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Evaluating The Influence of Fintech on Banking System Evolution

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Abstract: The emergence of the digital economy inevitably drives the integration of innovative technologies within the banking sector. Nevertheless, while digitalization enhances the operational efficiency of the banking system, it can also precipitate adverse consequences for its overall development. On the one hand, the digital transformation of banking and payment systems significantly mitigates transaction costs, broadens financial inclusion, and boosts both the profitability and comprehensive economic efficiency of banking operations. Conversely, the continuous advancement of technologies engenders substantial implementation costs, alongside elevated operational and cybersecurity risks, which may potentially offset the positive impacts on the banking system's trajectory.

Keywords: FinTech, digitalization, digital economy, FinTech lending, financial services, banking sector stability, financial ecosystems.

1. Introduction

The advent of the digital economy is inexorably driving the integration of innovative technologies across the financial sector, particularly within the banking industry. Nevertheless, while digital transformation significantly enhances the operational efficiency of the banking system, it may simultaneously precipitate adverse developmental consequences. Consequently, examining the impact of the FinTech sector on the banking system amid continuous digital innovation remains a highly pertinent research area [1]. In Uzbekistan, the evolution of financial innovations is predominantly intrinsically linked to the advancement of payment systems and banking services. The integration of digital technologies in these domains is characterized by a set of trends that can be broadly categorized into two dimensions: policy-driven factors and market-oriented dynamics.

Fundamentally, FinTech advancement within Uzbekistan's financial market is inextricably tied to the government's strategic policies championing the digital economy. The progression of national payment systems is driven not by external constraints, but rather by an internal strategic imperative to modernize the domestic payment infrastructure and accelerate the transition toward a cashless economy [2].

Currently, the market architecture is underpinned by the Uzcard national payment system, established in the 2010s, and Humo, subsequently introduced to cultivate a competitive landscape. Domestic priorities heavily emphasize the interoperability of these payment systems – ensuring universal acceptance across ATMs and POS terminals – and accelerating transaction velocities via instant payment frameworks (e.g., HumoPay, QR codes) [3].

Citation: Mengniyozov, A. N. Evaluating The Influence of Fintech on Banking System Evolution. Central Asian Journal of Innovations on Tourism Management and Finance 2026, 7(2), 510-520.

Received: 10th Jan 2026
Revised: 21th Feb 2026
Accepted: 14th Mar 2026
Published: 09th Apr 2026



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Furthermore, the Central Bank of Uzbekistan is actively developing the Central Bank Digital Currency (CBDC) framework, conceptualized as the “Digital Som”. The primary objective of this initiative transcends sanctions evasion; it is fundamentally designed to enforce transactional transparency, mitigate operational costs, and promote financial inclusion across remote peripheries. Ultimately, the Digital Som is projected to optimize the efficacy of public procurement and social welfare disbursements. Concurrently, prevailing geopolitical shifts have exerted an indirect influence, predominantly catalyzing the expansion of cross-border remittances and international financial cooperation [4].

Uzbekistan maintains robust collaborations with major international payment networks (Visa, Mastercard, UnionPay). Strategic plans are underway to facilitate the operation of global wallets, such as Google Pay and Apple Pay, integrated through domestic banking institutions. This integration will empower local consumers with seamless, NFC-enabled mobile payment capabilities. Simultaneously, the substantial volume of labor migration has amplified the digitalization of cross-border remittances, driving a surge in direct Peer-to-Peer (P2P) transfers executed via native banking applications [5].

Moreover, payment aggregators and neobanks – namely Click, Payme, and Uzum Bank – have successfully mainstreamed QR-code payments and P2P transfers. These mechanisms have democratized financial access, providing ubiquitous solutions across all socio-economic strata, irrespective of mobile hardware or operating system limitations.

Catalyzed by the recent e-commerce boom, the Buy Now, Pay Later (BNPL) segment (e.g., Uzum Nasiya, ZoodPay) has experienced exponential growth. A distinguishing hallmark of the Uzbek market is the robust demand for Sharia-compliant (Halal) installment facilities (e.g., Iman Pay), operating parallel to conventional credit mechanisms. This phenomenon is largely attributable to the intersection of the population’s religious demographics and their escalating financial literacy [6].

