

Article

The Importance of Using Digital Technologies to Improve the Efficiency of Catering Services

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Abstract: This article analyzes the role of digital technologies in improving the efficiency of catering services (restaurants, cafés, canteens, and fast-food chains) from both scientific-theoretical and practical perspectives. The impact of online ordering systems, mobile applications, electronic payment tools, software for automating warehouse and kitchen processes, artificial intelligence-based demand forecasting systems, and food delivery platforms on the industry is examined based on international and national scientific literature. The study compares real statistical data obtained from open sources, including the global size of the online food delivery market, the impact of digital ordering systems on revenue, and the share of mobile platforms, using tables and diagrams. The analysis shows that the implementation of digital technologies significantly improves the competitiveness of catering enterprises by reducing operational costs, enhancing service quality, and strengthening customer relations. The article concludes with scientific and practical recommendations for accelerating the digitalization process in the catering sector of the Republic of Uzbekistan.

Keywords: catering services; digital technologies; online ordering; electronic payment; artificial intelligence; digital transformation; service efficiency

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1. Introduction

In the modern economy, the service sector, including the catering industry, is undergoing rapid technological changes. Changes in consumer lifestyles, the busy schedules of urban residents, and the growing demand for convenience are encouraging catering enterprises to introduce modern digital tools into their operations. Online ordering, mobile applications, electronic payment systems, and food delivery platforms have become an integral part of the catering business today[1].

International experience shows that restaurants and cafés that have adopted digital technologies are able to reduce operating costs, increase service speed, minimize the number of errors, and strengthen customer loyalty. In particular, enterprises operating through online ordering systems demonstrate an increase in the average check value, a higher frequency of repeat customer visits, and a significant growth in overall revenue. At the same time, the digital transformation process also creates a number of challenges, including data security, employee adaptation to new technologies, and initial investment costs[2].

In the Republic of Uzbekistan, the catering industry has been developing rapidly in

recent years; however, the level of digital technology adoption varies across regions and types of enterprises. While online ordering and electronic payment systems are actively used in restaurant chains in major urban centers, the level of adoption of such technologies remains relatively low among small and family-owned catering enterprises. This situation creates a need to accelerate the digitalization process in the catering sector of Uzbekistan on a scientifically grounded basis[3].

The purpose of this article is to analyze the importance of digital technologies in improving the efficiency of catering services based on international and national scientific literature and open statistical sources, to determine their impact on enterprise performance, and to develop practical recommendations for the conditions of Uzbekistan. The objectives of the study are as follows: 1) to classify the main directions of digital technologies in the catering sector; 2) to assess the economic efficiency of digitalization based on real statistical data from open sources; 3) to analyze scientific research and practical experience in Uzbekistan; 4) to formulate recommendations for the development of the sector.

A study examining innovations and challenges in the digital era of foodservice management scientifically establishes that digital tools such as online ordering systems, mobile payments, and smart inventory management can significantly improve operational efficiency, reduce costs, and enhance customer experience. At the same time, the author highlights a number of challenges, including data security, privacy protection, and the need to adapt employees to new technologies[4].

A comprehensive study examining the application of technological innovations in the foodservice sector and their impact ranging from operational efficiency to consumer experience analyzed mobile applications, augmented reality (AR) applications, blockchain-based tracking systems, and artificial intelligence-based service evaluation tools. The findings indicate that while technology strengthens customer engagement, operational transparency, and decision-making processes, it also creates significant challenges related to organizational readiness and policy coordination.

An empirical study examining the impact of digital transformation on productivity in the restaurant industry statistically demonstrates that digitalization of front-of-house and back-of-house processes has a positive effect on overall firm-level productivity. In addition, another study investigating the economic impact of hospitality and tourism technologies on organizational performance found that self-service technologies, such as self-ordering kiosks, have a positive effect on customers' perceptions of service quality[5].

A study examining the role of digital transformation and operational optimization in cloud kitchen operations demonstrates that cloud-based order management systems, artificial intelligence-based demand forecasting, automated kitchen equipment, and integrated delivery platforms can streamline kitchen workflows, optimize inventory management, and enable scalable, data-driven decision-making.

