

# MANAGEMENT OF THE GLOBAL COMPETITIVENESS OF COMPANIES IN THE FIELD OF ELECTRONIC COMMERCE IN THE CONDITIONS OF DIGITALIZATION

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## ABSTRACT

The study is devoted to the issue of managing the competitiveness of companies in the e-commerce field, the relevance of which is determined by the spread of the latest information and communication technologies, the spread of the Internet, the development of payment systems, the increase in the digital culture of the population, which determines the attractiveness of the global e-commerce market and opens up new opportunities for ensuring competitiveness in the market. The purpose of the study is to highlight the principles of managing the global competitiveness of companies in the e-commerce field in the conditions of digitalization. To achieve the goal, a systematic approach was used, which makes it possible to comprehensively study the effectiveness of e-commerce of companies. Based on the analysis of the dynamics of the global e-commerce market, a number of objective reasons were identified that determine the competitive positions of certain companies in the e-commerce market. Obstacles to the development of the global e-commerce market and factors that activate the e-commerce development are identified, including: a positive effect of networks, which acts as a motivator for the e-commerce development; technology development in the digital economy; increasing the economic efficiency and competitiveness of companies due to the reduction of operating costs and the expansion of the consumer market due to the use of digital technologies. It is of practical importance to improve the effectiveness assessment of the companies entering the e-commerce market, taking into account the establishment of dense communications with the company's customers in real time, creating a positive image of the company in the e-commerce market, ensuring sales stimulation through the use of advertising measures, monitoring the activities of competitors in the e-commerce market.

**Keywords:** *Management, Electronic Commerce, Company, Competitiveness, Digitalization, Global Economy*

## 1. INTRODUCTION

The development of digital technologies and the spread of the Internet led to the emergence and rapid spread of various e-commerce systems, which include: business-to-business (B2B), consumer-to-consumer (C2C), business-to-consumer (B2C), business-to – government (B2G); government - to - consumer (G2C). And at the turn of the century, with

the development of mobile phone technologies, the so-called m-commerce began to actively develop, which quickly gained momentum due to the transformation of electronic commerce using various mobile applications. Also, at this time, the open standard for enterprises in the electronic trade OBI (Open Buying on the Internet) came into force, which made it possible to reduce time, labor and transaction costs, as well as eliminate redundant work due to the

optimization of logistics flows between enterprises. The impetus for the e-commerce development was the permission of the United States in 1990 for the Internet use by private corporations as a result of the prohibition cancellation of the Regulation of the National Science Foundation (NSF) on the commercial use of the Internet. And also, the emergence in 1994 of the first electronic payment system.

The further development of e-commerce is associated with the convergence with traditional commerce, accompanied by the spread of the Internet, popularization of social networks, development of electronic payment systems, expansion of the range of Internet users, development of electronic culture, and acceptance of the fact that e-commerce has become an integral, everyday part of the life of an average citizen.

Thus, it can be noted that the development of economic relations under the influence of globalization processes, development of information and communication technologies and general digitalization of economic processes have led to the emergence and further development of specific forms of relations both in the domestic and world markets, which are electronic business and electronic commerce. The development of digital technologies and transformation of international competitiveness create new opportunities for the expansion of commercial communication in the electronic business environment. Thus, the use of information technologies becomes a necessary condition for the functioning of companies and ensuring their competitiveness in the international market.

Therefore, the outline requires a deepening of the scientific search in identifying the principles of managing the global competitiveness of companies in the e-commerce field in the modern conditions of the spread of the information economy.

The purpose of the study is to highlight the principles of managing the global competitiveness of companies in the e-commerce field in the conditions of digitalization. To achieve the outlined goal, the authors set and solved the following tasks:

- substantiated the relevance of scientific research and the degree of disclosure of this topic in modern scientific research;
- indicators for evaluating effective functioning of the companies in the e-commerce market are singled out;

- indicators of the dynamics of the global e-commerce market are analyzed;

- obstacles to the development of the global e-commerce market and factors that activate the development of e-commerce are determined.

## 2. LITERATURE REVIEW

In today's globalization conditions, the issue of global competitiveness of enterprises is becoming more and more relevant. Taking into account rapid development of digitalization processes, the e-commerce field contributes to increasing the competitiveness of enterprises both in the national and international markets, and helps enterprises reach a qualitatively new level of development. Scientific research by the following leading domestic and international scientists is devoted to the issue of increasing competitiveness, innovative and investment development of enterprises, development of the e-commerce field in modern conditions of digitalization: Abramova A. [1]; Epede Mesumbe Bianca [2]; Grigoraş-Ichim C.E. [3]; Isa Salmi Mohd [4]; Lagodiienko V. [5]; Liu Y. [6]; Malega P. [7]; Marhasova V. [8]; Park J. [9]; Rathnasiri S. [10]; Revko A. [11]; Shaulska L. [12]; Tulchynska S. [13]; Utami Issa Dyah [14]; Viknianska A. [15]; Vovk O. [16]; Vuță Daniela Roxana [17]; Xiao Y. [18]; Zhavoronok A. [19] and others.

