

Enhancing the efficiency of e-commerce through digital technologies: Economic and legal aspects

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Abstract: The research is aimed at analyzing the economic and legal aspects of the functioning of digital technologies in the field of electronic commerce, as well as studying the impact of these technologies on the efficiency of processes and their interaction with various aspects of legislation regulating the field of electronic commerce. In the course of the research, literary sources and legal acts were analyzed with the aim of generalizing approaches to understanding electronic commerce and establishing the main principles of its regulation. The analysis of statistical data made it possible to identify trends in the development of the e-commerce market and the influence of negative external factors. In turn, the application of methods of generalization and systematization made it possible to determine the key aspects of the implementation of digital technologies to increase the efficiency of electronic commerce and identify regulatory gaps in this area. The results of the research confirm that e-commerce in Ukraine plays an important role in the digital economy, ensuring efficiency and profitability for businesses. An analysis of the e-commerce market showed the growth of the use of the Internet for shopping, even in difficult socio-political conditions. Therefore, despite the challenges facing the country, e-commerce remains a sustainable and powerful tool for business development and consumer activity. However, it is necessary to improve the legal framework in order to meet the requirements of modernity and to ensure the protection of consumers' and market participants' rights from technical and other risks related to electronic commerce.

Keywords: Consumer rights, Digital technologies, Economic impact, Electronic commerce, Electronic market stability Legal aspects, Market opportunities, Protection of personal data.

1. Introduction

E-commerce is becoming an increasingly important element of economic activity in the modern world, and its efficiency and competitiveness significantly depend on the use of digital technologies. The introduction of these technologies takes place at different levels: from optimizing and automating management and production processes to creating innovative services and products for consumers. The economic and legal aspects of implementing digital technologies in e-commerce allow optimizing production processes, reducing the cost of delivery of goods, and improving the level of customer service. It is necessary to develop relevant legal norms and standards that would ensure the protection of consumers' rights, transparency of transaction terms, and the fight against cybercrime and fraud in e-commerce.

However, along with positive aspects, the introduction of digital technologies also brings new challenges and risks. For instance, there is a growing threat of cyberattacks and data breaches, which

can negatively affect consumer confidence in e-commerce. In addition, issues of confidentiality and personal data protection during online transactions arise. Therefore, consideration of the economic and legal aspects of the introduction of digital technologies to improve the efficiency of e-commerce is an important task that requires a comprehensive approach and cooperation between business, government, and the public.

The purpose of the present research is to identify various aspects of using digital technologies in the field of e-commerce, taking into account economic and legal requirements. The research is aimed at studying the impact of these technologies on the efficiency of e-commerce processes and their interaction with various aspects of legislation.

2. Literature Review

In her scientific work, Kalachenkova [1] identified the key aspects of the formation of a digital society and its interaction with the information society. The author examined the processes of digitalization, development and use of information technologies, and also defined the essence of the digital sphere as an important component of society. The results of the study confirmed that the digital society is a new stage of development characterized by the active use of information technologies in all spheres of life and processes. In addition, the author proposed his own definition of the category “digital society” and noted its impact on e-government, e-commerce and e-communication.

In her scientific work, Marchenko [2] identified important aspects of the interaction between the legal regulation of e-commerce and electronic communications, taking into account the provision of the information and communication component of e-commerce. Changes in the legal status of intermediate service providers in the field of e-commerce are investigated, and the impact of the Law of Ukraine “On Electronic Communications” [3] on the legal regulation of the information and communication component of e-business is revealed. In addition, this law provides consumers for the first time with quantitative and qualitative guarantees that are important for exercising their rights in the field of electronic commerce at a particular place. Given the growing popularity of business electronic communications via Internet messengers, it is necessary to pay attention to the regulatory regulation of this issue. Thus, it remains important to resolve the issue of using software applications such as Skype, Telegram, Viber, WhatsApp and others in the field of e-commerce.