A study investigating digital tools for sustainable supply chain management aimed at reducing food waste in industrial canteens practically demonstrated, using the example of an Italian food production company, that the use of digital systems such as "Winnow" can reduce food waste, minimize environmental impact, and generate economic benefits. This study provides important evidence that digital monitoring tools have a positive impact not only on economic efficiency but also on environmental sustainability[6].

A study examining the impact of the Internet on the efficiency of the catering and accommodation industry assessed the effects of electronic technologies on operational efficiency using economic analysis methods. The results showed that enterprises with a higher level of digital infrastructure achieved significantly better overall efficiency indicators. A systematic review of innovative digital technologies in food purchasing and

consumption analyzed 57 scientific studies, most of which were related to the hotel-restaurant-café-catering (HORECA) sector. The review also showed that the main purpose of information and communication technologies is to provide information to consumers and farmers and to strengthen networking throughout the food supply chain[7].

A recent study examining the digitalization of services and the improvement of economic efficiency in foodservice establishments developed a scientific basis for integrating interactive touch panels into the technological and management processes of restaurants. Using business process modeling and systematic analysis methods, the functional modules of touch-based systems were described. A study on digital transformation and policy recommendations in the Chinese foodservice industry demonstrated, through a statistical regression model, that the level of digitalization in the foodservice sector has a positive impact on enterprise productivity and service quality.

A study examining cost accounting and analysis in catering enterprises in the Republic of Uzbekistan identifies digital solutions such as automating payroll calculations, managing work shifts, and automatically monitoring energy and utility costs using IoT devices as important tools for reducing enterprise costs and improving profitability indicators. The author considers the implementation of comprehensive ERP systems to be a key factor for success in the modern competitive environment[8].

A study on food and beverage services in the hotel industry analyzes the development prospects of this area in the context of Uzbekistan, including the role of digital technologies in managing food quality, hygiene, and customer experience. It also highlights the experience of using interactive kitchens and artificial intelligence technologies in hotel restaurants. A study published in the scientific journal *Advanced Economics and Pedagogical Technologies* examines ways to improve the efficiency of catering enterprises, including family-owned businesses, and identifies the introduction of innovative technologies and improvement of employee qualifications as key factors in strengthening competitiveness[9].

A study on improving cluster management mechanisms in food industry enterprises examines the modernization of enterprise operations and the enhancement of competitiveness through the implementation of modern information systems. In general, an analysis of the scientific literature in Uzbekistan shows that the number of studies on the implementation of digital technologies in the catering sector is increasing. However, these studies are mainly focused on cost accounting and management aspects, while areas such as digital marketing, customer analytics, and artificial intelligence in the sector remain insufficiently explored[10].