The study of the global competitiveness of enterprises in the e-commerce field in the conditions of digitalization is relevant, and according to the Scopus database, there are 137 scientific publications in the specified direction (Fig. 1). The first article dealing with these issues was published in 1997. In the future, publishing activity was more or less constant every year, and over the last 10 years the trend was as follows: 2013 - 6 articles, 2014 - 2 articles, 2015 - 8 articles, 2016 - 9 articles, 2017-14 articles, 2018 - 8 articles, 2019 - 4 articles, 2020 - 3 articles, 2021 - 5 articles, and in 2022 - 5 articles. The countries-leaders in terms of the publication activity on this topic were: China, Taiwan, France, India, Indonesia et.al. The articles were published in journals in the following areas: Management, Business, Computer Science, Economics, Engineering Industrial, Operation Research Management Science, Telecommunications etc.

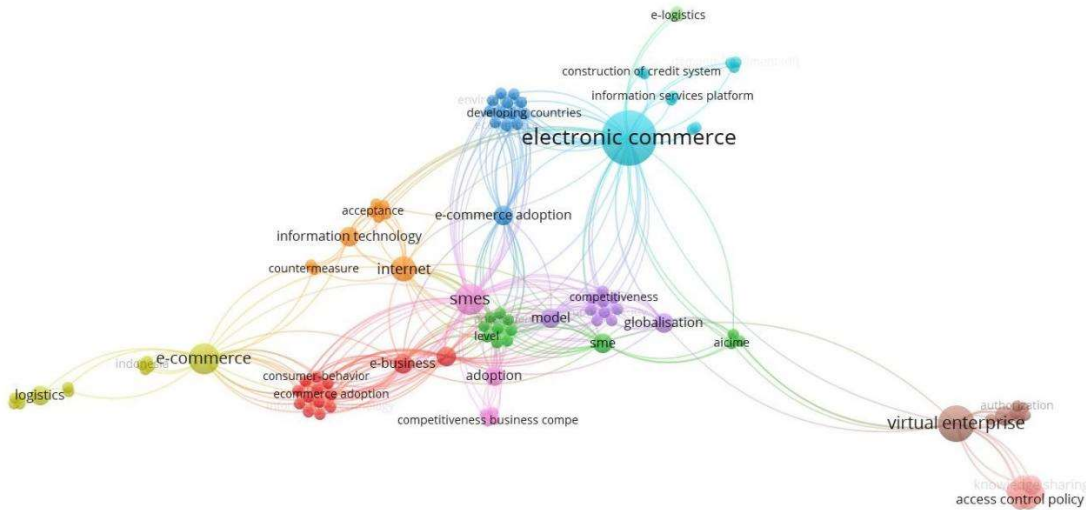


Figure 1: Graphic map of the keywords in publications, in which titles the words “global competitiveness of enterprises, electronic commerce, digitalization” are met

Source: authors’ elaboration using the VOSviewer program

The authors of the article [12] are convinced that the competitiveness of the enterprise is an important element of the market economy, which indicates the ability of the enterprise to adapt to market conditions and maintain a strong position in the market in the long term. Scientists conducted a comprehensive study and analyzed the competitiveness of 5 enterprises, which will allow to form a well-founded opinion about the prospects of further economic activity, and will also help developing a set of effective recommendations, preventive measures and, accordingly, increasing the competitiveness of the enterprise's potential.

Scientists [7] prove that in the Slovak Republic, small and medium-sized enterprises play an indispensable role, in particular, in job creation and regional development. Within one of the areas of research, the authors examine strategies for entering foreign markets and the competitiveness of small and medium-sized enterprises.

Within the framework of the study [14], the main criteria of the marketing strategy for competition at the national level are defined. The authors are convinced that the results of this study can help small and medium enterprises, and the government to plan a strategy to improve the opportunities of small and medium enterprises to enter the global market and be competitive.

The authors [2] explore that the growth of global value chains has increased the competition in global

markets through constant change in critical success factors, leading to changes in comparative advantage. As a result of the study, the authors emphasize that successful modernization in the value chain of wooden furniture can only be possible due to the inevitable interaction of the actions of the main stakeholders, such as government and industrial actors, as well as individual firms.

