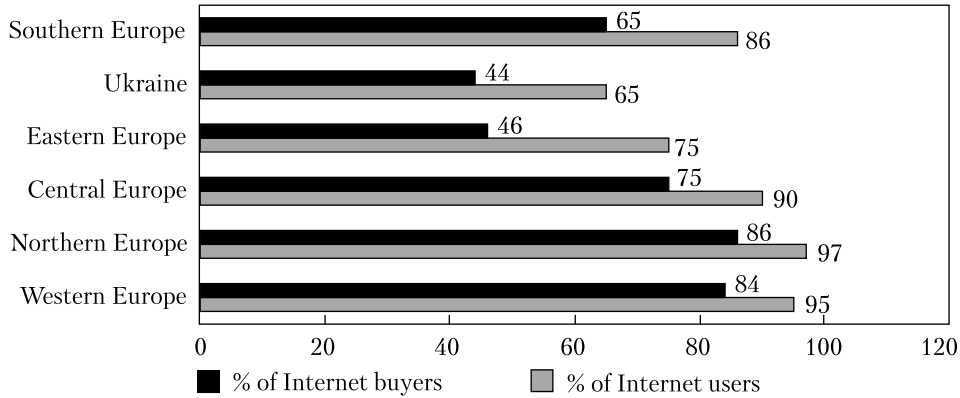


Fig. 3. The share of Internet users and Internet buyers from Ukraine by region of Europe in 2021

Source: prepared by the authors based on materials [12].

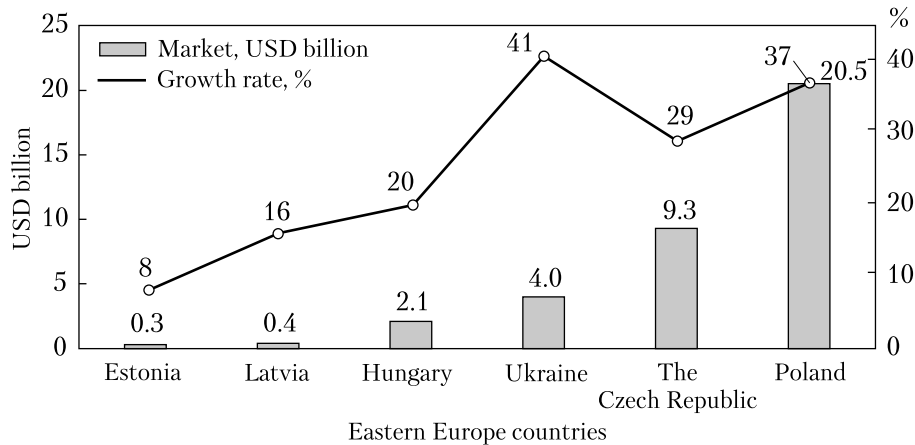


Fig. 4. The e-commerce market and its growth rates in Ukraine and in the Eastern EU countries in 2020

Source: prepared by the authors based on the materials [13].

region of Europe, there are opportunities to attract a high share of already existing Internet users to online shopping (Fig. 3).

Western Europe is still the most advanced e-commerce market in Europe. However, in Eastern of Europe, there have been observed higher growth rates. The analysis of the Eastern European e-commerce market has given reasons to state that the Ukrainian market showed the highest growth rate (41%) in 2020 as compared with Ukraine's neighbors (Fig. 4).

The share of e-commerce in Ukraine's GDP is 2.6%. As for the annual per capita spending on e-commerce, the low indicator for Ukraine can be explained by the low income per capita and the low purchasing power (Fig. 5).

Having compared the Ukrainian e-commerce with other countries, we may state that it is still at the stage of formation. Given that the Ukrainian market is not mature, it will grow at a rapid pace. At the same time, the retail trade market has been evolving well, as it has grown by 3.9%. Also,