In their research paper, [4] determined that e-commerce is the most progressive segment of the consumer market, which is of great importance in the modern digital economy. The authors identified the main factors influencing the development of e-commerce, its components and features of work on the Internet, as well as the benefits and challenges for organizations, employees and consumers. The study has identified the scale, trends and prospects of e-commerce development through analysis and synthesis, evaluation and diagnostics of quantitative indicators.

3. Research Methods

In the course of the research, the following methods were used:

- literature analysis was applied to summarize existing concepts and approaches to understanding e-commerce, highlighting key aspects of its functioning and socio-economic importance, in particular, in the context of the impact of digital technologies on economic and business development;
- the analysis of legal acts was used to establish the basic principles of e-commerce regulation, in particular, to define its essence and mandatory conditions for trading;
- the analysis of statistical data was utilized to analyze the dynamics of the e-commerce market in Ukraine and identify trends in the growth of Internet use for shopping and trading, despite the difficult socio-political conditions in the country;
- the generalization method was used to assess the impact of the COVID-19 pandemic and the introduction of martial law on the development of e-commerce in Ukraine, taking into account the dynamics of market growth and changes in consumer demand;

- the systematization method was applied to analyze the relevant legislation on e-commerce in order to identify regulatory gaps in the responsibilities and obligations of participants in this process.

4. Research Results

In today's world of technological progress, the use of digital technologies is becoming a crucial factor in economic and business development. E-commerce, which plays an important role in modern economic processes, is becoming a subject of attention for economic and legal studies. However, even with the widespread use of e-commerce in the world, it remains a relatively new branch of economic activity for Ukraine, different from the traditional one since it is based on the use of information and communication technologies [5].

E-commerce is an essential element of the digital economy, encompassing all financial and trade transactions conducted over computer networks, as well as all related business processes associated with such transactions. It includes various aspects of the digital economy, such as electronic data interchange (EDI), electronic funds transfer (EFT), online trading (E-Trade), electronic money (E-Cash), digital marketing (E-Marketing), electronic banking (E-Banking), electronic insurance products (E-Insurance), etc. [6]. The essence of e-commerce goes beyond technological tools; it involves the sale of goods and services for profit, which emphasizes its socio-economic importance, demonstrating the thesis that information technology is a means of achieving this goal. The use of electronic platforms often leads to higher profitability than conventional commercial methods, making it particularly attractive to businesses [7].

According to Article 3 of the Law of Ukraine "On Electronic Commerce", e-commerce is defined as a relationship aimed at achieving profit arising from the conclusion, amendment or termination of civil agreements and obligations conducted remotely through information and communication systems. Thus, these are relations where the participants have property rights and obligations. It is important to note that this Law is applicable only in cases where one of the parties is not an individual entrepreneur and conducts trade through information and communication systems, unless otherwise provided by the agreement. Thus, e-commerce is necessarily a form of economic activity unless the parties to the agreement expressly determine the application of the provisions of the said Law [8].

Regarding the principles of legal regulation of e-commerce, Article 5 of the Law "On E-Commerce" defines a number of key principles, among which the most important are as follows: guarantee of freedom of business activity with the use of information systems; free choice of counterparty and electronic means; ensuring competitiveness and compliance with the principles of fair competition; free conclusion of electronic transactions; guarantee of proper quality of goods, works and services in the field of e-commerce; equality of legal force of electronic transactions compared to. Therefore, enshrining these principles in law is an important prerequisite for effective legal regulation of e-commerce and its successful functioning in the context of the ongoing development of the digital economy in Ukraine [9].

Currently, the issue of e-commerce implementation requires practical justification, which emphasizes its importance as a competitive tool for domestic companies, especially in the context of the lack of borders, internationalization and "technological liquidity". The main motivations for implementing e-commerce include the possibility of global trade, increased competition, cost reduction, and business adaptation to difficult conditions such as a pandemic or martial law. It is also important to highlight the process of value creation in e-commerce. In this context, the value chain is a key business model that describes the sequence of stages where value is added or lost. The limited physical presence of e-commerce results in fragmented value chains, where different functions may be delegated to different organizations, subcontractors, or even individuals working without formal employment contracts [10]. This situation causes a number of problems for the further development of e-commerce, namely:

- the need to ensure a fair distribution of added value between the various functions involved in the process; however, there is often an inequality in bargaining power;

- shifting operational and financial risks to weaker actors in the value chain, which causes problems for subcontractor workers;
- the lack of rights and social protection for those who take risks by working without a proper labor contract [11].