The researchers [10] are convinced that an important aspect for improving the operational efficiency of small e-commerce supply chains is the development of effective strategies. The authors propose a dynamic cost-sharing contract for an e-store supply chain to address the problems of asymmetric information, long-run integration, and cost inefficiencies.

Within the study [9], the environmental sustainability of an e-commerce return package format distributed in Canadian apparel retail channels is analyzed. In particular, the authors determined that the return mail program had a greater environmental impact than the one-time mail program.

In the article [18], the authors proposed a model of the transmission coding management and vector quantification of the e-commerce information management system. The compensation of e-commerce data transmission delay has been implemented by scientists based on a fuzzy encryption algorithm. The proposed method has

excellent adaptability and strong output stability, which improves the accuracy of the e-commerce data transmission and reduces the output delay and error code.

It is noted within the study [6] that e-commerce through digital platforms relies on various user features to provide a better user experience. The authors proposed a scheme that they believe strengthens the user engagement with e-commerce platforms by improving the prioritization of the user's requirements. The effectiveness of the proposed scheme is analyzed by the authors using relevant experimental considerations.

As technology becomes more sophisticated, so do cyber-attacks. The authors [17] believe that the sustainability of e-commerce organizations today is a critical point as it affects the consumer and digital business behavior. Scholars believe that the adoption of the e-commerce and mobile commerce are two challenging research areas for global economic sustainability. Their adoption through big data, artificial intelligence, machine learning and even block-chain technology, the authors say, can strengthen resilience, even when the cyber-security education is required.

The practical significance of the article [4] is the study by scientists of the determinants of the introduction of e-commerce by small and medium-sized enterprises, as well as technological, organizational and environmental characteristics, as well as to analyze the impact of the frequency of the technology use as a moderator on the e-commerce introduction by SMEs. The results of the scientists' study demonstrate a positive relationship between relative advantage, competitive pressure and the adoption of e-commerce.

However, despite a significant number of publications on the mentioned topic, the study of the processes of global competitiveness of enterprises in the e-commerce field commerce in the modern conditions of digitalization requires further analysis, identification of problematic aspects and research of prospects and opportunities.

### 3. METHODOLOGY

The development of digitalization of the country as a whole, the level of digital culture in the country and other general factors are important for companies to implement e-commerce. In addition to exogenous factors, the effectiveness of e-commerce is important for companies from the point of view of evaluating the effectiveness of the introduction of modern information and communication technologies into commercial activities. The e-commerce effectiveness of the companies should be

considered from the standpoint of evaluating the effectiveness of the introduction of modern information and communication technologies into commercial activity of companies, taking into account the specific features of business activity, the forms and main purpose of commercial activity. To evaluate the effectiveness of the e-commerce implementation, the following indicators are used:

- effectiveness of the company's means of the entry into the e-commerce market ( $E_m$ ),
- assessment of visits to the company's server pages ( $A_v$ );
- effectiveness of banner advertising ( $E_b$ );
- conversion rate (efficiency of conversion of visitors to buyers) ( $CR$ );
- return of customers for subsequent purchases ( $Rc$ );
- advertising efficiency ratio ( $Aer$ );
- interest coefficient of visitors ( $Civ$ ).

Let's consider them in more detail.

The effectiveness of the entry into the e-commerce market due to the company's use of various means of exiting potential customers to the server is defined as follows:

$$E_m = \frac{N_m}{N_{mv}}, \quad (1)$$

where  $E_m$  – effectiveness of means of entering the e-commerce market;

$N_m$  – number of visitors who used the means of access to the company's server;

$N_{mv}$  – total number of visitors to the company's server during the researched period.

In this case, it is important to determine the researched period, because depending on the specifics of the goods and services, their seasonality must be taken into account.

The evaluation of visits to the pages of the company's server for a certain period ( $A_v$ ) can be determined as follows:

$$A_v = \frac{N_{vp}}{N_{mv}}, \quad (2)$$

where  $N_{vp}$  – number of page visits for the studied time period.

The effectiveness of using banner advertising for a company ( $E_b$ ) entering the e-commerce market can be calculated as follows:

$$E_b = \frac{N_{vp}}{N_{vcc}}, \quad (3)$$

where  $N_{vp}$  – number of visitors to the page where the banner is directly located;

$N_{vcc}$  – number of visitors to the company's server who "clicked" on the information banner.