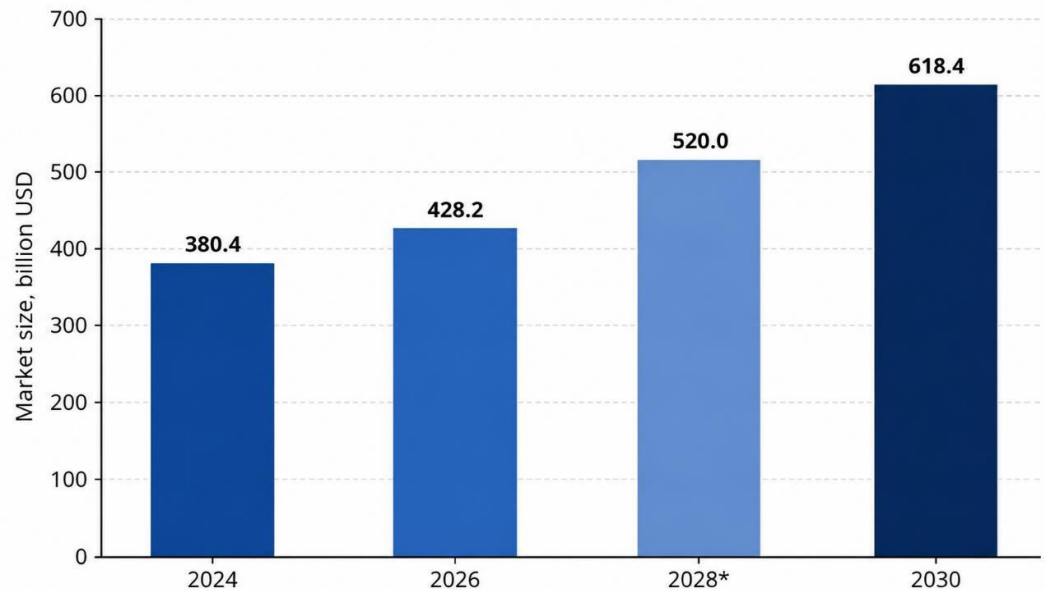
2. Materials and Methods

The study employed a qualitative and quantitative research approach. The qualitative approach was used to analyze international and national scientific literature on the application of digital technologies in the catering sector. The quantitative approach was applied to analyze statistical indicators obtained from open sources, including the global online food delivery market size, the share of mobile orders and online payments, and changes in revenue and average order value associated with digital technologies. Comparative and systematic analysis methods were used to classify digital technologies and assess their impact on the operational and economic efficiency of catering enterprises. Statistical data from Grand View Research, DoorDash, and Deliverect were compared using tables and diagrams. The study also analyzed the current state of digitalization in Uzbekistan and identified key challenges and opportunities for small and family-owned catering enterprises. Based on the results, practical recommendations for accelerating digital transformation in the catering sector of Uzbekistan were developed.

3. Result

The analysis of open statistical sources shows that the most prominent application of digital technologies in the catering sector is online food delivery platforms. According to an analytical report published by Grand View Research in 2025, the global market size of online food delivery services amounted to USD 380.4 billion in 2024 and is projected to reach USD 618.4 billion by 2030, representing an average annual growth rate (CAGR) of 9.0%. This trend is illustrated in Figure 1.

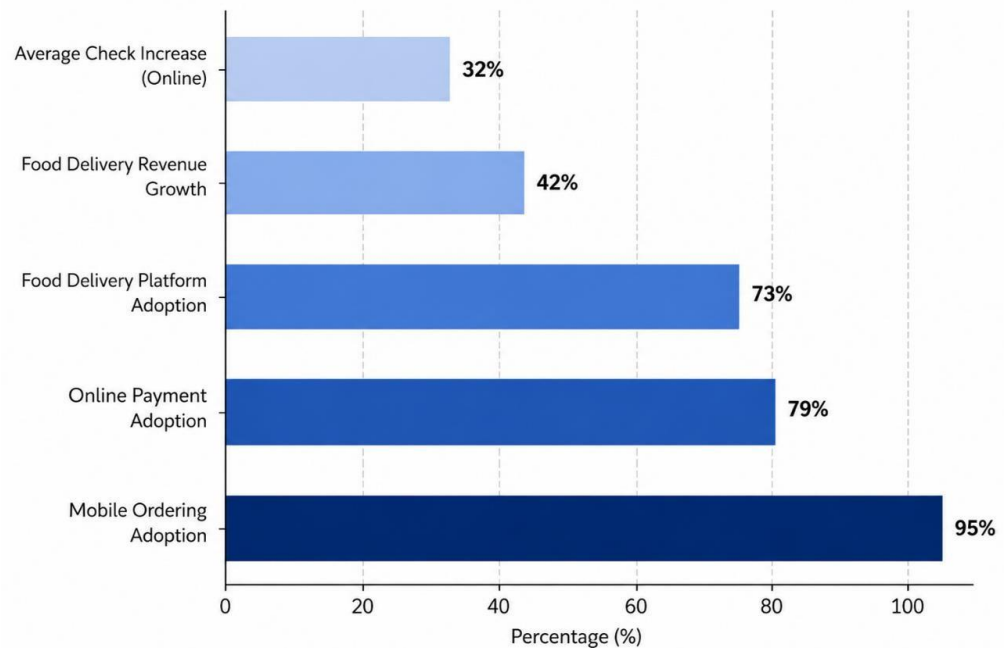
Figure 1. Global Online Food Delivery Services Market Size, Billion USD



The diagram shows that the online food delivery market has demonstrated a steady growth trend in recent years. The main factors driving this growth include the widespread adoption of smartphones and mobile internet, the development of digital payment systems, and the growing demand for convenient services that meet consumers' busy lifestyles[11].