In parallel, the crypto-asset ecosystem is subjected to stringent regulatory oversight by the National Agency of Perspective Projects (NAPP). The implementation of legal crypto-exchange frameworks and a Regulatory Sandbox regime has been instrumental in institutionalizing transparency within this nascent sector [7].

A defining contemporary trend is the consolidation of holistic financial ecosystems anchored by traditional banking institutions. Prominent manifestations include the Uzum ecosystem (aggregating a marketplace, banking, and FinTech services) and the purely digital paradigm of TBC Bank. While the market hegemony of major institutional players – such as commercial banks and telecommunications conglomerates – elevates overarching service quality, it simultaneously erects formidable barriers to entry for early-stage FinTech startups, thereby risking elevated market concentration [8].

Ultimately, the trajectory of FinTech development in Uzbekistan is predicated on the principles of global integration and transparency, systematically rejecting financial isolationism. The foundational catalysts of this evolution remain the state-led digitalization mandate, the proliferation of e-commerce, and the profound public confidence in mobile financial services.

Literature Review. Consequently, in an era characterized by the ubiquitous digitalization of various facets of life, a comprehensive examination and analysis of FinTech integration within the banking sector is imperative. Analyzing the prevailing trends in FinTech evolution within the banking ecosystem reveals that these dynamics are predominantly driven by the evolving demands of end consumers. Nevertheless, the implications of financial technologies for the banking system and broader financial markets must not be approached through a unilateral lens [9], [10]. A substantial corpus of academic literature has been dedicated to this discourse, with scholars critically evaluating both the merits and drawbacks of digitalizing distinct financial sectors.

The first cohort of studies focuses on the impact of financial technologies on banking system efficiency. Scholars emphasize that the deployment of financial innovations catalyzes an increase in the Return on Assets (ROA) and Return on Equity (ROE) of credit institutions [11]. Notably, the authors observe that this positive paradigm is primarily evident among smaller commercial banks. Concurrently, certain empirical studies

corroborate that the proliferation of financial innovations also elevates the capital intensity of banking operations.

A second distinct group of authors empirically demonstrates that financial innovations exert a profound positive influence on the accessibility of banking services (financial inclusion) for both retail and corporate demographics. To further enhance customer satisfaction among banking service users, these researchers advocate for the robust development of the regulatory and legal framework governing FinTech entities, alongside targeted interventions aimed at elevating the digital and financial literacy of prospective innovation adopters [12], [13].

The third cluster of researchers corroborates the positive trajectory that FinTech imparts on the overall development of banking systems [14]. However, these authors meticulously highlight that the digital transformation of the banking architecture must be strategically harmonized with existing economic resource constraints, the overarching income levels of the populace, and their corresponding digital and financial acumen.

The fourth group of scholars rigorously dissects the risks associated with banking digitalization, analyzing potential vulnerabilities and threats to systemic stability [15]. Empirical findings indicate that although digital innovations introduce an array of operational and cybersecurity risks, they concurrently and significantly mitigate the overall risk appetite of commercial banks.

In summation, this comprehensive literature review affirms that the digitalization of the banking system and the proliferation of financial technologies exert a predominantly positive, albeit multifaceted and complex, impact on the operational efficacy of credit institutions and the holistic advancement of the financial system.

2. Materials and Methods

The formulation of this research employed fundamental scientific methods, specifically analysis and synthesis, as well as induction and deduction. Furthermore, theoretical approaches such as systematization, classification, and generalization were systematically applied. The empirical analysis was conducted utilizing an econometric framework, predominantly relying on correlation analysis techniques. The statistical foundation of the study is predicated on comprehensive datasets sourced from the World Bank.

3. Results and Discussion

FinTech is advancing across various financial sectors (Figure 1), and the implementation of innovations is being driven by both FinTech startups and traditional financial institutions in accordance with contemporary trends.