In turn, to determine the conversion of visitors to the company's server into direct buyers, the calculation of the efficiency of the conversion of visitors to buyers ( $E_c$ ) or the so-called conversion rate ( $CR$  - Click - to - Buy) is used according to the formula:

$$CR = \frac{N_v}{N_{inv}}, \quad (4)$$

where  $N_v$  – number of visitors who became buyers of the company, that is, placed an order or performed another necessary action (registered, established contact with the company, downloaded a price list, etc.);

$N_{inv}$  – total number of visitors to the company's server.

It is also important to return potential customers and visitors to the company for the next purchase, which is determined by the number of repeated visits to the server according to the formula:

$$R_c = \frac{N_{inv}}{N_m}. \quad (5)$$

To evaluate advertising measures, the companies on the e-commerce market use the advertising efficiency ratio ( $A_{er}$  – Click-to-Rate), which is determined by the formula:

$$A_{er} = \frac{N_{ncam}}{N_{nvam}}, \quad (6)$$

where  $N_{ncam}$  – number of clicks on an advertising message;

$N_{nvam}$  – number of views of the advertising message.

The interest rate of visitors who viewed more than one page (Civ Click-to-Interest) is determined by:

$$C_{iv} = \frac{N_{int}}{N_{niv}}, \quad (7)$$

where  $N_{niv}$  – number of interested visitors, considered to be those who viewed more than one page.

It is important not only calculations, but also analytical conclusions regarding the achievement of the goal set for the company when entering the e-commerce market, which should include:

- establishment of close communications with the company's clients in real time, informing potential buyers and clients about the company's activities and development, changes in its products or services. Establishing feedback and responding to existing customer's complaints and complaints in order to improve the quality of service to potential and existing customers of the company;

- creating a positive image of the company on the e-commerce market, ensuring sales stimulation through the use of advertising measures;

- disclosure of a certain part of financial statements and other information about suppliers, employees, shareholders and other interested and involved persons in the company with their consent;
- constant monitoring and analysis of the activities of competitors in the e-commerce market and their products.

In the opinion of the authors, for a more detailed analysis of the effectiveness of companies in the e-commerce market, it is necessary to pay more attention to the assessment of the establishment of communications with customers. The economic effect consists in reducing the share of costs for finding new customers, maintaining feedback from them, which makes it possible to serve a large number of customers and simultaneously increase the company's competitiveness in the electronic services market. We suggest using the following formula to determine the effectiveness of establishing communications with clients ( $E_{cl}$ ):

$$E_{cl} = N_{cl} \cdot SW, \quad (8)$$

where  $E_{cl}$  – economic effect of establishing communications with customers of companies;

$N_{cl}$  – number of customers who have left contact information about themselves or correspond with the company, persons;

$SW$  – reduction of the specific weight of costs for servicing one client.

It is important to evaluate the effectiveness of the company's website ( $E_{cw}$ ), which provides automated order generation and control of their implementation. For this, it is appropriate, in the opinion of the authors, to use the following calculation:

$$E_{cw} = (Q \cdot d + D) \cdot Kr, \quad (9)$$

where  $Q$  – value of orders made by customers using the company's website independently;

$d$  – share of paid orders to the total volume made through the company's website;

$D$  – amount of receivables that was repaid by customers on their own without the involvement of the company's personnel;

$Kr$  – sales profitability ratio.

Thus, the company's entry into the e-commerce market provides various advantages, including increasing sales volumes, entering new markets, expanding the circle of consumers, reducing costs and increasing competitiveness in general.



#### 4. RESULTS OF THE RESEARCH

In accordance with the methodology proposed in the previous section for evaluating effectiveness, we will give an example of evaluating the effectiveness of banner advertising when an enterprise enters the e-commerce market. The Ukrainian company

Eurotrading LLC was chosen to test the proposed improvements regarding the evaluation of the company's performance in the e-commerce market.

When entering the e-commerce market, the company purchased 5,000 banner impressions. That is, the total number of played ad impressions.

*Table 1: Indicators of Eurotrading LLC when entering the e-commerce market*

Indicator	Indicator value	Units of measurement
Total number of played impressions of the company's advertising (AD Impression)	5000	showings
Cost per thousand, M (millesimus) cost per 1000 impressions (CPM)	10	USD
Number of unique visitors (AD Reach)	1750	personal
Clicked on the banner (AD Exposure)	200	personal
We contacted the site again	5	personal
Filled out the order form	34	persons
Made a purchase	31	person
Average cost of an order made by users	75	USD
Unit cost of production	42	USD

Source: compiled by the authors based on company data

According to the results of the entry of Eurotrading LLC into the e-commerce market and advertising placement, it can be noted that the average frequency of advertising to one user was 2.86 times. At the same time, positive reviews were received on average 4, which corresponds to the ratio of clicks to the total number of advertising impressions. The actual number of contacts of the audience with the advertisement, that is, the actual number of users who actually saw the advertisement is 70%.

