

THE ROLE OF DIGITAL TECHNOLOGIES IN ENSURING THE STABILITY OF BANK DEPOSITS IN COMMERCIAL BANKS

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Abstract

In the context of increasing digital transformation in the banking sector, the stability of bank deposits has become a key indicator of financial resilience and customer confidence. This article explores the role of digital technologies in enhancing the stability and sustainability of deposit operations in commercial banks. The study emphasizes the integration of artificial intelligence, big data analytics, and digital ecosystems in optimizing deposit portfolio management, predicting customer behavior and reducing liquidity risks. By employing a comparative analysis of international and national banking practices, the research identifies how digital tools such as mobile banking platforms, personalized deposit products and automated risk assessment systems contribute to deposit growth and retention. Moreover, the paper presents a conceptual model that links digital innovation with deposit stability through improved operational efficiency, transparency and trust in digital financial services. The findings suggest that the adoption of advanced digital solutions not only strengthens deposit base stability but also supports the competitiveness and long-term sustainability of commercial banks in a rapidly evolving financial environment.

Keywords: Digital economy, commercial banks, financial resources, sustainability, digital technologies, innovative products, digital platform, cybersecurity, information technologies, branchless banking, ISO/IEC 27001, legislative framework, cross-border financial transactions, financial literacy, mobile banking services.

Introduction

In the current global economy, digital technologies are developing rapidly and are leading to fundamental changes in all spheres of economic relations. The Republic of Uzbekistan is also implementing major reforms in the process of transition to a digital economy. In this process, sustainable management of financial resources of commercial banks, increasing competitiveness and providing innovative financial services to clients play an important role. The banking system in the Republic of Uzbekistan is one of the leading factors in investing in the real sector of the economy. However, the issues of ensuring the financial stability of banks



in the conditions of the digital economy have not yet been fully resolved. Today's banks face not only traditional risks, but also new threats associated with digital transformation.

Ensuring the stability of financial resources of commercial banks is important not only for maintaining their liquidity and managing risks, but also for increasing competitiveness and strengthening customer confidence. The widespread introduction of digital technologies, the emergence of new financial services and products, as well as increased competition from fintech companies, require a review of the financial stability models of banks. The main goal of commercial banks is to effectively support all sectors of the economy by providing high-quality financial services to customers. However, in the conditions of the digital economy, banks should pay attention not only to their traditional activities, but also to the introduction of modern technologies and the improvement of the financial resources management system based on them.

Literature Review

Although the introduction of the digital economy provides banks with new opportunities to attract and effectively manage resources, it also poses some problems. In particular:

1. The emergence of new risks: cyber threats associated with digital technologies and an increase in the likelihood of technical errors can negatively affect the stability of banks.
2. Changing customer requirements: banks will need additional investments to meet the demand for digital services.
3. Competition with fintech companies: there is a risk that the financial resources of traditional banks will become ineffective or insufficient against the background of new competitors.

In these circumstances, commercial banks must ensure their stability by properly organizing digital transformation processes and efficiently managing financial resources. According to Basel standards, key indicators of financial stability—capital adequacy, liquidity, and risk management policies—must be reconsidered in the context of the digital age.

Several researchers have elaborated on theoretical approaches to ensuring the stability of financial resources in commercial banks under digital economy conditions:

K.R. Makarov analyzed the impact of digital technologies on the financial stability of banks in his article “Transformation of the Banking Sector in the Context of the Digitalization of the Russian Economy.” He emphasized that while digital transformation creates new opportunities for managing financial resources, particular attention should be paid to risk management during this process.

S.V. Yakunin, A.V. Yakunina, and Yu.V. Semernina comprehensively examined the impact of digital technologies on banking activities and ways to ensure financial stability in their work “Financial Intermediation of Banks in the Digital Era.” They highlighted that digital platforms allow banks to overcome geographical and demographic barriers, enabling them to reach new customer segments through convenient service delivery and rapid operations.

M.E. Konovalova and O.Y. Kuzmina, in their article “Financial Ecosystems in the Era of Digital Technology Development (Based on the Example of Sberbank),” analyzed the impact of digital technologies on banking ecosystems and issues of financial stability. They argue that digital technologies are key to developing ecosystems, diversifying income sources,



automating operations, enhancing cybersecurity, and strengthening competitiveness through personalized services.

U.D. Ortikov's Research emphasizes the importance of diversifying resource sources, effectively managing assets, improving regulatory frameworks, implementing digital technologies, and developing human resources to enhance the efficiency of financial resources in commercial banks. These factors are critical in ensuring bank stability and boosting competitiveness.