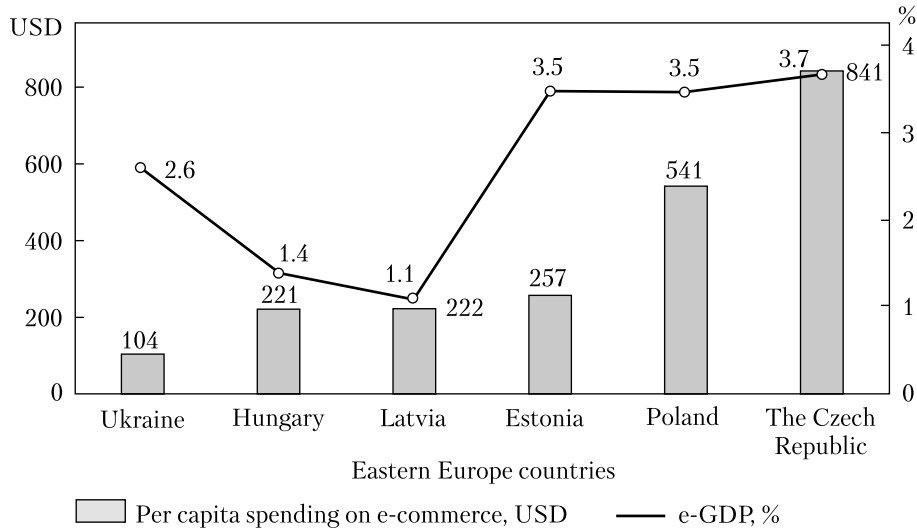


Fig. 5. Per capita spending on e-commerce and e-GDP in Ukraine and in the Eastern EU countries in 2020

Source: prepared by the authors based on materials [8, 13].

the number of offline stores has been constantly decreasing in Ukraine, which has a positive effect on the online trade. Despite the large annual growth, Ukraine is still far from the leaders in the field of e-commerce, although if we succeed in overcoming some problems, the growth potential of our country will be even greater. For example, in 2019, the Internet coverage in Ukraine was only 67% that was lower than the average one in Eastern Europe, with the number of Internet buyers accounting for only 21% [13]. In 2021, the number of Internet buyers in Ukraine reached 44% (while the average one for Eastern Europe is 46%) (see Fig. 3). This significant growth can be explained by the COVID-19 pandemic. Among the barriers that hinder the development of the Ukrainian e-commerce market there is limited access to certain international payment systems, such as Paypal. The number of POS terminals per capita in Ukraine is 3 times less than in Poland [14].

Until February 24, 2022, the Ukrainian e-commerce market was growing rapidly. In 2020, the market share came to 8% of the retail sales (41% year-on-year growth). On the day of the Russian invasion, all the online stores lost, on average,

82.7% of visits and almost all revenue (92%, on average), in the first week. From the mid-March, the trend changed to a positive one, as there was reported a noticeable increase in visits and in revenues [9, 15]. It should be noted that the trade companies, despite the difficulties, have been adapting to new conditions and improving the expectations regarding their economic results, as the sectoral index approached the neutral level and made up 48.7, in July, 2022, as compared with 43.4, in June 2022. The respondents intend to increase the turnover [16]. It is difficult to predict the distant consequences of the Russian-Ukrainian war for the development of the global and the Ukrainian e-commerce at this stage. The war has significantly exacerbated inflation, led to increasing energy prices, and disrupted the global supply chains that had already been weakened by the pandemic [17]. As for the aggressor, the e-commerce companies start suffering from the economic barriers imposed by the US and other states and leaving the region. This concerns the e-commerce shippers and logistics companies (*UPS, FedEx, DHL, A.P. Moeller-Maersk, MSC*) and the e-commerce platforms (*eBay, Sendlle*). In addition,

Visa and Mastercard have stopped in Russia, which seriously complicate e-commerce transactions in Russia [18].

Among the drivers of the e-commerce growth in Ukraine, we highlight the following factors: increasing Internet penetration; increasing number of smartphone users in Ukraine; the restrictions caused by COVID-19; growing trust in the digital payment systems; increasing variety and improving payment methods; expanding geography of delivery and shortening delivery terms; low cost of delivery; growing individual consumption; increasing reliability of online sellers; and developing innovation technologies [13].

Based on the results of the study, given the analyzed exogenous and endogenous factors [19–21] that influence the development of the domestic e-commerce market, we have offered a methodical approach to assessing the prospects for the development of the Ukrainian e-commerce:

$$\Sigma EC \rightarrow \max,$$

where EC is the Ukrainian e-commerce market.

The market grows due to increasing number of online buyers and online purchases.