The actual cost of one advertising contact is \$0.014. US, and the cost of one contact with a unique user is \$0.03 USA with an average cost per click of \$0.25 USA.

As a result, Eurotrading LLC received \$0.26 US is the cost of one user visit to the site, which is defined as the cost of advertising in relation to the number of users who visited the site.

For Eurotrading LLC, the conversion rate is \$1.5 USA, which is quite a positive result considering the number of users who viewed the ad and made a purchase.

The cost of one sale was \$1.6 USA, while the average cost of the order was \$75 USA, thus the turnover from electronic commerce reached \$2325,00 USA.

The efficiency of establishing communications of Eurotrading LLC with clients is 0.97, while the number of orders placed through the e-commerce market was 11%. Every dollar invested in advertising brought the company \$1.95 USA.

With the increase in the number of customers who were attracted by the Internet, the ratio of establishing communications with customers, the effectiveness of the website will increase.

The use of new technologies increases the efficiency of companies' activities by improving financial stability due to the speed of management decision-making, reducing receivables by increasing the manageability and transparency of relations with customers, creating a new powerful product sales channel that expands the range of services for the company's potential customers in the global electronic market commerce

Entering the e-commerce market for companies today is not something new, so you should not expect a rapid increase in sales and profits. The company should clearly formulate the main goal and objectives when entering the global e-commerce market.

It should be noted that competitive positions of various companies in the world market in the e-commerce field and, in general, its development in different countries are different, which is due to a number of objective reasons, including:

- different level of computerization and its different rates due to different living standards of the population, which caused one country to lag behind others;

- different rates of internetization and the quality of the Internet, and the lag in some countries in the use of broadband fiber optic and modem Internet technologies is about two dozen;

- different paces and levels of the development of banking systems and electronic bank payments, which influenced the formation of the population's culture of purchasing via the Internet;

- language barriers, due to the fact that English-speaking Internet sectors have much more traffic, compared to many other official languages of different countries of the world.

According to the analytical assessments of various experts regarding the strengthening of competition in the e-commerce market, it is noted that the main players of this market are located in the Indian-American and Western European e-commerce markets. The basis of high competitiveness of companies is a high level of the support of the main mass of consumers and the presence of an extensive information infrastructure. Also, traditional

European companies, European Internet companies and North American Internet companies compete in the world market today.

It should be noted that the volume of the global e-commerce market is steadily growing and in 2021 reached almost 20% of the total sales volume (Fig. 2). In five years, the volume of the global e-commerce market has increased more than 2.5 times. A significant increase of 5.8% in sales volumes in the e-commerce market was observed in 2020 compared to the previous year, which was caused by the COVID-19 pandemic. According to forecast data, in 2022, the volume of the global e-commerce market should reach \$5.424 trillion USA, and the volume of sales will be 20.3% of the total volume of sales.