It should be noted that trading at the consumer level is one of the sectors most susceptible to automation, and e-commerce can be considered an advanced form of this automation. However, it is difficult to predict the long-term effects of e-commerce. Current estimates of global job losses due to digitalization are as high as 2 million by 2030, and the discrepancies in these estimates make it difficult to predict the future. Strategies for retraining and developing new industries that will create additional employment opportunities need to be developed to mitigate the impact of digital transformation on jobs [12].

Raising the issue of the current state of e-commerce in the context of the digital economy, it should be noted that there are no official statistics on the number of registered business entities engaged in e-commerce. Nevertheless, many businesses are currently actively using information and communication technologies in their operations: from advertising to the possibility of ordering goods and services online, as well as paying for them online [13]. In this context, the progress of e-commerce in Ukraine is driving changes in the domestic market, which are observed in the context of large-scale transformations in consumption, production, and trade habits (Figure 1).

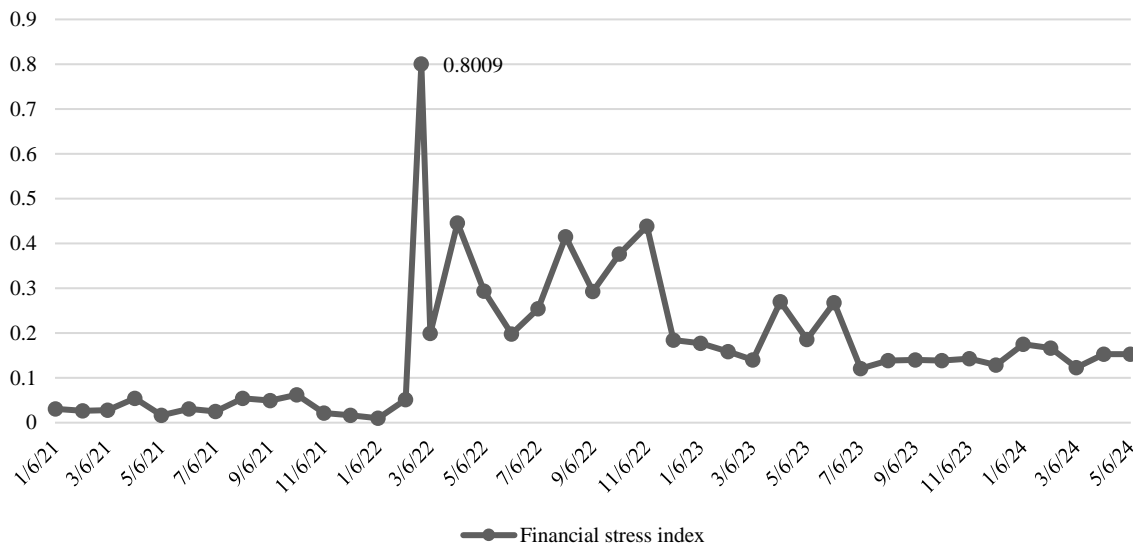


Figure 1.
Revenue of the e-commerce market in Ukraine, million USD.
Source: Compiled by the author on the basis of [14].

The change in the level of revenue in the e-commerce market is an important indicator that reflects the reaction of this sector to external influences. In this case, the impact of the full-scale invasion and global economic difficulties caused by military conflicts and the COVID-19 pandemic has significantly affected e-commerce. Declining incomes and changing consumers' attitudes have required businesses to adapt to new conditions to ensure their survival and recovery. However, even with these challenges, the e-market continues to develop, showing resilience and readiness for further successful evolution [15].