The research has made it possible to identify the most influential exogenous and endogenous factors that have a positive and negative effect on the Ukrainian e-commerce market. Having substituted the above-mentioned factors of influence on the Ukrainian e-commerce market, we get the equation like this:

$$y_x = a_0 + a_1 \cdot IP + a_2 \cdot NOS + a_3 \cdot AUR + a_4 \cdot NMPU + a_5 \cdot NDC + a_6 \cdot VGDPPC + a_7 \cdot IR,$$

where parameters $a_0 - a_i$ are the size of the Ukrainian e-commerce market; IP is the Internet penetration, % of the population; NOS is the number of online buyers, million people; AUR is the average unemployment rate, % of the population; NMPU is the number of mobile phone users, million people; NDC is the number of debit cards, million pcs.; VGDPPC is the GDP per capita, USD; IR is the inflation rate, %.

With the help of the proposed methodology, it is possible to assess the influence of the speci-

fied factors on the size of the Ukrainian e-commerce market.

Our forecast of the global e-commerce market has shown a steady growth trend and coincides with the forecasts of Statista [6] and UNCTAD [7], which suggest that this trend will continue in the near future. The forecast has been calculated for the trend based on polynomial, exponential, power, and logarithmic functions. For the polynomial function ($y = 42.571x^2 + 135.17x + 1128.4$), $R^2 = 0.9967$; for the exponential function ($y = 1080.6e^{0.1922x}$), $R^2 = 0.9953$; for the power function ($y = 1097.1x^{0.6412}$), $R^2 = 0.9131$; for the logarithmic function ($y = 1648.1\ln(x) + 637.62$), $R^2 = 0.8092$. That is, the calculations have shown that the international e-commerce market will be growing until 2025 with almost 100 percent probability.

According to the research, the Ukrainian e-commerce forecast, like the global one, shows a growing trend (Fig. 6) and has been confirmed by the forecast by tech.liga [8]. The forecast is made for the trend based on polynomial, exponential, power, and logarithmic functions. For the polynomial function ($y = 0.103x^2 - 0.4035x + 1.75$), $R^2 = 0.9769$; for the exponential function ($y = 0.9582e^0, 1862x$), $R^2 = 0.8304$; for the power function ($y = 1.0925x^{0.5038}$), $R^2 = 0.611$; for the logarithmic function ($y = 1.1209\ln(x) + 0.8306$), $R^2 = 0.5916$. That is, according to the calculations, the Ukrainian e-commerce market will be growing until 2025, with the most significant probability (97.69%) corresponding to the polynomial function.

Threats to the development of domestic e-commerce during the corona crisis and in the conditions of the martial law in Ukraine are similar. In particular, they include threat to life, declining business activity, increasing unemployment, and decreasing income. Based on the analysis of the successful development of the e-commerce market during the pandemic, it is expected that the mechanisms used by the enterprises in this sphere will be employed during the Russian-Ukrainian war. In addition, based on the research results, we suggest that, given the exogenous and endogenous factors, the main directions for the

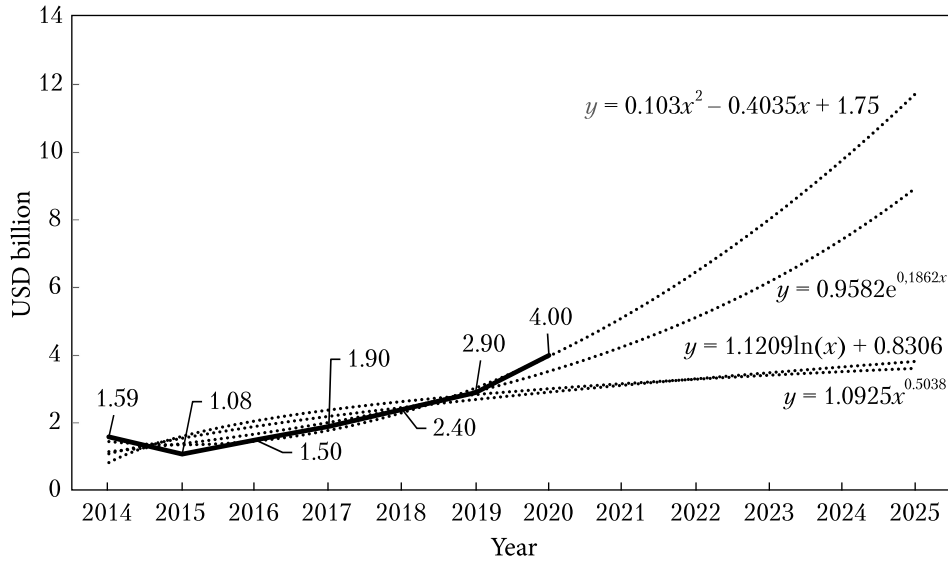


Fig. 6. Forecast of the Ukrainian e-commerce market growth until 2025, USD billion

