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THE DEVELOPMENT OF DIGITAL BANKING SERVICES AND THEIR EFFECTIVENESS

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Abstract: this article scientifically analyzes the development trends of digital banking services, their economic efficiency, and their impact on the activities of commercial banks. The study examines the role of mobile banking, internet banking, remote identification, electronic payment systems, and artificial intelligence-based services in banking operations. Furthermore, the research evaluates indicators such as the reduction of operational costs, acceleration of service delivery, and expansion of customer coverage resulting from digital transformation. The digitalization processes of Uzbekistan's banking system are comparatively analyzed with international practices, highlighting their importance in improving financial stability and competitiveness of banks. The article concludes with scientific and practical recommendations aimed at enhancing digital banking services and implementing innovative technologies within the banking sector.

Keywords: digital banking, mobile banking, internet banking, fintech, banking services, digital transformation, operational efficiency, cybersecurity, electronic payment system, artificial intelligence.

Introduction

The acceleration of digitalization processes in the global economy is fundamentally transforming the operational mechanisms of the financial and banking system. In recent years, commercial banks have been gradually abandoning traditional service methods and prioritizing remote and automated banking services. Technologies such as mobile banking, internet banking, QR payments, e-wallets, artificial intelligence, and biometric identification have significantly increased the speed, convenience, and security of banking operations. In the post-pandemic period, the demand for digital services has sharply increased, leading to a new stage of competition among banks. In evaluating the efficiency of banks, not only financial indicators but also the quality of digital services, customer activity, and the level of implementation of innovative technologies are considered important criteria. Digital

banking services positively impact financial results by reducing banking costs, optimizing operational risks, and expanding the customer base.

In the banking system of Uzbekistan, digital transformation processes have also become one of the priority directions of state policy. In recent years, the increase in the number of remote services in commercial banks, the expansion of electronic payment infrastructure, and the development of fintech platforms have led to structural changes in the banking services market. At the same time, cybersecurity threats, technological risks, and data protection issues associated with digitalization remain among the most pressing challenges. Scientific research on the effectiveness of digital services in the modern banking system is of great importance for increasing the competitiveness of banks, improving service quality, and ensuring financial inclusion. Therefore, this topic represents one of the aктyal scientific and practical issues in the context of the digital transformation of the economy.

Main Part

The theoretical foundations of digital banking services are directly related to the digital transformation of economic systems, which implies a fundamental change in service delivery mechanisms within the financial sector. Digital banking services refer to a set of financial services provided to customers remotely through information and communication technologies. These services include mobile banking, internet banking, automated payment systems, e-wallets, remote identification, and artificial intelligence-based services. According to scientific sources, digital banking contributes to reducing transaction costs, increasing operational efficiency, and optimizing interactions with customers. From this perspective, digital banking services are considered an integral element of the modern banking system.

The stages of development of digital banking services can be divided into several periods from a historical evolution perspective. At the initial stage, banks focused on simplifying internal operations by introducing automated accounting systems. In the next stage, internet banking services emerged, enabling customers to access banking services remotely. In the modern stage, there is a widespread implementation of mobile banking, fintech platforms, and artificial intelligence technologies. According to international experience, 70–90% of banking operations in developed countries are carried out through digital platforms, which has significantly increased the efficiency of the banking system. This evolutionary

process once again confirms the importance of innovative approaches in banking activities.

A number of key indicators are used to evaluate the economic efficiency of digital banking services. Among them, the reduction of operational costs, the increase in service speed, the growth in the number of customers, and the rise in profitability are considered the main criteria. Research shows that in banks that have implemented digital services, operational costs decrease by 30–50 percent compared to traditional services. In addition, automated systems reduce errors associated with the human factor, thereby increasing the accuracy and reliability of services. Digital services also enable banks to create new sources of income.

Mobile banking services are one of the most important components of the digital banking process. Today, the increasing use of smartphones has significantly boosted the demand for mobile banking services. Through mobile applications, users can manage accounts, make payments, obtain loans, and carry out investment operations. According to statistical data, the number of mobile banking users is growing by an average of 15–20 percent annually. This trend has a positive impact on the widespread use of banking services and the level of financial inclusion.

