

## DEVELOPMENT OF E-COMMERCE DURING THE WAR IN UKRAINE

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*У статті досліджено особливості розвитку інтернет-торгівлі в Україні в умовах повномасштабної війни. Проаналізовано основні тенденції трансформації електронної комерції, зміни в поведінці споживачів та адаптацію бізнес-моделей до нових умов. На основі статистичних даних визначено динаміку зростання обсягів онлайн-продажів, зміни в структурі попиту та пропозиції. Окреслено основні виклики та перспективи розвитку галузі в умовах воєнного стану.*

**Ключові слова:** електронна комерція, інтернет-торгівля, воєнний стан, цифрова економіка, логістика, маркетплейси, адаптація бізнесу.

**Problem statement.** Russia's full-scale invasion of Ukraine in February 2022 dramatically changed the functioning of all sectors of the economy, including the retail sector [1]. With traditional sales channels destroyed or forced to cease operations due to security risks, online commerce has become not only an alternative channel but also a vital element in providing the population with essential goods [2]. The relevance of the study is due to the unprecedented conditions in which the business found itself: the need to quickly adapt to the destruction of logistics chains, the migration of a significant part of consumers, changes in consumer preferences and limited access to financial resources [3]. Studying the transformation processes in the field of e-commerce during the war is important for understanding the mechanisms of business sustainability, formulating effective development strategies and identifying promising areas of government support for the industry.

**Analysis of recent research and publications.** Many well-known scholars have made a significant contribution to the study of the peculiarities of the development of Internet commerce and traditional trade in the national scientific economic literature, in particular, such as: Danyliuk V. O. [1] Grytsenko O. A. [2] Grewal D. [3], Roggeveen A. L. [3] Coffee A. [4], Sviatojec-Szczepanska J. [4] Kozlovsky S. V. [5] Loudon K. [6], Traver C. G. [6], Mansour M. & Nor K. M. [7].

Melnyk T. M. [8], Turban E. [9], Outland J. [9], King D. [9] Shevchenko I. Y. [10] and other scholars. In particular, Hrytsenko O. A. [2] predicts the growth of the e-commerce market in Ukraine despite the consequences of the pandemic and the war with Russia. Kava A. [4] and Sviatayets-Schepanska J. [4] write that in the difficult

conditions of the war, domestic enterprises quickly adapted their business models and, thanks to the digitalization of business processes, were able not only to save their business but also to ensure its certain growth. Grewal D. [3], Roggeveen A. L. [3] write about the problems of legal regulation of e-commerce in Ukraine. They emphasize the legal aspects of e-commerce problems and the means of solving them. Shevchenko I. Y. [10] studies statistical data on the development of e-commerce in Ukraine. He notes that the e-commerce market has begun to recover at a rapid pace, and according to forecasts, starting in 2024, the growth rate of turnover is expected to reach the pre-war level.

**The purpose of the article** is to provide a comprehensive analysis of the status, dynamics and structural changes in the field of online commerce in Ukraine in the context of a full-scale war for the period of 2022–2025.

**Research methods.** In the course of the study, a set of general scientific and special methods was used: System analysis – to study e-commerce as an integral system and its interaction with other sectors of the economy; Statistical analysis – to process quantitative data on the dynamics and structure of online sales; Comparative method – to compare the indicators of e-commerce development before and during the war; Method of expert assessments – to identify key factors influencing the transformation of the industry.

**Research results.** At the beginning of the full-scale invasion in February 2022, Ukrainian e-commerce suffered a sharp decline. According to the Ukrainian E-Commerce Association, in the first weeks of the war, online sales fell by 70–80 % compared to the pre-war period [4]. This was due to the disruption of logistics chains, the temporary shutdown of many warehouses, problems with the supply of goods, and massive internal migration.

However, since April 2022, there has been a gradual recovery in activity: companies have begun to adapt to new conditions, rebuild logistics, and resume operations in safe regions [5]. By the end of 2022, the e-commerce market volume amounted to about 85 % of the pre-war level, which indicated the high adaptability of the industry.