Source: authors' calculations.

Ukrainian e-commerce development may be grouped as follows: to reduce the overload of online store website in order to simplify its use by consumers, to improve the logistics of e-commerce and to harmonize the regulations in the field of e-commerce with the EU rules that include the list of the measures proposed below.

According to the data of the survey on the rejections of online purchases (2022, USA [22]), many problems of e-commerce can be solved only by making changes in the online store website (the site requests to create an account (24%), too long / complicated checkout process (17%), I cannot see / calculate the total cost of the order in advance (16%), site errors / failure (13%)). Other problems are related to the organization of delivery (additional costs are too high (shipping, taxes) (48%), delivery is too slow (22%)), but these problems are solved by improving e-commerce logistics.

The personalization technologies are now very common in e-commerce, because every customer wants to feel special and receive interesting offers. Over time, the role of an individual approach to each customer will become even greater, so this

factor shall be taken into account by online stores. Using chatbots on websites and apps that help customers get the information they need enables speeding up addressing the customer problems. Individual approach to each customer, including personalized news feed and offers. Round-the-clock customer support that helps customers get answers to all questions quickly, at any time [23]. The e-commerce business includes product storage and safe and proper packaging of ordered products. The e-commerce supply chain is essential for an online store, it needs to be organized efficiently so that the customers continue ordering products from that store. It is mandatory to set up process automation in order to optimize the supply chain. Packaging the orders is an important step in the logistics process; well-chosen material is more cost-effective and can perform a marketing function. Reducing the shipping costs can be achieved in many ways. The easiest shipping method is to use post office, but in this case the store has to pay the full cost of shipping the product to customer. Also there is an option to make a contract with a regional carrier and to get small discounts on delivery, but in this case, the

seller still has to pay for logistics. It is advisable to use the above delivery methods if there is enough volume to get the best offers from postal and transport carriers. Also, there are such methods of supply chain optimization as outsourcing, fulfillment, and dropshipping [24].

The preparations for Ukraine's accession to the EU continue at a faster pace. Therefore, given Ukraine's signature of the Association Agreement and the announced intention to join the EU Digital Single Market, the European model of institutional regulation in the field of e-commerce should be applied in Ukraine. It provides for clear regulation of all its aspects, the procedure for the operation of all subjects in this field and the system of government and market supervision. Today, the EU is one of the largest e-commerce markets in the world. Therefore, taking steps to integrate into the European market will have a positive effect for both national business and consumers [25]. To this end, it is necessary to take the following steps: to oblige online marketplaces to clearly inform consumers about the main criteria for selecting goods, the selling price and change in it; the consumers shall have the same rights, regardless of which of the EU countries the seller is located in; to ensure equal access to the online store or to the services provided on the Internet, that is, nationality and place of residence cannot be used to deny access; to regulate the supply of digital content and digital services at the government level; to reflect in the legislation of Ukraine the taxation of remotely purchased goods/services at the destination with the obligation to apply VAT in customer's country if the cross-border B2C sale exceeds EUR 10,000. It is also important to focus on improving e-commerce logistics, namely: the implementation of advanced technological trends in the global e-commerce market; the personalization and cooperation with clients; and the optimization of supply chains [26, 27].