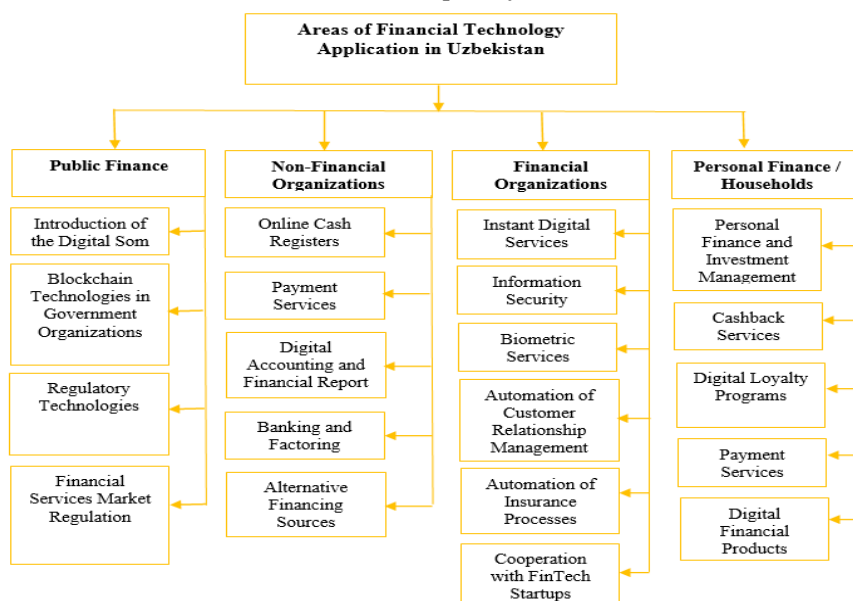


Figure 1. Areas of Financial Technology Implementation in Uzbekistan

Given the broad scope of FinTech development depicted in Figure 1, there is no single universal indicator for assessing the advancement of financial technologies. The World Bank suggests evaluating innovative financial development through the ratio of FinTech lending volume to Gross Domestic Product (GDP). Data for this indicator has been compiled for many countries globally, including Uzbekistan, since 2018. Therefore, we posit that this metric can be effectively utilized to subsequently assess the impact of FinTech development on the banking system.

It is proposed to evaluate the development of the banking system based on the groups of indicators suggested for assessing state financial development. The development indicators of Uzbekistan's banking system, classified according to these groups, are presented in Table 1.

Table 1. Dynamics of the Development Level Indicators of the Banking System of the Republic of Uzbekistan.

Group and Name of Indicators	2020	2021	2022	2023	2024	2025
Coverage (relative to macroeconomic indicators)						
1. Bank assets to GDP, %	51.9	51.7	53.4	51.7	50.1	50.0
2. Loans issued by credit institutions to GDP, %	39.3	37.9	37.4	37.4	34.7	32.7
3. Banking sector's own funds to GDP, %	8.3	8.2	7.6	7.7	7.5	7.3
4. Funds of non-bank financial institutions to GDP, %	3.3	4.3	7.2	7.9	8.9	32.7
Accessibility (Financial Inclusion)						
1. Maximum interest rates on deposits, %	20.4	20.5	20.8	21.7	22.1	22.1
2. Central Bank key (policy) rate, %	15.3	14.0	15.4	14.2	13.7	13.9
3. Average interest rates on credit operations, %	23.6	21.8	22.6	23.8	24.5	23.6
4. Volume of individual deposits, bln UZS	27403	42376	68748	92792	129812	169130
Efficiency (Profitability)						
1. Net Interest Margin (NIM) of banks, %	5.1	5.3	5.6	6.1	6.8	7.1
2. Loan-to-deposit spread, %	5.0	2.4	2.0	2.6	2.7	2.2
3. Return on Assets (ROA), %	2.2	2.2	2.5	2.6	1.4	2.2
4. Return on Equity (ROE), %	10.3	10.3	13.3	14.2	6.6	12.4
5. Ratio of non-interest income to total income, %	24.1	26.7	35.0	32.7	33.0	36.4
Stability						
1. Bank Z-score	57.7	61.9	64.3	68.9	81.2	86.3
2. Bank capital to total assets ratio, %	17.4	16.0	15.1	14.7	15.0	14.9
3. Bank loans to deposits ratio, %	241.0	209.0	180.0	195.0	172.0	144.0

