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Directions for Improving the Use of New Technologies in Creating a Competitive Environment in the Field of Electronic Commerce

Abstract

In the modern era, the digitalization of the global economy has accelerated the development of electronic commerce (e-commerce), and the formation of a competitive environment in this area is directly linked to the level of use of new technologies. Increasing competitiveness in electronic commerce is further strengthened by the application of innovations such as artificial intelligence, big data analytics, cloud technologies, blockchain and digital payment systems. These technologies allow analyzing consumer behavior, developing personalized marketing strategies, reducing transaction costs and providing a secure payment infrastructure. Important steps are being taken in Azerbaijan to expand the e-commerce ecosystem and improve the competitive environment. Within the framework of the "Digital Economy" concept, the state's support for e-commerce platforms, the development of electronic signature and payment systems, and the increase in online sales opportunities for small and medium-sized businesses are important directions. In addition, the application of international experience, the renewal of the legal and regulatory framework, and the improvement of consumers' digital literacy contribute to the sustainable development of the competitive environment. The study presents the role of technological innovations in strengthening competition in e-commerce, the impact of digital transformation on economic efficiency, and strategic proposals for the formation of a competitive market environment. The results show that the application of new technologies not only increases economic efficiency, but also makes a significant contribution to the integration of Azerbaijan into the global digital market.

Keywords: *e-commerce, competitive environment, digital technologies, artificial intelligence, blockchain*

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Elektron ticarət sahəsində rəqabət mühitinin yaradılmasında yeni texnologiyalardan istifadənin təkmilləşdirilməsi istiqamətləri

Xülasə

Müasir dövrdə qlobal iqtisadiyyatın rəqəmsallaşması elektron ticarətin (e commerce) inkişafını sürətləndirmiş, bu sahədə rəqabət mühitinin formallaşması isə yeni texnologiyalardan istifadənin səviyyəsi ilə birbaşa əlaqələndirilmişdir. Elektron ticarətdə rəqabət qabiliyyətinin artırılması sənii intellekt, böyük məlumat analitikası (big data), bulud texnologiyaları, blokçeyn və rəqəmsal ödəniş sistemləri kimi yeniliklərin tətbiqi ilə daha da güclənir. Bu texnologiyalar istehlakçı davranışlarını analiz etməyə, fərdiləşdirilmiş marketing strategiyaları hazırlamağa, əməliyyat xərclərini azaltmağa və təhlükəsiz ödəniş infrastrukturunu təmin etməyə imkan verir.

Azərbaycanda elektron ticarət ekosisteminin genişlənməsi və rəqabət mühitinin təkmilləşdirilməsi istiqamətində mühüm addımlar atılır. “Rəqəmsal iqtisadiyyat” konsepsiyası çərçivəsində dövlət tərəfindən e-ticarət platformalarının dəstəklənməsi, elektron imza və ödəniş sistemlərinin inkişafı, kiçik və orta sahibkarlar üçün onlayn satış imkanlarının artırılması vacib istiqamətlərdəndir. Bununla yanaşı, beynəlxalq təcrübənin tətbiqi, hüquqi normativ bazanın yenilənməsi və istehlakçıların rəqəmsal savadlılığının yüksəldilməsi rəqabət mühitinin dayanıqlı inkişafına töhfə verir. Tədqiqatda elektron ticarətdə rəqabətin gücləndirilməsində texnoloji innovasiyaların rolü, rəqəmsal transformasiyanın iqtisadi effektivliyə təsiri və rəqabətqabiliyyətli bazar mühitinin formallaşması üçün strateji təkliflər təqdim olunur. Nəticələr göstərir ki, yeni texnologiyaların tətbiqi yalnız iqtisadi səmərəliliyi artırır, həm də Azərbaycanın qlobal rəqəmsal bazarda integrasiyasına mühüm töhfə verir.

Açar sözlər: elektron ticarət, rəqabət mühiti, rəqəmsal texnologiyalar, süni intellekt, blokçeyn

Introduction

The dynamic development of the e-commerce sector, as one of the main directions of the modern global economy, is directly related to the rapid transformation of digital technologies. New technologies – artificial intelligence, big data analysis, cloud computing, blockchain and digital payment systems – stimulate the formation of a competitive environment by both studying consumer behavior and increasing the efficiency of business operations (Johri et al., 2025).

The development of e-commerce is directly related not only to technological modernization, but also to the improvement of state support and institutional frameworks. Important measures have been taken in Azerbaijan in this direction.