In the conditions of military operations in Ukraine, which led to the disruption of logistics chains, a fall in Ukraine's GDP and in the population incomes, and an increase in the unemploy-

ment rate, there was an urgent need to develop a model that includes the modern realities of the Ukrainian e-commerce development under the influence of exogenous and endogenous factors, to forecast the future trends, and to propose the main areas for raising the e-commerce efficiency. So, having studied the modern global and Ukrainian realities in the field of e-commerce and the potential opportunities, we offer a descriptive model for the expansion and improvement of the Ukrainian e-commerce efficiency in the conditions of uncertainty caused by the Russian aggression. This model helps to continue the trend of the Ukrainian e-commerce development: the Internet companies may employ it for implementing their corporate strategies, market positioning, marketing, cost savings, profit maximization, raising the efficiency and customer loyalty; the consumers in the field of e-commerce get protection of their rights at the government level, convenience of service, cost savings and quality of goods and services (Fig. 7).

The research has given reasons to state that in the conditions of COVID-19 there was an increase in e-commerce all over the world. The Russian-Ukrainian war will further contribute to the transfer of a large number of companies online. It has been emphasized that the threats to the e-commerce development during both unfavorable conditions in Ukraine are similar, in particular: threat to life, declining business activity, increasing unemployment rate, and dropping income. In Eastern Europe, it was the Ukrainian market that had the highest growth rate (41%), in 2020. Despite the large annual growth, Ukraine is still far from the leaders in the field of e-commerce, although if we succeed in overcoming some problems, the growth potential of our country will be higher.

Based on the analysis of the exogenous and endogenous factors that influence the development of the domestic e-commerce market, the methodical approach to assessing the prospects for the Ukrainian e-commerce development has been proposed. Having employed the trend based fore-