From the perspective of financial management, the most critical indicators that comprehensively cover the development of the banking sector and have statistical data available from 2020 were selected. To assess the impact of FinTech on the indicators presented in Table 1, and to determine the efficiency of utilizing digital technologies, it is

expedient to calculate the correlation coefficient (R) between the volume of FinTech lending and the indicators of banking system development. This coefficient is determined based on the following formula (1):

$$R = \frac{\sum_{t=1}^T (X_t - \bar{X})(Y_{n,m,t} - \bar{Y}_{n,m})}{\sqrt{\sum_{t=1}^T (X_t - \bar{X})^2 \sum_{t=1}^T (Y_{n,m,t} - \bar{Y}_{n,m})^2}} \quad (1)$$

where:

R is the correlation coefficient between FinTech volume and the m -th indicator of the n -th group of the banking system;

t is the number of time periods (e.g., years or quarters, from 1 to T);

X_t is the volume of FinTech lending in period t ;

\bar{X} is the average value of the FinTech lending volume;

$Y_{n,m,t}$ is the banking system indicator in period t ;

$\bar{Y}_{n,m}$ is the average value of the banking system indicator.

The interpretation of the correlation research results is conducted using Table 2.

Table 2. Interpretation of the Correlation Between FinTech Market Development Indicators and Banking System Development Indicators.

Indicator Group	Interpretation of Correlation Results
Coverage	<ul style="list-style-type: none"> – If $R \rightarrow 1$, FinTech development leads to an increase in the capitalization of credit institutions. – If $R \rightarrow 0$, FinTech development does not affect capitalization. – If $R \rightarrow -1$, FinTech development leads to a decrease in capitalization.
Accessibility	<ul style="list-style-type: none"> – If $R \rightarrow 1$, FinTech development increases the need for technical equipment to ensure efficient operations. – If $R \rightarrow 0$, FinTech development does not affect the need for technical equipment. – If $R \rightarrow -1$, FinTech development reduces the need for technical equipment.
Efficiency	<ul style="list-style-type: none"> – If $R \rightarrow 1$, FinTech development leads to an increase in the profitability level of credit institutions. – If $R \rightarrow 0$, FinTech development does not affect profitability. – If $R \rightarrow -1$, FinTech development leads to a decrease in the profitability level.
Stability	<ul style="list-style-type: none"> – If $R \rightarrow 1$, FinTech development leads to increased stability of commercial banks. – If $R \rightarrow 0$, FinTech development does not affect stability. – If $R \rightarrow -1$, FinTech development leads to a decrease in stability.

The results of the conducted research, reflecting the interrelationship between the advancement of digital innovations in the banking sector of Uzbekistan and the structural changes occurring within it, are presented in Table 3.

Table 3. Results of the Correlation Analysis Between FinTech Market Indicators and Banking Sector Indicators.