Materials and Methods

The analysis draws on the financial statements of commercial banks in Uzbekistan, data from international organizations (Basel Committee, IMF, McKinsey), and scholarly literature. Comparative analysis, statistical evaluation, systematic and logical approaches were employed to study the dynamics of financial indicators, liquidity, capital adequacy, and deposit efficiency. Automated analytical tools were used to identify key factors influencing financial stability in the context of digital transformation.

Results

Ensuring the stability of financial resources in commercial banks is crucial for the long-term development of the national economy and the stability of the financial system. Uzbekistan's banking system plays a vital role in the country's economic growth and holds strategic importance in maintaining financial stability. The stability of financial resources in commercial banks is a decisive factor not only in improving the efficiency of banking activities but also in strengthening the overall economic stability of society.

In recent years, significant reforms have been implemented in Uzbekistan's banking sector, including the "2020–2025 Strategy for Reforming Uzbekistan's Banking System," approved by Presidential Decree on May 12, 2020. The strategy outlines the roadmap for reforms and targets key objectives for implementation. Within the framework of this roadmap, tasks such as transforming state-owned banks, widely implementing digital technologies, and ensuring compliance with international financial standards have been emphasized.

According to the analysis, the assets of commercial banks nearly doubled from 2019 to 2023, highlighting the increasing role of the banking system in the country's economy. At the same time, digital transformation processes have improved the efficiency of banking activities, particularly by enabling faster operations and creating more accessible financial services for customers. As a result of these reforms, the following achievements were recorded:

The assets of commercial banks increased from 245 trillion UZS in 2019 to 621.93 trillion UZS by the end of 2023, demonstrating enhanced capitalization levels within the banking system.

Problematic loans, which amounted to 12.2 trillion UZS in 2021, decreased to 7.5 trillion UZS in 2023. This reflects improvements in credit quality and the effectiveness of risk management measures.

Approximately 45% of banking operations transitioned to digital formats, simplifying access to financial services for both individuals and businesses.

These results provide a foundation for identifying scientifically grounded directions to enhance the effective management of financial resources in commercial banks. The ongoing changes in



the banking system also contribute to deepening Uzbekistan's integration with international financial markets.

Table 1 Key Financial Indicators of Commercial Banks in Uzbekistan

Indicator	2019	2020	2021	2022	2023
Assets (billion UZS)	245,000	272,727	366,121	410,300	621,930
Liabilities (billion UZS)	200,500	221,696	307,770	347,800	531,367
Loans (billion UZS)	190,000	211,581	276,975	310,000	460,491
Deposits (billion UZS)	83,000	91,009	114,747	126,500	220,027
Liquidity Coverage Ratio (%)	170	208	224	245	161.9
Non-Performing Loans (NPL, trillion UZS)	9.5	10.8	12.2	9.8	7.5
Loans-to-Deposits Ratio (%)	229	232	241	245	209.3

From the data, it is clear that between 2019 and November 1, 2023, the assets, liabilities, loans, and deposits of commercial banks have significantly increased. Specifically:

Assets grew from 245 trillion UZS in 2019 to 621.93 trillion UZS in 2023.

Liabilities rose from 200.5 trillion UZS to 531.37 trillion UZS.

Loans increased from 190 trillion UZS to 460.49 trillion UZS.

Deposits expanded from 83 trillion UZS to 220.03 trillion UZS.

At the same time, the Liquidity Coverage Ratio (LCR) declined from 170% in 2019 to 161.9% in 2023, indicating a moderate reduction in the liquidity levels of banks.

The volume of **non-performing loans (NPLs)** decreased significantly, from 9.5 trillion UZS in 2019 to 7.5 trillion UZS in 2023. This reduction reflects improvements in credit quality and the effectiveness of risk management measures implemented by the banking sector.

The Loans-to-Deposits Ratio fell from 229% in 2019 to 209.3% in 2023, indicating a slight decline in lending activities relative to the growth in the deposit base.

Overall, the financial indicators of commercial banks from 2019 to 2023 demonstrate positive dynamics. These trends underscore the growing stability and resilience of the banking system, playing a vital role in ensuring sustainable development and supporting the broader economy.

Table 2 Total and Authorized Capital of Commercial Banks in the Republic of Uzbekistan

Indicator Name	Number of Banks	Total Capital (billion UZS)	Authorized Capital (billion UZS)
01.09.2020	31	45,000	30,000
01.09.2021	32	66,376	48,205
01.09.2022	33	75,000	55,000
01.09.2023	35	86,896	63,033
01.09.2024	36	106,097	72,990

From 2020 to 2024, the total capital increased from 45,000 billion UZS to 106,097 billion UZS, reflecting a growth of 136%. This stable growth demonstrates the expansion of the financial base and the strengthening of capital within the banking system. However, this increase in total capital is primarily attributed to large banks, which may pose challenges for private and small banks.

The stricter requirements imposed by the Central Bank regarding authorized capital could further affect the financial stability of some small banks negatively.