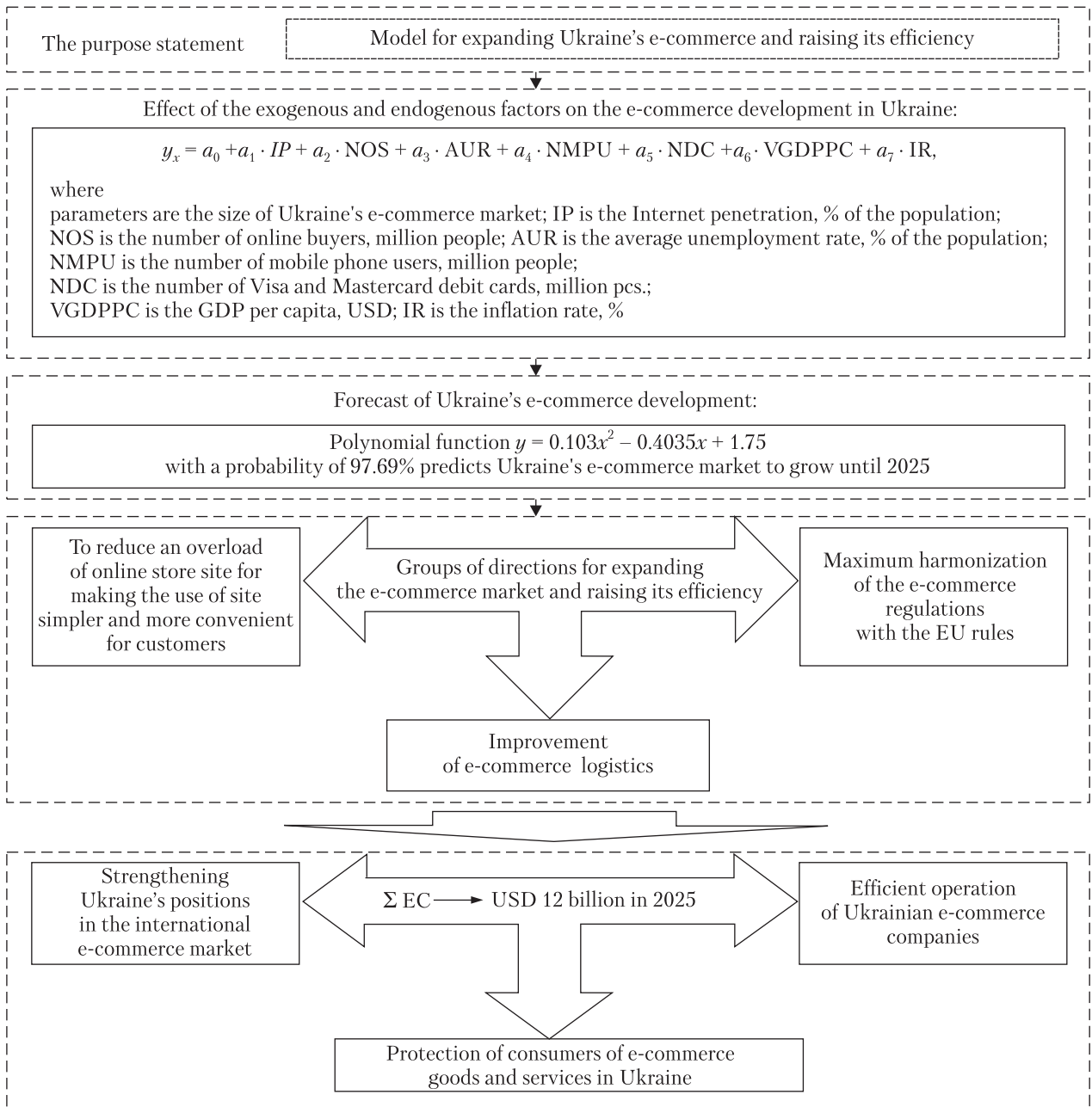


Fig. 7. Descriptive model for expanding the Ukrainian e-commerce and raising its efficiency in the conditions of uncertainty caused by the Russian aggression

Source: developed by the authors.

casting we conclude that the most accurate forecast with a probability of 97.69% is given by the polynomial function. The forecast has shown a steady trend towards the growth of the Ukraini-

an e-commerce market and assumes that this trend will continue in the near future.

The main directions for improving the Ukrainian e-commerce efficiency, which are combined

into three groups and aimed at the enhancement of Ukraine's position in the international e-commerce market, the effective operation of Ukrainian enterprises, and the protection of consumers of goods and services in the Ukrainian e-commerce market, have been proposed. The implementation of the proposed steps helps bring a large part of the Ukrainian e-commerce market out of the shadows and to adapt it to the European market. All of the listed proposals can

radically change the situation in the field of e-commerce in Ukraine as early as in 2025, given that the Ukrainian e-commerce has been boosted by the COVID-19 pandemic and before the full-scale war demonstrated the highest growth rates as compared with the Eastern Europe countries.

The further research in this direction is to study Ukraine's e-commerce market during the post-war development of Ukraine's economy.

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РОЗВИТОК ЕЛЕКТРОННОЇ КОМЕРЦІЇ В УКРАЇНІ В УМОВАХ ВОЄННОГО ТА ПІСЛЯВОЄННОГО ПЕРІОДІВ

Вступ. В умовах воєнного періоду, коли дистанційна робота набуває ще більшої актуальності, надзвичайно важливим завданням є розширення та підвищення ефективності вітчизняної електронної комерції.

Проблематика. Українська електронна комерція як інноваційний вид підприємницької діяльності вимагає комплексного підходу щодо підвищення її ефективності, особливо в умовах надзвичайного стану.

Мета. Дослідити тренди української електронної комерції та створити описову модель її розширення й підвищення ефективності у ситуації невизначеності, спричиненої військовим станом.

Матеріали й методи. Інформаційною базою дослідження стали статистичні дані *Statista*, *UNCTAD*, *Promodo*. Використано методи теоретичного узагальнення інформації, прогнозування на основі тренду, порівняльного аналізу, економіко-статистичного аналізу, побудова описової моделі.

Результати. Досліджено динаміку розвитку світової та української електронної комерції в період до пандемії COVID-19, при коронакризі та під час російської агресії. Підкреслено, що загрози для розвитку під час обох несприятливих станів в Україні є схожими: зниження ділової активності, зростання безробіття, спад доходів, загроза життю. Визначено, що найточніший прогноз з вірогідністю 97,69% демонструє поліноміальна функція. Запропоновано основні напрями розширення та підвищення ефективності української електронної комерції, які об'єднано в три групи та спрямовано на зміцнення позицій України на міжнародному ринку електронної комерції, ефективне функціонування українських підприємств та захищеність споживачів товарів та послуг у сфері української електронної комерції.

Висновки. Запропонована описова модель перспектив розширення та підвищення ефективності української електронної комерції дозволяє комплексно оцінити тренди досліджуваного явища у ситуації підвищених ризиків.

Ключові слова: електронна комерція, описова модель, екзогенні та ендогенні фактори, прогнозування, російська агресія, воєнний та післявоєнний періоди.