Group and Name of Indicators	2020	2021	2022	2023	2024	2025	Average (Y)
FinTech lending volume (X), bln UZS	23003	36900	75400	99300	137400	605500	162917
I. Coverage (relative to macroeconomic indicators)							
1. Bank assets to GDP, %	51.9	51.7	53.4	51.7	50.1	50.0	51.47
2. Loans issued by credit institutions, %	39.3	37.9	37.4	37.4	34.7	32.7	36.57
3. Banking sector's own funds, %	8.3	8.2	7.6	7.7	7.5	7.3	7.77
4. Funds of non-bank financial institutions, %	3.3	4.3	7.2	7.9	8.9	32.7	10.72
II. Accessibility							
1. Maximum interest rates on deposits, %	20.4	20.5	20.8	21.7	22.1	22.1	21.27
2. Central Bank key (policy) rate, %	15.3	14.0	15.4	14.2	13.7	13.9	14.42
3. Average interest rates on credit operations, %	23.6	21.8	22.6	23.8	24.5	23.6	23.32
4. Volume of individual deposits, bln UZS	27403	42376	68748	92792	129812	169130	88377
III. Efficiency							
1. Net Interest Margin (NIM) of banks, %	5.1	5.3	5.6	6.1	6.8	7.1	6.00
2. Loan-to-deposit spread, %	5.0	2.4	2.0	2.6	2.7	2.2	2.82
3. Return on Assets (ROA), %	2.2	2.2	2.5	2.6	1.4	2.2	2.18
4. Return on Equity (ROE), %	10.3	10.3	13.3	14.2	6.6	12.4	11.18
5. Ratio of non-interest income to total income, %	24.1	26.7	35.0	32.7	33.0	36.4	31.32
IV. Stability							
1. Bank Z-score	57.7	61.9	64.3	68.9	81.2	86.3	70.05
2. Bank capital to total assets ratio, %	17.4	16.0	15.1	14.7	15.0	14.9	15.52
3. Bank loans to deposits ratio, %	241.0	209.0	180.0	195.0	172.0	144.0	190.17

Before directly interpreting the correlation analysis results, it is crucial to highlight the growth dynamics of financial market indicators in recent years. According to the presented data, the volume of FinTech lending in the country experienced unprecedented growth between 2020 and 2025. While this indicator stood at 23 bln UZS in 2020, it increased nearly 26-fold by 2025, reaching 605.5 bln UZS. However, against the backdrop of this sharp surge in digital financing volume, an inverse, i.e., contractionary, trend is

observed in the coverage of traditional bank assets. Specifically, the ratio of bank assets to GDP decreased from 51.9% at the beginning of the study period to 50.0% by 2025.

This comparative dynamic indicates that significant structural shifts are occurring in the financial market. On the one hand, this phenomenon can be explained by consumers increasingly preferring swift and convenient digital FinTech solutions over traditional, rigidly bureaucratic banking services. On the other hand, the growth rate of the national GDP is outpacing the expansion of the traditional banking sector's own funds. A substantial portion of the growing economic demands is being actively met by emerging financial technologies and non-bank credit organizations.

To scientifically evaluate the strength of the relationship between the indicators in the correlation analysis, the Chaddock scale was employed. According to this scale, the strength of the relationship based on correlation coefficient (r) values is interpreted as follows: 0.1 to 0.3 – weak; 0.3 to 0.5 – moderate; 0.5 to 0.7 – noticeable (significant); 0.7 to 0.9 – strong; 0.9 to 1.0 – very strong correlation. The interpretation of the obtained empirical results relied heavily on these criteria.

Table 4. Results of the Correlation Assessment of the Impact of FinTech Lending Volume on Banking System Indicators.

No.	Banking System and Macroeconomic Indicators (Y)	Correlation (r)	Degree of Relationship
1	Funds of non-bank financial institutions, %	+0.99	Very strong direct
2	Volume of individual deposits, bln UZS	+0.85	Strong direct
3	Bank Z-score	+0.82	Strong direct
4	Net Interest Margin (NIM) of banks, %	+0.79	Strong direct
5	Maximum interest rates on deposits, %	+0.66	Noticeable direct
6	Ratio of non-interest income to total income, %	+0.63	Noticeable direct
7	Average interest rates on credit operations, %	+0.26	Weak direct
8	Return on Equity (ROE), %	+0.17	Weak direct
9	Return on Assets (ROA), %	-0.07	Almost no relationship
10	Loan-to-deposit spread, %	-0.36	Moderate inverse
11	Bank capital to total assets ratio, %	-0.44	Moderate inverse
12	Bank assets to GDP, %	-0.63	Noticeable inverse
13	Banking sector's own funds, %	-0.70	Strong inverse
14	Bank loans to deposits ratio, %	-0.79	Strong inverse
15	Loans issued by credit institutions, %	-0.88	Strong inverse