The introduction of the global quarantine in 2020 resulted in a sudden growth of e-commerce, including in Ukraine. Under the influence of restrictions, e-commerce has rapidly and deeply penetrated the retail trade in food, medicine, and other everyday goods. According to GlobalData, the growth trend in e-commerce and contactless payments observed during the quarantine will continue after the pandemic ends. The impact of the pandemic will play a long-term role in stimulating the development of

e-commerce. Experts predict that new customers will continue to shop online because it is convenient, fast, and secure, making e-commerce the biggest beneficiary of the COVID-19 pandemic [16]. In 2020, Ukraine was ranked the 48th place in the world in terms of e-commerce market size, demonstrating rapid growth driven by the pandemic [17].

The dynamics of the Ukrainian e-commerce market since the outbreak of hostilities and the subsequent introduction of martial law have been marked by an increase in the share of the population using the Internet. According to the Ecommerce Europe study for 2022, this figure was approximately 67 %, which is 5 % higher than in the previous period. Despite significant migration processes and the temporary occupation of part of the country's territory, the total population has decreased, and even with that, 85 % of citizens have access to the Internet. According to the report, about 44 % of Internet users make purchases online, indicating a trend of digitalization. Thus, despite an estimated 23 % decline in the total population, the percentage of internet users remains almost stable, indicating the resilience and potential of e-commerce in Ukraine [18].

In addition, there are certain trends in the number of residents and purchasing power. It is noticeable that the e-commerce market is overcoming difficulties along with the decline in the number of residents physically present in Ukraine and the decline in active online shoppers due to inflationary pressures. This trend leads to a slowdown in its development, and competition is growing with the popularity of online shopping, which requires companies to focus on attracting customer attention and loyalty. The use of automated marketing tools makes it possible to personalize approaches to customers' needs, increasing their loyalty and engagement. Thus, the development of e-commerce continues to require businesses to constantly improve their marketing strategies and ability to compete effectively in this dynamic market [19].

Thus, the impact of the COVID-19 pandemic and the full-scale invasion on Ukrainian consumers has been extremely significant. Back in 2021, a significant portion of respondents noted that quarantine restrictions had almost no impact on their purchases; however, the situation changed dramatically in 2022. Firstly, economic instability caused a decline in household incomes, which led to a reduction in consumer demand and lower sales in retail chains. The panic among consumers to stockpile led to an increase in the average receipt even though their purchasing power decreased. At the end of 2022, the average receipt for online purchases was 42.25 USD. This is less than in many European countries but significantly higher than in the previous year. The sharp increase in demand has become a major challenge for e-commerce businesses, whose inventory may be limited and access to suppliers is difficult due to disruptions in supply chains, leading to sudden increases in product prices [20].

In such circumstances, it is important to take into account not only the economic foundations of e-commerce but also legal aspects, including the protection of personal data, consumer rights, digital signatures and electronic documents. In order to identify certain shortcomings and gaps in the legislation governing special economic legal relations arising in the field of e-commerce, a comprehensive analysis should be conducted to improve the legal framework and provide greater legal certainty to market participants [21].

As a result of analyzing the relevant legislation of Ukraine, in particular, the content of the laws "On Electronic Communications" [3], "On Electronic Trust Services" [22], etc., it becomes obvious that e-commerce requires special attention to the responsibilities and obligations of participants in this process. It should be noted that information and communication service providers, such as electronic communication network providers and electronic trust service providers, play a key role in ensuring the technical side of entering into and executing e-commerce transactions [23].

Although the Law "On Electronic Commerce" defines the legal status of an intermediary service provider, there is no separate provision regarding its liability in electronic contracts, as is provided for other participants. This is probably due to the fact that such an entity is not a direct party to the electronic contract, and, accordingly, all technical problems are borne by the business entities that are a party to the transaction. For the purpose of ensuring adequate consumer protection in the field of e-commerce, this detail may be specified in specific electronic contracts [24].

In turn, the Law "On Electronic Commerce" defines various methods of signing electronic contracts, including the use of a one-time identifier and analogs of a handwritten signature, such as facsimile

reproduction. Although the Law “On Electronic Digital Signature” expired in 2017, the Law “On Electronic Commerce” still uses terms related to electronic signatures, referring to this expired legislation [25]. Thus, such discrepancy creates confusion in the legal norms and requires elimination by clearly defining the terms “electronic signature” and “qualified electronic signature” in the context used in other legislation, namely, in the Law “On Electronic Trust Services” [8].