In 2023–2025, the market stabilized and gradually grew. The following factors played an important role in this:

- Development of alternative logistics routes
- Growing popularity of delivery services from abroad
- Expanding the range of essential goods
- Active implementation of contactless delivery technologies
- Development of mobile applications and improvement of user experience [6].

The analysis of the statistical data in Table 1 shows uneven but generally positive dynamics of e-commerce development in Ukraine during the period under study. These data demonstrate a steady upward trend in the e-commerce market in Ukraine despite the difficult economic conditions and security challenges [7]. The volume of the e-commerce market increased from UAH 137.2 billion in 2022 to UAH 209.5 billion in 2024, an increase of 52.7 %.

**Table 1. Key indicators of e-commerce development in Ukraine**

Indicator	2022	2023	2024	I-II quarter of 2025	Growth rate 2024/2022, %
E-commerce market size, UAH billion	137.2	168.4	209.5	132.7	+52.7
Share of e-commerce in total retail trade, %	12.3	15.8	19.2	21.3	+6.9 p.p.
Number of online stores, thousand	22.8	25.4	31.2	33.8	+36.8
Average online purchase check, UAH	865	912	978	1023	+13.1
Internet shopping penetration rate, % of population	47.2	53.5	58.7	61.2	+11.5 p.p.
Number of online orders, mln	158.6	184.7	214.2	129.7	+35.1

In the first two quarters of 2025, the figure has already reached UAH 132.7 billion, which indicates that the positive dynamics is maintained. Particularly significant is the growth in the share of e-commerce in total retail trade – from 12.3 % in 2022 to 21.3 % in the first half of 2025. This confirms the structural changes in the Ukrainian economy and the shift in consumer practices towards online channels [8].

The number of online stores grew by 36.8 % between 2022 and 2024, reflecting both the entry of new players and the digital transformation of traditional businesses. Noteworthy is the 13.1 % increase in the average online purchase receipt, which is partly due to inflationary processes, but also indicates an increase in consumer confidence in online channels for higher value purchases.

**Table 2. Structure of online sales by product category, %**

Product category	2022	2023	2024	I-II quarter of 2025	Amendment 2024/2022, para.
Electronics and home appliances	27.4	24.8	23.1	22.5	-4.3
Clothing and footwear	15.2	16.4	18.5	19.3	+3.3
Food	11.8	14.7	16.9	17.2	+5.1
Home and garden products	9.5	10.2	11.4	11.8	+1.9
Cosmetics and perfumery	8.7	9.3	8.8	8.6	+0.1
Medicines and medical supplies	7.4	8.1	8.5	8.3	+1.1
Children's products	6.8	5.4	4.9	4.7	-1.9
Automotive products	5.2	4.5	3.7	3.8	-1.5
Sporting goods	4.8	3.4	2.8	2.9	-2.0
Other categories	3.2	3.2	1.4	0.9	-1.8

The structure of online sales has undergone significant changes during the study period, reflecting the transformation of consumer priorities in the wartime. The share of electronics and household appliances decreased (-4.3 percentage points), which is explained by the postponement of optional expenses and consumer focus on essential goods. The growth in the share of food (+5.1 p.p.) is the most dynamic category, which demonstrated rapid development due to the need to meet basic needs and the spread of food delivery services. Increase in the share of clothing and footwear (+3.3 p.p.), which indicates that consumers are adapting to buying these goods online and developing the relevant virtual fitting technologies. Steady growth in the household and garden category (+1.9 percentage points), which may be due to the massive movement of people and the need to equip new housing. Decrease in the shares of non-staple goods: children's goods (-1.9 p.p.), automotive goods (-1.5 p.p.) and sports goods (-2.0 p.p.).

These structural shifts reflect the rationalization of consumer behavior and the prioritization of basic needs in the face of economic uncertainty.