The recalculated correlation analysis results presented in Table 4 revealed a series of critical empirical regularities regarding the impact of financial technologies (FinTech) on the banking system of Uzbekistan. It is appropriate to analyze these correlations across three main dimensions:

1. According to the correlation analysis, the growth in FinTech lending volume exhibits a very strong direct relationship ($r = +0.99$) with the share of non-bank financial institution funds in GDP. This confirms that financial innovations are primarily acting as a catalyst for the rapid development of the non-bank sector. Furthermore, digital technologies show a strong direct correlation ($r = +0.85$) with the growth in the volume of individual deposits. Consequently, the convenience of banking applications and digital services has enhanced public trust in the

financial system, facilitating the deposit mobilization process. One of the most noteworthy findings is that FinTech development in the financial sector has a strong positive correlation ($r = +0.82$) with the Z-score, a key indicator of banking system stability. This provides scientific empirical evidence that digital transformation and diversification significantly bolster banks' resilience to external shocks.

2. The analysis indicates that the development of financial technologies has a strong direct relationship with banks' Net Interest Margin (NIM) ($r = +0.79$) and a noticeable direct relationship with the share of non-interest income ($r = +0.63$). However, there is no strong correlation between FinTech and overall profitability metrics, specifically Return on Equity (ROE) and Return on Assets (ROA). This condition is largely attributable to the high initial operational costs associated with establishing and maintaining digital infrastructure, coupled with the fact that the share of FinTech lending remains relatively small within the aggregate credit portfolio.

3. As the FinTech market expands, a strong inverse relationship is observed with indicators such as the ratio of traditional loans issued by banks to GDP ($r = -0.88$) and total bank asset coverage ($r = -0.63$). This suggests that the absolute dominance of the banking sector in the economy is gradually diminishing, partially being substituted by digital and non-bank financial alternatives. Traditional bank lending is increasingly being supplemented by new instruments such as BNPL (Buy Now, Pay Later), microfinancing, and digital credit platforms.

The conducted empirical analysis confirms that FinTech exerts a predominantly positive impact on the operational activities of banking sector institutions. Through the integration of digital innovations, the asset volume of credit institutions expands, the accessibility (financial inclusion) of banking services broadens, and the operational efficiency of credit organizations improves.

Simultaneously, it is imperative to acknowledge that currently, the share of financial technologies in the total matrix of banking services is not overwhelmingly large. This underscores the necessity for more profound analyses of the impact of digital transformation on overarching banking sector metrics in the future. In subsequent research, it would be highly beneficial to incorporate a broader array of FinTech development indicators, which can be formulated in tandem with the ongoing evolution of innovations in the financial sector.

The correlation analysis conducted in the preceding stage of our research confirmed the existence of a strong linear relationship between the volume of FinTech lending and several key indicators within the banking system of Uzbekistan. However, while the identified correlation coefficients illustrate the strength of the relationship, they do not fully elucidate the sensitivity (elasticity) of these variables to one another. Consequently, to deepen the financial analysis methodology, we developed Log-Log regression models for the two core indicators that demonstrated the highest degree of empirical correlation: individual deposits and banking stability (Z-score).

It is a well-established econometric principle that a fundamental property of logarithmic models is that the calculated coefficient (β) directly represents elasticity; that is, it signifies the percentage change in the dependent variable resulting from a 1% change in the independent variable. First, we evaluated the degree of impact of the FinTech lending volume (independent variable – X) on the volume of individual deposits attracted into the banking system (dependent variable – Y_1).

The constructed regression model took the following mathematical form:

$$\ln(Y_1) = \beta_0 + \beta_1 \ln(X) + \varepsilon \quad (2)$$

The obtained empirical results demonstrate that the elasticity coefficient between these factors is $\beta_1 = 0.57$. According to its economic interpretation, every 1% increase in the volume of FinTech lending in Uzbekistan drives an average increase of 0.57% in the volume of individual deposits in commercial banks. This empirical conclusion effectively refutes the hypothesis frequently encountered in some studies suggesting that “digital

alternative financial institutions (neobanks, P2P, and BNPL platforms) cannibalize clients and their funds from traditional banks". On the contrary, the integration of financial technologies – particularly the popularization of convenient mobile applications, remote biometric identification (Face-ID) systems, and highly liquid digital deposit products – is reinforcing public confidence in the banking system and significantly accelerating the inclusive mobilization of savings into the formal banking sector.