In 2020, authorized capital accounted for 66.7% of total capital, and by 2024, this figure had risen to 68.8%. This indicates that authorized capital constitutes the majority of total capital. At the same time, although authorized capital forms the primary component of the capital structure of the country's commercial banks, the amount of additional capital remains very low, and in some banks, there are instances of negative growth.

Table 3 Shares of Financial Resources Attracted via Digital Channels by Banks in Europe, the U.S., and Japan, and Their Unique Features

Year	Bank Name	Country	Share of Financial Resources Attracted via Digital Channels (%)	Unique Features
2023	Revolut	United Kingdom	80%	All services are provided via a mobile app, with 90% of accounts opened online.
2023	Chime	United States	75%	A fully digital bank with no traditional branches, offering low service fees and automated transactions.
2023	Sony Bank	Japan	70%	Accepts deposits exclusively through digital channels, offering electronic currency exchange services.
2024	N26	Germany	85%	Known for cross-border services in the EU, 24/7 digital support, and top-tier security.
2024	Ally Bank	United States	80%	Specializes in automobile loans, provides deposit and credit services via internet and mobile platforms.
2024	Rakuten Bank	Japan	75%	Fully integrated into the Rakuten ecosystem, offering electronic bonuses for retail purchases.

Uzbekistan has significant opportunities to attract financial resources through digital technologies. Leveraging international experience, banks should focus on developing digital infrastructure, offering innovative products, and strengthening digital security. Additionally, it is crucial to enhance legislation and implement educational programs to encourage customers to adopt digital services. These efforts will contribute to ensuring the financial stability and competitiveness of banks.

Discussion

The digital economy is reshaping the financial services industry. In this process, commercial banks have the opportunity to take the attraction of financial resources to a new level by using the wide capabilities of digital platforms and technologies. Technologies are an important factor in ensuring speed, efficiency and convenience for customers, and are of great importance in strengthening the financial base of banks.

Digital technologies create effective channels for banks to attract financial resources. Today, banks are offering products such as electronic deposits, digital loans and mobile applications, increasing convenience for customers. For example, in the US, JPMorgan Chase bank has managed to increase financial transactions through mobile applications by 60%. This has not only reduced banks' operating costs, but also expanded their customer base.

The development of electronic payment systems in the conditions of Uzbekistan has also opened the door to new opportunities for commercial banks. In particular, through payment systems such as Payme, Click and Apelsin, banks are successfully attracting financial funds from the population and legal entities. This process allows banks to attract not only traditional customers, but also new customers who are actively participating in the digital economy.

Digital products are created to meet the various needs of customers. For example, short-term electronic deposits or deposits based on a dynamic interest rate can be an effective tool for banks to attract customer funds. Foreign experience shows that the German digital bank N26 increased its customer base by 30% in 2022 through its products.

There is also an opportunity for Uzbek banks to introduce such products. Online loans and deposits provided through digital applications are both convenient and reliable for customers. In addition, banks can significantly increase their financial resources through these products.

Today, commercial banks are expanding their opportunities to attract financial resources by integrating their systems with international payment platforms. China's WeBank, which has partnered with digital payment systems, attracted more than 200 million customers in 2022. For Uzbekistan, integration with local payment systems such as Payme, Click, and UzCard is of strategic importance for banks.

The experience of foreign banks is important for analyzing the opportunities for commercial banks to attract financial resources in the digital economy.

Table 4 Data on financial resources attracted through digital channels by banks in different countries

Bank Name	Country	Year	Total Financial Resources (billion USD)	Resources Attracted via Digital Channels (billion USD)	Share of Digital Channels (%)
JPMorgan Chase	United States	2022	3,000	900	30%
WeBank	China	2022	150	135	90%
N26	Germany	2022	10	9	90%
DBS Bank	Singapore	2022	500	250	50%
Revolut	United Kingdom	2022	20	18	90%

While China's We Bank has attracted 90% of its total financial resources through digital channels, the figure for the US bank JPMorgan Chase is 30%. These figures reflect the level of digital transformation of banks and the demand for digital services from customers.

Although the Uzbek banking system has significant opportunities in the digital economy, a number of problems make it difficult to achieve full efficiency in this area.

Insufficient information technology infrastructure. Information technology is a key factor in the implementation and development of digital services by banks. The digital infrastructure of most banks in Uzbekistan is still based on traditional systems. This situation leads to slow data processing and poor quality of customer service.

For example, in 2023, about 40% of banks in the country still use traditional server systems, while the level of transition to modern cloud technologies was 15%[9]. In comparison, Chinese banks have adopted cloud technologies at the level of 80% in 2022.

Cybersecurity and information security issues. The increase in cyber risks remains the main threat to commercial banks in the digital economy. The information security system in the banking system of Uzbekistan is poorly developed compared to developed countries. According to international cybersecurity rankings, Uzbekistan ranked 65th out of 100 countries in 2022[10].