**Table 3. Distribution of online orders by regions of Ukraine (%)**

Region	2022	2023	2024	I-II quarter 2025	Amendment 2024/2022, para
Kyiv	24.5	22.3	21.7	21.2	-2.8
Western Ukraine	23.2	28.5	30.4	31.5	+7.2
Central Ukraine	22.8	24.1	25.3	25.8	+2.5
Northern Ukraine	12.3	11.5	11.8	11.6	-0.5
Eastern Ukraine	9.7	7.2	5.9	5.3	-3.8
Southern Ukraine	7.5	6.4	4.9	4.6	-2.6

The regional distribution of online orders has undergone significant changes, which correlates with the displacement of people as a result of the hostilities. The growth of the share of Western Ukraine (+7.2 percentage points) is the most dynamic indicator, due to the migration of a significant number of people to relatively safe western regions and the development of the relevant infrastructure [5]. Decrease in the shares of Eastern and Southern Ukraine (-3.8 p.p. and -2.6 p.p., respectively), due to security risks, occupation of some territories, and massive out-migration. Decrease in the share of Kyiv (-2.8 p.p.), despite its traditional leadership, reflecting partial decentralization of economic activity. A moderate increase in the share of Central Ukraine (+2.5 p.p.), which has become a relatively stable region for internally displaced persons. These changes indicate a profound transformation of the geographical structure of the e-commerce market and the need to adapt logistics networks to new realities.

The transformation of e-commerce business models and infrastructure reflects the industry's adaptation to wartime challenges. A significant increase in the number of delivery points (+61.5 %) demonstrates the development of physical infrastructure to ensure the last mile of delivery, especially in the context of unstable postal services. The increase in the share of mobile purchases (+14.4 percentage points) indicates a

change in consumer habits and the need to adapt interfaces to mobile devices [6].

The reduction of the average delivery time from 5.8 to 2.6 days reflects the optimization of logistics processes and investments in the development of the last mile infrastructure.

**Table 4. Changes in e-commerce infrastructure and business processes**

Indicator	2022	2023	2024	I-II quarter 2025	Deviations
Number of points of delivery, thousand	18.2	22.5	27.6	29.4	+61.5 %
Share of mobile purchases, %	62.4	68.7	74.3	76.8	+14.4 p.p.
Average delivery time, days	5.8	4.2	3.1	2.6	-3.2 days
Share of non-cash payments, %	78.3	85.4	91.2	93.5	+12.9 p.p.
Level of process automation, %	43.5	57.2	68.9	72.3	+25.4 p.p.
Share of companies with their own delivery service, %.	12.4	18.7	27.5	31.8	+15.1 p.p.

The growth in the share of non-cash payments (+12.9 p.p.) indicates the digitalization of payment systems and increased consumer confidence in electronic payments. An increase in the level of process automation (+25.4 p.p.) demonstrates investments in technology to optimize operational efficiency. Increased importance of supply security: 82 % of consumers prefer trusted sellers with a reliable reputation, even if their prices are higher. Growing importance of social responsibility of business: 65 % of respondents said they prefer companies that support the Armed Forces and participate in volunteer initiatives.

The main challenges for e-commerce in times of war:

1. Logistical constraints: destruction of transport infrastructure, closure of airspace.
2. Security risks: the threat of missile attacks on warehouses and logistics hubs.
3. Energy crisis: power outages affecting warehouses and servers.
4. Personnel problems: migration of specialists, staff mobilization.
5. Financial constraints: limited access to credit, exchange rate volatility.
6. Cyberattacks: an increase in the number and sophistication of hacker attacks on IT infrastructure.

Promising areas of development:

1. Integration of augmented reality: technologies for virtual fitting and 3D visualization of goods.
2. Developing dropshipping with international partners as a way to minimize logistics risks.
3. Implementation of blockchain technologies to increase the transparency of supply chains.
4. Personalization of offers based on big data analysis and machine learning.

5. Development of social commerce: integration of sales through social networks and messengers.
6. Automation of customer support through chatbots and voice assistants.
7. Implementation of unmanned delivery technologies under security restrictions.