State support for innovation activities, the formation of a digital economy and the improvement of the legal and regulatory framework of e-commerce systems form the basis of a competitive market environment (Aliyeva, 2020; Azərbaycan Respublikası Rəqəmsal İnkişaf və Nəqliyyat Nazirliyi, 2022).

At the same time, international experience shows that transparency of e-commerce platforms, increasing digital security and a customer-oriented approach are important for ensuring competitive advantage (Akin, 2024; Värzaru, Bocean, 2024).

The economic and social impact of e-commerce in Azerbaijan is increasing. Especially after the pandemic period, a rapid expansion of the online sales market is observed (Najafova, 2021; Hajiyeva, 2021). Suleymanov and Ibrahimova (Suleymanov, Ibrahimova, 2018) note that expanding digital infrastructure in the local market, ensuring the security of online payments and forming consumer culture are among the main goals of the competitive environment. In this regard, improving the use of new technologies is considered a strategic direction for the future development of e-commerce.

Research

The formation of a competitive environment in the field of electronic commerce depends on the unity of technological, institutional and socio-economic factors. In modern times, digital transformation acts as one of the main factors determining the efficiency, transparency and market dynamism of e-commerce. Through digital technologies, enterprises establish more flexible management systems, satisfy consumer demands with personalized approaches and gain a more stable position in the market (Kolomiyets et al., 2024).

Table 1.
Key indicators of e-commerce in Azerbaijan in 2019–2024.

Year	E-commerce Turnover (million AZN)	Annual Growth Rate of Online Orders (%)	Number of Active E-commerce Platforms	Share of Electronic Payments in Total Payments (%)
2019	750	12.5	42	8.3
2020	1,200	60.0	65	14.7
2021	1,850	54.2	79	19.6
2022	2,420	30.8	93	24.1
2023	3,150	30.1	118	28.9
2024	3,920	24.4	145	33.2

Table 1 shows that e-commerce turnover in Azerbaijan increased by approximately 5.2 times during 2019-2024. This increase is due to both the expansion of the online consumer base and the effective implementation of the state's digitalization policy. After 2020 – especially during the pandemic – the growth rate reached 60%, which created conditions for the intensive development of online services and payment systems (Hajiyeva, 2021).

Table 2.
Share of technological trends in the global e-commerce market (2024).

Technology Type	Global Adoption Level (%)	Impact on Competitive Advantage (1-5 scale)
Artificial Intelligence (AI)	78%	5
Big Data Analytics	72%	5
Blockchain Technology	47%	4
Cloud Technologies	83%	4
Automated Logistics Systems	61%	4
Social Commerce Integration	69%	5

Source: (Attar et al., 2022; Varzaru, Bocean, 2024; Johri et al., 2025).

Table 2 shows that artificial intelligence and big data analytics are the technologies that provide the most competitive advantage in e-commerce on a global scale. These technologies, in addition to personalizing the customer experience, also optimize market forecasting and product distribution (Athamakuri et al., 2025).

Overall, the statistical results prove that the competitive potential of e-commerce at both the global and national levels is directly determined by the level of digital technologies. In order for technological development in this area to be sustainable in Azerbaijan, it is important to strengthen innovation policy, SME support programs, and e-government infrastructure.

Conclusion

The conducted research and statistical analysis show that improving the use of new technologies in creating a competitive environment in the field of e-commerce is an important strategic direction for the economic development of Azerbaijan. The application of digital technologies – artificial intelligence, big data analytics, blockchain and cloud systems – not only increases the efficiency of e-commerce operations, but also creates conditions for ensuring transparency in the market, reducing transaction costs and increasing consumer satisfaction.

The results of the study show that the growth rate of e-commerce turnover in Azerbaijan during 2019-2024 was more than five times, which demonstrated the effectiveness of digital infrastructure

and the state's innovation-oriented policy. The expansion of electronic payments, the proliferation of online sales platforms and the increase in digital literacy of consumers have led to a qualitatively new stage in the competitive environment.

However, the analysis shows that in order to further improve the competitive environment, it is necessary to update the legal and regulatory framework, strengthen consumer protection mechanisms, expand technological support programs for SMEs, and improve digital security systems. International experience (Johri et al., 2025; Attar et al., 2022; Akin, 2024; Lobacheva, Yadova, 2020) shows that competitive advantage is provided not only by technology, but also by innovative management models and open innovation ecosystems.

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