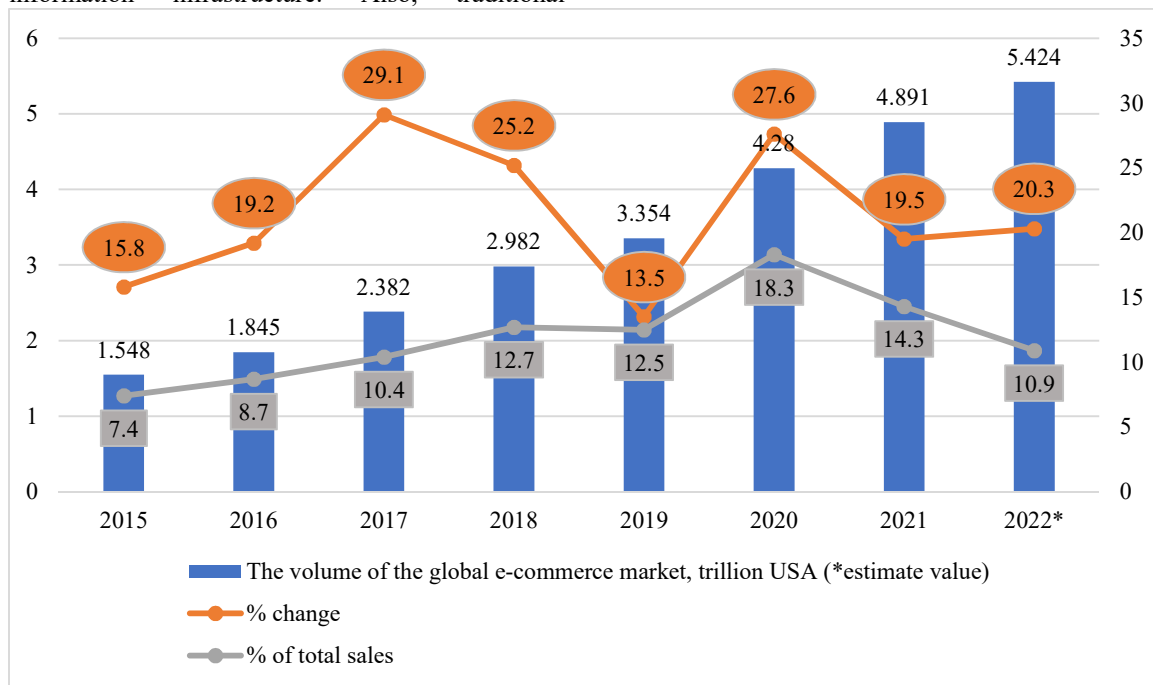


Figure 2: Dynamics of the global e-commerce market in the total turnover

Source: built by the authors based on [20-21]

The payment environment is important for increasing the competitiveness and development of e-commerce. In the conditions of digitization of economic environment, the competitiveness of its subjects is determined by the level of the development and interaction of the integration of payment and trade instruments. Global e-commerce is characterized by various payment methods, the analysis of which is presented in Fig. 3.

The most common e-commerce payment transaction in 2020 was digital and mobile wallets,

namely at the level of 41.8%, according to forecast data, in a couple of years, payment by this method will increase and will reach more than half of the volume of all transactions, namely 52,2% according to forecast data in 2023. The second most popular form of transactions is credit card payments, which in 2020 accounted for 24.2% of all payments on the e-commerce market. But, according to forecast data, the volume of such payments will decrease in favor of payment by digital and mobile gadgets.

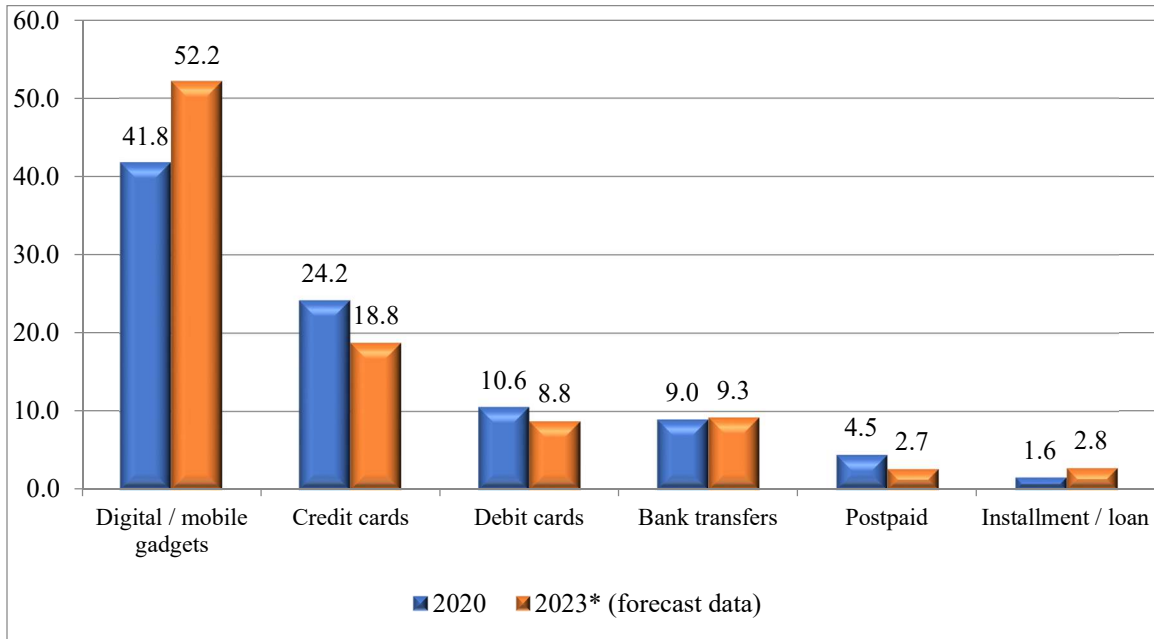


Figure 3: Payment methods in the global e-commerce market by share of transaction volume, %

Source: built by the authors based on [22]

It should be noted that the development of payment systems and payment infrastructures will become an asset for the spread of electronic commerce and the development of the global electronic market.