**Conclusions.** E-commerce in Ukraine has demonstrated high adaptability and resilience in the context of a full-scale war, as evidenced by the steady growth of key industry indicators in 2022–2025. The war has caused profound structural changes in e-commerce, including an increase in the share of food and essential goods in the sales structure, a reorientation of the geography of online orders to the western and central regions, and rationalization of consumer behavior. The digital transformation of e-commerce business processes was accelerated: increased automation, development of non-cash payments, and optimization of logistics processes, which reduced the average delivery time despite objective obstacles

Successful business strategies in times of war are based on diversifying risks, developing their own infrastructure, flexible inventory management, and integrating social initiatives into the business model.

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## Annotation

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### ***Development of e-commerce during the war in ukraine***

*The article examines the peculiarities of e-commerce development in Ukraine under the conditions of full-scale war (2022–2025). The research analyzes the main trends in the transformation of e-commerce, changes in consumer behavior, and the adaptation of business models to new conditions. The dynamics of online sales growth and changes in the structure of demand and supply are determined based on statistical data. The study identifies significant regional shifts in e-commerce activity, with Western Ukraine demonstrating a 7.2 % increase in online orders, while the share of Eastern and Southern regions decreased by 3.8 % and 2.6 % respectively, reflecting large-scale population migration due to security risks. Business adaptation strategies included diversification of logistics routes, development of proprietary delivery services, and decentralization of warehouse facilities, resulting in a 61.5 % increase in pick-up points and a reduction in average delivery time from 5.8 to 2.6 days. Consumer behavior has transformed toward more rational purchasing decisions, with 76 % of respondents indicating more deliberate shopping compared to the pre-war period.*

*Despite infrastructure challenges, energy crises, and security risks, the e-commerce sector has demonstrated remarkable resilience, with market volume*

increasing by 52.7 % from 2022 to 2024 and the share of e-commerce in total retail growing from 12.3 % to 21.3 % by mid-2025. The study outlines the main challenges and prospects for industry development during wartime, emphasizing the acceleration of digital transformation processes and the importance of implementing innovative technologies such as augmented reality, blockchain, and artificial intelligence in the post-war recovery period.

**Key words:** e-commerce, internet trade, martial law, digital economy, logistics, marketplaces, business adaptation, wartime economy, consumer behavior, supply chain resilience.

УДК: 338.48:640.4:004:005.8

DOI: 10.32782/2415-8240-2025-106-2-363-375

## SYNERGY OF TOUR OPERATION AND HOSPITALITY SERVICE QUALITY IN THE ERA OF DIGITALIZATION

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*Досліджено синергію між туropерейтингом та готельно-ресторанним обслуговуванням за умов цифровізації. Розкрито роль цифрових технологій, як інтегратора сервісів, що сприяють підвищенню якості, персоналізації і задоволеності клієнтів. Обґрунтовано, що ефективна взаємодія можлива за умов технологічної сумісності, стратегічного партнерства і впровадження єдиних цифрових стандартів. Проведено огляд сучасних практик з якості обслуговування в готельно-ресторанному бізнесі на міжнародному рівні. Розглянуто концептуальні моделі синергії підприємств у великих туристичних містах України, де цифровізація виступає платформою для підвищення конкурентоспроможності та інноваційного розвитку туризму і сфери гостинності.*

**Ключові слова:** туropерейтинг, туристичний продукт, готельно-ресторанний сервіс, якість обслуговування, синергія, цифровізація, конкурентоспроможність, інновації, технології.

**Problem Statement.** Current trends in the development of the tourism industry indicate a growing need for the integration of key elements of tourism activity into a single, efficient system. Particular attention is drawn to the interaction between tour operation and the quality of hospitality services, which, under conditions of digitalization, acquires new forms and strategic significance. The effectiveness of this interaction determines not only the competitiveness of individual tourism companies but also the ability of tourist destinations to offer a holistic, high-quality, and attractive tourism product. The period of digital transformations entails a paradigm shift in the field of tourism services, which includes not only technical modernization of processes but also deep structural integration among all actors in the tourism market.