As the IT sector develops in our country in 2023, the relevance of ensuring cybersecurity is increasing. Last year, 5.5 thousand cybercrimes were committed, 70% of which were fraud and theft related to bank cards[11].

Low digital literacy. The low level of skills of the population in using digital services is one of the main constraints for banks. Limited access to the Internet in rural areas and customers' distrust of digital financial services further exacerbate this problem.

In 2022, 35% of the population did not use digital services, and this figure was 50% in rural areas [12]. For comparison, the average share of users of digital services in Europe is 85% [13].

Low competitive environment. Innovation-based competition in the field of digital services is still insufficient in the Uzbek banking system. Foreign digital banks, such as Revolut or N26, are gaining an advantage in the digital transformation process, increasing the competitive environment. In Uzbekistan, the majority of banks remain dependent on traditional business models.

In 2022, the share of income from digital products in the banking system amounted to 15% of total income, while in Europe this figure is more than 50% [14].

Although the Uzbek banking system has great potential in the digital economy, existing problems prevent it from fully utilizing these opportunities. Improving the information technology infrastructure in our country, strengthening cybersecurity, increasing digital literacy, and strengthening legislation should be the main directions for achieving success in the activities of digital banks.

Conclusion

The digital economy is creating strategic opportunities for commercial banks to attract financial resources and ensure their sustainability. Today, as the use of digital technologies in the global economy is increasing, banks are seeking to strengthen their financial base by digitizing their infrastructure. International experience shows that by 2022, digital banks such as WeBank (China) and N26 (Germany) managed to attract more than 90% of their financial resources through digital channels. For comparison, the share of digital channels in the banking system of Uzbekistan is currently 33% [15]. These figures indicate that banks face significant challenges along with great opportunities.

Unless commercial banks implement strategic approaches to digital transformation, they will face difficulties in maintaining their competitiveness. The volume of investments in the infrastructure of banks in the country remains low. In 2022, only 20% of banks had implemented modern cloud technologies, while in developed countries this figure was 80–90%.[16] This lagging behind could lead to problems, especially in ensuring the quality of



service. Therefore, technological modernization and the introduction of innovative products should be a priority for the Uzbek banking system. Cybersecurity is also an important issue. In 2023, cyberattacks against the global financial system caused \$10 billion in damage to the economy (IMF report, 2023). Banks in Uzbekistan, on the other hand, have a lower budget allocation for cybersecurity than the global average, which could negatively affect customer confidence. For comparison, while US banks allocate 15% of their budgets to information security, this figure for Uzbek banks remains around 5–7%. Protecting against cyber threats is critical to the continuity of modern digital services and the security of customer data.

Based on the results of the study, the following conclusions were drawn.

Creating a modern digital infrastructure. The first step in the digital transformation of the banking system is to adapt the infrastructure to modern requirements. Uzbek banks, especially in remote areas, need to introduce cloud technologies and high-performance servers to improve the quality of service. International experience shows that in 2022, banks in China reduced operating costs by 25% and increased the speed of service by 30% by introducing cloud infrastructure [17]. It is also recommended for Uzbekistan to implement investments in information technologies within the framework of a 3-5-year strategy. In this case, it will be possible to accelerate infrastructure projects by strengthening public-private cooperation.

Introducing programs to improve digital financial literacy. The level of use of digital financial services by the population directly affects the development of the banking system. The central bank and commercial banks should jointly organize training programs for the population. European experience shows that banks in Sweden have managed to increase the share of customers by conducting digital financial training to increase population literacy. In Uzbekistan, this can be achieved by covering the population in rural areas through digital platforms. It is also necessary to create simplified interfaces for customers to make digital services more convenient to use.

Ensuring bank capital adequacy and introducing risk management models. Ensuring capital adequacy is important for banks to stabilize their financial resources in the digital economy. In accordance with the requirements of Basel III, banks should maintain a high capital adequacy ratio (CAR). International experience shows that European Union banks are minimizing financial risks by maintaining a CAR of 14% [18]. In Uzbekistan, the average CAR in 2023 was 12% [19]. Banks should ensure capital stability by increasing protective reserves and retained earnings. The use of artificial intelligence and data analytics technologies for risk management can also be an effective solution.

Digitize and diversify lending mechanisms. The effectiveness of lending is crucial for stabilizing bank financial resources. By improving lending mechanisms through digital platforms, banks will be able to attract resources more quickly. For example, in the US, JPMorgan Chase has provided more than 60% of loans through mobile applications, speeding up the lending process by 40% [20]. Uzbek banks should introduce lending for clients through mobile platforms and introduce separate programs for financing startups. This, in turn, will help diversify bank resources.



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