In the subsequent phase of the study, to assess the impact of digital transformation on the resilience of the banking system, the elasticity between the FinTech volume and the Altman Z-score (adapted for commercial banks) was investigated.

Based on the modeling results, the following equation was derived:

$$\ln(Y_2) = \alpha_0 + \alpha_1 \ln(X) + \varepsilon \quad (3)$$

The calculations revealed that the degree of elasticity between the FinTech market and banking system stability constitutes $\alpha_1 = 0,13$. This implies that a sustained 1% growth in the volume of FinTech lending improves the overall crisis resilience indicator (Z-score) of the Uzbekistan banking system by an average of 0.13%. It is paramount to emphasize that although this specific relationship exhibits an inelastic character ($\alpha_1 < 1$), the commercial banks' Z-score must be recognized as an exceptionally rigid and inert (slow-moving) macroeconomic indicator. From this perspective, a positive shift of 0.13% in the Z-score driven purely by digital innovations in the financial sector is considered an economically profound achievement. This mathematically substantiates the premise that financial technologies are empowering banks to diversify their risk exposures, optimize operational expenditures (reduce transaction costs), and establish a robust resilience buffer against systemic shocks.

4. Conclusion

Through this study, the developmental indicators of the banking system were systematically categorized into dimensions of depth, accessibility (financial inclusion), stability, and operational efficiency. The interaction between these domains and financial technologies (FinTech) was rigorously evaluated via comprehensive econometric methodologies, incorporating both correlation and Log-Log regression modeling. Predicated on the derived empirical findings, the following foundational scientific conclusions are established:

Primarily, the advent of financial technologies does not cannibalize the appeal of traditional bank deposits; on the contrary, it serves as a catalyst, accelerating the mobilization of retail savings into the formal banking sector via the enhanced utility of digital platforms. The calculated elasticity coefficient mathematically substantiates that a 1% expansion in FinTech lending volume yields an average 0.57% augmentation in individual commercial bank deposits. This empirical evidence firmly positions digital innovations as a paramount driver for advancing financial inclusion.

Secondly, the study unequivocally demonstrates that digital transformation exerts a direct, substantive, and positive influence on overarching banking system stability. Regression outcomes indicate that a 1% proliferation of the FinTech market yields a 0.13% enhancement in the crisis-resilience parameter (Z-score) of Uzbekistan's banking system. Within the context of highly inertial macroeconomic variables, this constitutes a profoundly significant positive trajectory, illustrating the efficacy of FinTech in systemic risk diversification.

Thirdly, the maturation of financial technologies is precipitating the rapid expansion of the non-bank sector, introducing robust alternatives to traditional banking paradigms. While this structural shift corresponds to a contraction in traditional bank lending relative to GDP (evidenced by a strong inverse correlation, $r = -0.88$), it concurrently facilitates the deep economic penetration of digital micro-lending and seamless payment ecosystems. Nevertheless, owing to the capital-intensive nature of deploying initial FinTech infrastructure, its capacity to decisively elevate the ultimate net profitability metrics (ROA and ROE) of commercial banks remains in a nascent stage.

Drawing upon these empirical insights and analyses, the following scientifically grounded policy recommendations are advanced to optimize the assimilation of financial technologies within Uzbekistan's banking sector:

Capitalizing on the documented high elasticity (0.57%) between FinTech integration and retail deposit mobilization, institutional banks must continuously pioneer "smart" digital deposit products. These instruments should feature dynamic interest rate structures, complete transparency devoid of latent fees, and natively integrated automated savings mechanisms within mobile architectures.