The development of e-commerce is not possible without an increase in the number of consumers

(Fig. 4). The International Telecommunication Union (ITU) emphasizes that as of 2020, more than half of the world's population, namely 53.6%, are Internet users, which is 4.1 billion of the world's population.

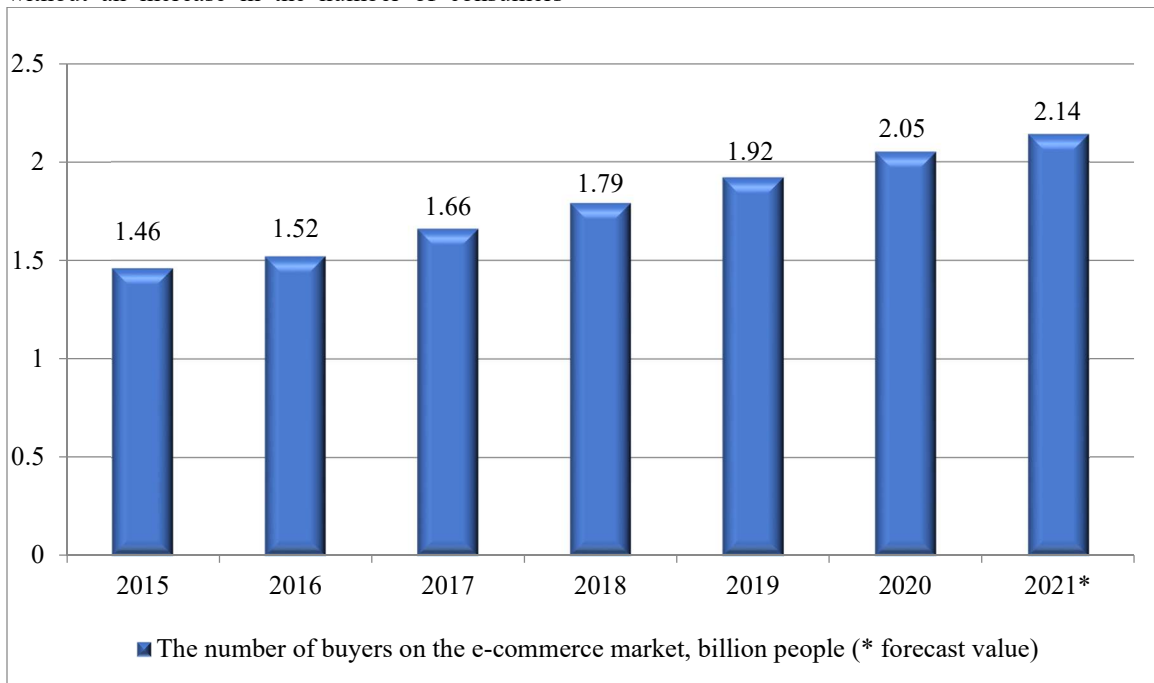


Figure 4: Number of buyers on the global e-commerce market, billion people

Source: built by the authors based on data [23]



From 2015, in which the number of users was 1.46 billion people, it reached 2.05 billion people in 2020, which is an increase of 0.65 billion people. Such an increase in consumers of the e-commerce market expands the capabilities of companies and ensures their competitiveness in the global market and opens new prospects for increasing market share and promoting their goods and services.

Recently, the increase in Internet users is due to the increase in its availability in the developing countries of the world. In Fig. 5, the statistics of the in the level of global e-commerce growth by world region in relation to the previous period is presented.