It is worth noting that the Law “On Electronic Commerce” is a key regulatory act in the field of electronic commerce since it establishes the rules and procedures for electronic identification required for electronic transactions. It grants a qualified electronic signature the same legal force as a regular signature, subject to its compliance. In addition, the concept of an “electronic time stamp” was introduced, which creates an electronic trace at a point in time associated with specific electronic data. This Law also regulates the procedure for registering electronic delivery [9].

The means of tracking the date of conclusion of an electronic contract and electronic delivery are intended to facilitate more effective protection of the rights of consumers and other parties to legal relations in the field of electronic commerce. An important prerequisite for the functioning of electronic commerce is the availability of payment systems that allow for payments via the Internet or other remote methods. The Law “On Payment Services” regulates the procedures for opening accounts, managing funds thereon, and making remote payments [26]. Information security in e-commerce legal relations, including personal data protection, is ensured in accordance with Ukrainian legislation, in particular the Law “On Personal Data Protection” [27]. In this context, the electronic contract should include the relevant terms and conditions for the use, protection, storage and deletion of personal data as an important component of the terms and conditions [28].

5. Discussion

We agree with [1] on the importance of studying the process of formation of the digital society and its interaction with the information society. According to the findings of the study, the development of e-commerce is one of the key components of this process since it reflects the transition to the digital economy and changes in the ways of consumption, production and trade. Therefore, the interaction of the digital society with e-commerce opens up new opportunities for businesses and consumers, in particular, by increasing the level of trust in online purchases and adapting companies to digital reality. This aspect of the study is equally important since it reflects current trends in the economy and the impact of information technologies on improving business efficiency and competitiveness.

We partially agree with [2] in recognizing significant changes in the legal status of intermediate service providers in e-commerce and their impact on the provision of the information and communication component of e-commerce. In particular, the Law of Ukraine “On Electronic Communications” [3] provides consumers with the necessary guarantees to facilitate the implementation of their rights in the field of e-commerce. However, we believe that the exclusion of electronic communications network providers from the list of intermediate service providers is unjustified. On the contrary, they play a crucial role in the legal regulation of e-commerce, providing the necessary information and communication functions. Thus, resolving the issue of their status is considered important for ensuring the effective functioning of e-commerce.

We support the standpoint of [4] in their scientific work that explores important aspects of e-commerce development in the context of restrictions caused by the COVID-19 pandemic and the need to ensure personal safety. The authors point out that e-commerce is one of the most progressive and independent segments of the consumer market [29], [30]. They examine the main factors that influence the development of this segment, as well as draw attention to the benefits and challenges faced by organizations, employees, and consumers. Therefore, we believe that the results of the study are of practical importance for understanding current trends and prospects for the development of e-commerce. In addition, we support the thesis that it is necessary to popularize new areas of development in this area, such as improving institutional support and attracting marketing strategies.

6. Conclusions

The introduction of digital technologies in e-commerce has a significant impact on the economic and legal aspects of this segment. Firstly, these technologies contribute to economic growth since they provide businesses with new opportunities to promote goods and services as well as attract new customers and increase sales. For instance, the use of electronic platforms allows businesses to conduct trade both domestically and internationally, which contributes to expanding their market potential. On the other hand, digital technologies raise a number of legal issues that require attention and regulation. In this context, it is primarily necessary to ensure compliance with the legislation on personal data protection, consumer rights and other aspects of e-commerce.

The development and adaptation of the legal framework to the new realities of the digital economy helps ensure stability and transparency in this sector, promoting trust between market participants and protecting their rights. Thus, the introduction of digital technologies in e-commerce requires a comprehensive approach that covers both economic and legal aspects. Such an approach is the only way to ensure the effective development of e-commerce, while maintaining its sustainability and stability in the modern digital economy.

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