Acknowledging the current muted impact of digitalization on core profitability ratios (ROA and ROE), it is imperative for commercial banks to systematically aggressively curtail transactional and operational overhead. This can be strategically achieved by rationalizing physical branch networks, pivoting toward branchless (neobanking) operational models, and scaling sophisticated, AI-driven predictive customer scoring frameworks.

In response to the exponential proliferation of non-bank financial entities (e.g., payment aggregators, BNPL providers), direct confrontation is suboptimal. Instead, commercial banks should adopt a strategically collaborative posture by engineering interconnected digital ecosystems (synthesizing marketplaces, banking, and FinTech startups) underpinned by the open API architecture of Banking-as-a-Service (BaaS).

To secure the sustained parallel trajectory of the Z-score (0.13% elasticity) alongside FinTech expansion, and to fortify the sector against escalating external cyber threats, the Central Bank and commercial institutions must proactively embed advanced RegTech and SupTech (Regulatory and Supervisory Technologies) solutions into their operational compliance matrix.

Crucially, while the robust correlation coefficients documented herein validate the presence of significant statistical associations, they do not inherently denote absolute causality. Consequently, this investigation deployed Log-Log regression frameworks to accurately quantify the precise magnitude of these dynamic sensitivities. Looking forward, to unravel the intricate granularities of these interactions at the institutional level, the deployment of Panel Data Analysis models across a cross-section of individual commercial banks is highly recommended for future scholarly inquiry.

REFERENCES

- [1] President of the Republic of Uzbekistan, "On additional measures to increase the accessibility of banking services (Decree No. PQ-3620)," Mar. 23, 2018.
- [2] President of the Republic of Uzbekistan, "On measures to further develop the financial technology sector in Uzbekistan (Decree No. PQ-359)," Nov. 27, 2025.
- [3] J. Wang, "The influence of fintech on the performance of commercial bank based on big data analysis," *Lecture Notes on Data Engineering and Communications Technologies*, vol. 122, pp. 96–106, 2023.
- [4] M. Rickingham, "Impact of fintech on Islamic bank performance in Malaysia: Descriptive study on fintech," in *Modern Management Based on Big Data III*, vol. 352, pp. 93–102, 2022.
- [5] O. V. Lunyakov, "Traditional and alternative credit ratings: Fintech companies vs banks," *Banking Services*, no. 1, pp. 18–27, 2022.
- [6] A. A. Alsmadi, "Banking services transformation and financial technology role," *Information Sciences Letters*, vol. 12, no. 1, pp. 315–324, 2023.
- [7] S. Barjaktarović Rakočević, "Digital banking services from customer perspective," *Lecture Notes in Networks and Systems*, vol. 562, pp. 210–227, 2023.
- [8] H. S. Umarov, "The role of fintech startups in modern society," *Finance and Credit*, vol. 8, no. 812, pp. 1911–1930, 2021.
- [9] L. T. Ha, "Effects of digitalization on financialization: Empirical evidence from European countries," *Technology in Society*, vol. 68, pp. 1–15, 2022.
- [10] K. V. Krinichansky, "Concept and prospects of financial development," *Voprosy Ekonomiki*, no. 10, pp. 20–36, 2022.
- [11] C. Li, "Does the bank's fintech innovation reduce its risk-taking? Evidence from China's banking industry," *Journal of Innovation & Knowledge*, vol. 7, no. 3, pp. 100–119, 2022.

-
- [12] M. A. Abramova, "Turbulence of threats to financial stability in new realities of monetary and payment systems development," *Banking Services*, no. 7, pp. 9–18, 2022.
- [13] E. S. Zeleneva, "Assessment of characteristics, areas and limits of application of digital innovations in the financial sector," *Finance: Theory and Practice*, vol. 27, no. 2, pp. 76–86, 2023.
- [14] G. Gospodarchuk, "Assessment of financial development of countries based on the matrix of financial assets," *Economies*, vol. 10, no. 5, Art. no. 122, 2022.
- [15] D. W. Arner, J. Barberis, and R. P. Buckley, "The evolution of fintech: A new post-crisis paradigm," *Georgetown Journal of International Law*, vol. 47, no. 4, pp. 1271–1319, 2016.