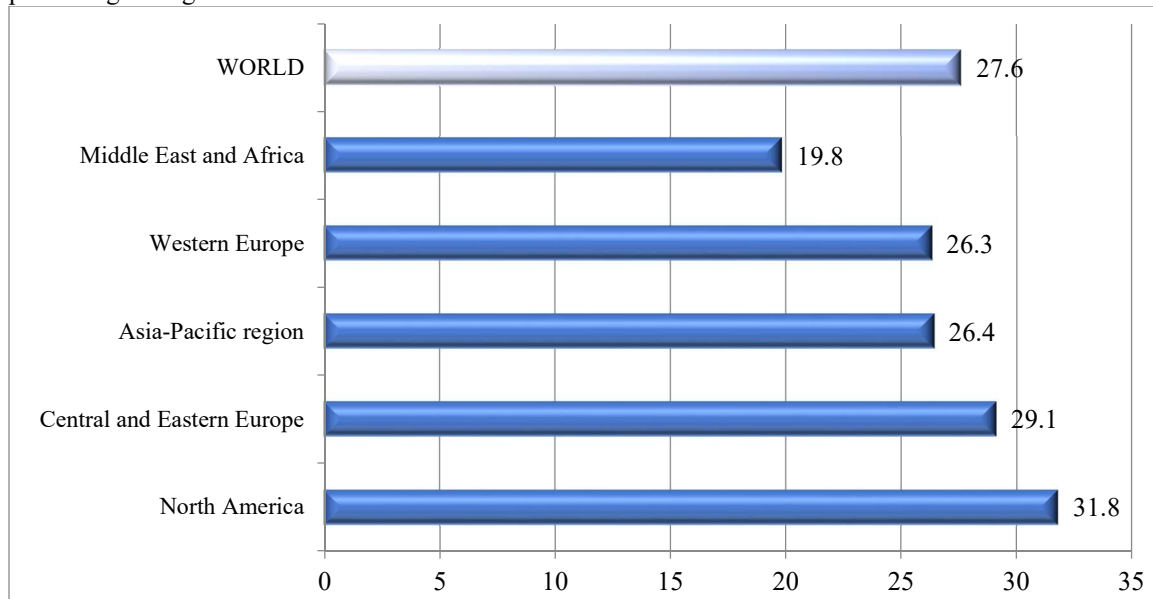


Figure 5: Growth of e-commerce by regions of the world in 2020 compared to the previous one, %

Source: built by the authors based on data [24]

However, it should be noted that today the electronic market is not yet sufficiently developed compared to traditional markets, the reasons for this are as follows:

- insufficient development of the regulatory and legislative framework of many countries, which creates a general problem of protecting intellectual property rights for goods sold using e-commerce, as well as the legal basis of e-commerce contracts. This causes mistrust on the part of investors and creates certain financial problems and inhibits the development of the e-commerce market on a global scale;

- presence of end-to-end problems directly related to the global concept of culture and business introduction rules in different countries of the world that exist within the functioning of the e-commerce market. There is some uncertainty regarding the real existence of partner companies in the global e-market space and the availability of goods and services offered for sale;

- presence of additional security threats in the e-commerce market, which make it necessary to build additional mechanisms for guaranteeing

confidentiality, means of authorization and identification;

- partial closure of certain countries as a result of various reasons for entering the e-market, lack of uniformity in interaction in the network, lack of common standardized access to websites of the companies located on different continents, which narrows the circle of participants in e-commerce;

- lack of general competence of managers, logisticians, marketers and other qualified specialists who simultaneously implement projects and tasks set before them in the classical and e-commerce market, which in general narrows the circle of participants of the e-market and inhibits its development.

There are general factors that stimulate the e-commerce development, which are:

- firstly, the positive effect of networks, which acts as a motivator for the e-commerce development, because thanks to the Internet, sellers and consumers find more and more advantages for themselves and increasingly actively involve each other in e-commerce;

- secondly, the development of technologies in the digital economy, which, due to the introduction of

new Internet and information and communication technologies, expands the capabilities of corporations in their activities in the e-commerce field and increases the passion of consumers for the e-market;

- thirdly, increasing the economic efficiency and competitiveness of companies due to the reduction of operating costs and the expansion of the consumer market due to the use of digital technologies.

## 5. CONCLUSIONS

In summary, it can be noted that the volume of the global e-commerce market is increasing, thanks to which new externalities are opening up for companies in the form of global opportunities and global choice, ensuring a quick response to demand, personalizing sales, reducing costs and increasing their own competitiveness. Further development of information technologies, the spread of various interactive functions and the use of the Internet in the world are increasingly popularizing e-commerce and expanding the capabilities of companies on a global scale.

The scientific novelty of this study is the justification of the expansion of the methodological toolkit for evaluating the effectiveness of the e-commerce implementation by the companies, which involves taking into account the effectiveness of establishing communications with customers and the effectiveness of the company's website, taking into account the specifics of the company's functioning and the environment, which depends on many exogenous factors and the development of digitalization in general.

Currently, the e-services market is only about 20% of sales from the total volume, but despite the existing restrictions and obstacles, it continues to develop at a fairly high pace. The directions for the activation of e-commerce are the development of the regulatory and legislative framework for e-commerce at the state level, increasing the security of the e-commerce market, and improving the digital culture of the population.

Questions related to ensuring economic security of the functioning of enterprises when entering the international market to ensure competitiveness and further development, taking into account modern globalization challenges, require further scientific research.

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