Internet banking systems also play an important role in the development of banking services. These systems allow customers to perform banking operations through computers or other devices. Through internet banking services, users can manage deposits, monitor loans, and carry out international payments. The introduction of internet banking reduces the need for physical bank branches and significantly lowers operational costs. These services further strengthen the interaction between banks and their customers.

The development of fintech technologies is providing a strong impetus for the expansion of digital banking services. Innovative solutions offered by fintech companies make banking services faster, more affordable, and more convenient. For example, payments carried out using blockchain technology reduce transaction costs and increase security levels. Artificial intelligence, in turn, enables the provision of personalized services by analyzing customer behavior.

Cybersecurity issues play a particularly important role in the development of digital banking services. Along with the widespread implementation of digital technologies, the risk of cyberattacks is also increasing. Therefore, banks are introducing modern security systems to protect data, safeguard customers' personal information, and prevent fraud. According to research, expenditures on

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cybersecurity in the banking sector are increasing by an average of 10–15 percent annually, which is an important factor in ensuring the stability of digital services.

The development of digital services in the banking system of Uzbekistan has also significantly accelerated. In recent years, commercial banks have widely introduced mobile applications, online lending systems, and electronic payment platforms. As a result, the level of public access to banking services has increased, and the share of cashless transactions has grown considerably. Government strategies aimed at developing the digital economy are having a positive impact on the modernization of the banking sector, contributing to the enhancement of the competitiveness of the national banking system in the international financial market.

The role of databases and big data technologies is of particular importance in improving the efficiency of digital banking services. The large volume of data collected by banks enables in-depth analysis of customers' financial behavior. As a result, banks can offer services based on an individualized approach, more accurately assess credit risks, and optimize marketing strategies. In banks that effectively utilize big data technologies, customer retention rates increase by 20–30 percent, ensuring stable growth in bank revenues.

The introduction of artificial intelligence (AI) technologies into the banking system is elevating service quality to a new level. AI-based chatbots and virtual assistants provide customers with 24/7 service. In addition, AI algorithms are applied in credit scoring systems, enabling highly accurate assessment of borrowers' creditworthiness. International practice shows that the use of AI technologies has increased the speed of loan processing by 40–60 percent. These technologies also serve as an important tool in detecting fraudulent transactions.

Another important direction in the development of digital banking services is the advancement of open banking systems. The concept of open banking enables the creation of new services through data exchange between banks and third-party service providers. These systems, operating on the basis of API (Application Programming Interface) technologies, expand interbank cooperation and allow the provision of more convenient and integrated services to customers. Open banking systems are particularly well developed in European countries, where they play a key role in fostering an innovative environment in the banking sector.

Digital banking services also play a significant role in ensuring financial inclusion. Various segments of the population that previously lacked access to traditional banking services, particularly those living in remote areas, are now

gaining new opportunities through digital services. Mobile banking and electronic payment systems expand access to financial services, contributing to their widespread adoption. According to World Bank data, digital financial services have increased the level of financial inclusion by 15–25 percent in developed countries. The improvement of the regulatory and legal framework is also an important factor in the development of digital banking services. Effective implementation of digitalization processes in the banking system requires the development of clear regulatory documents and mechanisms by the state. In particular, legal frameworks related to electronic signatures, remote identification, personal data protection, and cybersecurity play a crucial role in ensuring the security of banking services. It is also necessary to reduce excessive bureaucratic barriers in the implementation of innovative technologies.

The development of digital banking services has significantly intensified the competitive environment among banks. Banks now compete not only in terms of the quality of financial services but also in technological solutions, user interface design, and service speed. As digital platforms continue to evolve, the criteria for customers when choosing a bank are also changing. More than 60 percent of customers consider the convenience and functionality of mobile applications as the primary factor in selecting banking services. This trend encourages banks to further accelerate their innovative activities.