To assess the direct impact of digital technologies on the operations of catering enterprises, quantitative indicators obtained from several open sources were analyzed. According to official statistics from DoorDash, 95% of orders placed over the past six months were made through mobile applications, confirming that mobile platforms have become the primary ordering channel for foodservice operations. At the same time, according to Grand View Research, in 2024, online payment methods accounted for more than 79% of orders in the global market, while the platform-to-consumer model represented more than 73% of the market share.

According to industry statistics published by Deliverect in 2025, restaurants that directly collaborate with delivery applications experienced an average 42% increase in revenue during the first year of technology adoption. In addition, the average value of orders placed through online applications was 32% higher than that of traditional table-service orders. These five key indicators are presented comparatively in Figure 2[12].

Figure 2. Impact of Digital Technologies on the Efficiency of Catering Services, %

The indicators presented in the diagram confirm that the implementation of digital tools not only expands communication channels with customers but also has a significant positive impact on direct financial outcomes, including revenue and average check value. In particular, the dominance of mobile application-based ordering (95%) indicates that catering enterprises should primarily focus their digital strategies on mobile platforms[13].

Based on the analyzed literature, the main types of digital technologies used in the catering sector and their areas of impact on enterprise performance are systematized in Table 1.

Table 1. Main Functions of Digital Technologies and Their Impact on the Efficiency of Catering Enterprises[14].

Type of Technology	Main Function	Impact on Efficiency
Online ordering systems and mobile applications	Digitalization of menu browsing, ordering, and payment processes	Increases ordering speed, reduces errors, and encourages repeat purchases
Electronic payment and mobile wallet systems	Fast, secure, and cashless transactions	Speeds up checkout processes and automates reporting
Kitchen and inventory management systems (ERP/IoT)	Monitoring product inventory, costs, and energy consumption	Reduces costs and minimizes waste
Artificial intelligence-based demand forecasting	Analyzing consumer trends and planning purchasing and production	Reduces excess inventory and waste and accelerates decision-making
Food delivery platforms (aggregators)	Providing logistical mediation between restaurants and customers	Expands customer flow and revenue sources
Blockchain-based supply chain tracking	Transparent recording of product origin and safety	Improves food safety and consumer trust

The table data shows that digital technologies cover all stages of a catering enterprise's operations — from the initial contact with customers to product delivery. In this regard, online ordering and payment systems directly contribute to increasing revenue, while kitchen and inventory management systems help reduce costs. The combination of these two areas ensures the overall economic efficiency of the enterprise[15].

An analysis of national scientific literature on the implementation of digital technologies in catering enterprises in Uzbekistan shows that, at the current stage, the main focus is on automating cost accounting and implementing ERP systems. Restaurant chains operating in major urban centers actively cooperate with online ordering and delivery aggregators; however, the level of adoption of such technologies remains significantly lower among catering enterprises in regional centers and districts.

The results observed in international practice — particularly the 42% increase in revenue and the 95% dominance of mobile orders — are also relevant for catering enterprises in Uzbekistan. This indicates the potential to achieve similar economic benefits through the wider adoption of digital technologies under national conditions. However, this process should take into account factors such as local consumers' payment habits, the level of Internet infrastructure, and the digital literacy of small business entities.

4. Conclusion

The research results showed that digital technologies — online ordering, mobile applications, electronic payments, artificial intelligence, and IoT — are important factors in increasing the efficiency and profitability of catering enterprises. The growth of the global online food delivery market confirms the prospects for digitalization in the sector. In Uzbekistan, the digitalization of small and family-owned enterprises, improvement of employees' digital literacy, and implementation of affordable technological solutions are pressing priorities. In the future, it is advisable to study the economic effects of digitalization, suitable digital models for small businesses, and platforms integrated with national payment systems.

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