Human capital and workforce capacity play a crucial role in the development of digital banking services. The modern banking system requires highly qualified IT specialists, data analysts, and cybersecurity experts. Banks are placing significant emphasis on improving employees' qualifications, mastering new technologies, and fostering innovative thinking. In banks with high levels of digital competence, service quality and customer satisfaction are significantly higher.

The development of digital banking services represents a strategic transformation of the banking system. It fundamentally changes banks' business models, service delivery methods, and interactions with customers. Through the widespread implementation of digital technologies, banks can increase operational efficiency and strengthen their competitiveness in the global financial market. This process requires continuous innovation and creates not only new opportunities but also new risks for banks.

Cloud computing technologies are emerging as an important strategic tool for improving the efficiency of digital banking services. Cloud infrastructure enables

banks to store, process, and rapidly access large volumes of data. Compared to traditional server systems, cloud technologies offer advantages in terms of flexibility, speed, and cost optimization. In particular, cloud platforms allow banks to quickly introduce new services, expand IT infrastructure, and prevent operational disruptions. In banks utilizing cloud technologies, IT costs are reduced by an average of 20–30 percent.

The implementation of biometric identification systems in digital banking services has significantly enhanced both security and customer convenience. Technologies such as fingerprint recognition, facial recognition, and voice identification simplify the customer authentication process and help prevent fraudulent activities. Transactions conducted using biometric technologies are considered more reliable than traditional password-based systems. These technologies save time for customers and improve the overall user experience of banking services.

Blockchain technology occupies a special place in the development of digital banking services. As a decentralized database, blockchain ensures the transparency and immutability of transactions. It plays an important role in international payments, credit operations, and financial asset management. With the use of blockchain technology, the time required to complete transactions is reduced from several days to just a few minutes. Moreover, this technology reduces the number of intermediaries, significantly optimizing operational costs.

Customer experience is one of the key indicators in evaluating the effectiveness of digital banking services. In the modern banking system, understanding customer needs in depth and offering personalized services are considered top priorities. The quality of UX/UI design, service speed, and intuitive interfaces contribute to increasing customer satisfaction. According to research, improving customer experience can increase bank revenues by 10–15 percent. Banks are increasingly adopting customer-oriented approaches in the development of digital platforms.

International cooperation and integration with global financial institutions also play an important role in the development of digital banking services. Banks are expanding their services through partnerships with international payment systems, fintech companies, and investment platforms. This enables further development of cross-border payments, currency operations, and investment services. As a result of global integration, banks adapt to international standards and

improve their overall performance.

In the future, the development of digital banking services will be closely linked with emerging innovative technologies. In particular, advanced forms of artificial intelligence, quantum computing technologies, and smart contracts will create new opportunities in the banking system. These technologies will further automate banking operations and reduce the influence of the human factor. This will help elevate the speed, accuracy, and security of banking services to a new level. Banks must pay special attention to risk management and ensuring technological stability when implementing these innovations.

Conclusion

The development of digital banking services is one of the key factors in improving the efficiency of commercial banks. The integration of digital technologies into the banking system leads to a reduction in operational costs and an increase in the speed and quality of service delivery. The widespread adoption of mobile and internet banking platforms enables customers to access banking services anytime and anywhere. Digital transformation contributes to strengthening financial stability, improving profitability, and enhancing competitiveness in the market. The use of artificial intelligence, automated analytical systems, and fintech technologies significantly improves the accuracy and security of banking services.

In the process of digitalizing the banking system, special attention should be paid to cybersecurity, data protection, and the management of technological risks. Ensuring the sustainable development of digital banking services requires the implementation of modern information security systems, the enhancement of employees' digital competencies, and the improvement of the regulatory framework supporting innovative technologies. In the future, the development of open banking, artificial intelligence, and blockchain technologies will elevate banking services to a qualitatively new level. The digital banking ecosystem is expected to become one of the strategic factors in the sustainable development of the national economy and financial sector.

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