

**CAN DIGITAL TRANSFORMATION EXPAND THE BOUNDARIES OF THE EARNINGS POTENTIAL OF COMMERCIAL BANKS? EVIDENCE FROM UZBEKISTAN**

**Bozorov Jamshid Rasuljon o‘g‘li**

**ARTICLE INFORMATION**

**ABSTRACT:**

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*This paper examines whether digital transformation has expanded the earnings potential of commercial banks in Uzbekistan, using official data from the Central Bank of Uzbekistan (CBU), IMF Financial Sector Assessment Program (FSAP) reports (2025), World Bank Global Findex surveys, and Visa country insights (2023). The analysis covers the period 2017–2025, focusing on key profitability indicators (return on assets [ROA], return on equity [ROE], net interest margin share), cost-to-income ratios, and digital metrics such as remote banking users and account ownership.*

*Data show rapid digital penetration: remote banking users grew from approximately 2 million in 2017 to 14.5 million in 2021 (a 43% increase during the COVID-19 year) and reached 74.18 million by October 2025 (CBU data via secondary reports). Account ownership among adults rose from 23% in 2011 to 44% in 2021. Profitability indicators fluctuated: aggregate ROA stood at 1.9% in 2017, peaked at 2.6% in 2023, and fell to 1.4% in 2024; ROE followed a similar pattern (17.1% in 2017 to 9.2% in 2024). Cost-to-income ratios declined from 69.4% in 2018 to around 42% in 2020–2021 before*

rising again (IMF, 2025).

*Using descriptive trend analysis and period comparisons (pre- and post-2020 digital acceleration), the study finds that periods of strong digital growth coincided with temporary efficiency gains and ROA recovery after the 2021 dip, consistent with cost reductions from remote channels and new fee-based revenues. However, state-owned commercial banks (SOCBs), which dominate 62% of assets, continue to show lower profitability (ROA 0.1% in 2024). Limitations include the absence of bank-level digital adoption data for formal panel regression and the confounding effects of preferential lending and macroeconomic shocks. The paper contributes to the literature on digital banking in transition economies by providing the first structured, data-driven assessment for Uzbekistan. It suggests that digital transformation supports—but does not independently guarantee—expanded earnings potential amid ongoing structural reforms.*

**Introduction.** Digital transformation in banking—encompassing mobile and internet platforms, remote onboarding, digital payments, and data-driven services—has reshaped financial intermediation globally by lowering transaction costs, broadening customer reach, and creating new revenue streams. In emerging and transition economies, these changes are particularly relevant where traditional branch networks are costly and financial inclusion remains incomplete.

Uzbekistan offers a compelling case. Following economic liberalization since 2017, the country launched the “Digital Uzbekistan – 2030” strategy and a Banking Sector Reform Strategy (2020–2025) aimed at privatization, competition, and modernization. The banking sector, which accounts for over 94% of financial system assets, remains dominated by SOCBs but has seen accelerated digital adoption, especially after COVID-19 prompted remote service initiatives.

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The research question is straightforward: Has digital transformation expanded the earnings boundaries of Uzbekistan’s commercial banks, as measured by profitability and efficiency metrics? Existing international literature points to positive effects through cost savings and scale, yet evidence from Central Asia is sparse and mostly descriptive. This paper addresses the gap by combining official aggregate statistics with clear trend analysis. It relies exclusively on verifiable sources from the CBU, IMF, World Bank, and peer-reviewed studies, avoiding any fabricated figures or forward-looking projections.

The contribution is twofold: first, it documents the scale of digital uptake using CBU-reported remote banking figures; second, it links these developments to observed changes in ROA, ROE, and cost structures within the specific institutional context of a reforming, bank-centric system.

**Literature Review.** Theoretical channels linking digitalization to bank profitability are well-established. Digital channels reduce operating expenses (branch staffing, cash handling) while enabling fee income from payments, transfers, and value-added services (e.g., insurance or investment products via apps). They also improve risk assessment through data analytics and expand the depositor and borrower base, potentially raising net interest margins via volume effects (Berger, 2003; Frame et al., 2019). However, upfront IT investment and cybersecurity costs can pressure short-term profitability, and benefits may accrue unevenly in state-dominated systems.

Empirical findings from emerging markets are mixed but generally supportive of efficiency gains. Studies in ASEAN and other middle-income countries using bank-level panels often report positive coefficients on digital proxies (e.g., mobile banking users or IT expenditure) for cost-to-income and ROA after controlling for size and ownership (Banna & Alam, 2021; Phan et al., 2020). In transition contexts, digital adoption has helped offset legacy inefficiencies, though results weaken when preferential lending distorts incentives.

For Central Asia and Uzbekistan specifically, the literature is limited. Recent works examine fintech adoption or remote services qualitatively, noting rapid user growth but not rigorously testing profitability links (e.g., studies on financial security or ecosystem development). One analysis of Uzbek banks’ digital services (2025) highlights efficiency improvements in adopter banks, but relies on case evidence. This study positions itself as an aggregate-level bridge, using official time-series data to assess whether the observed digital surge has translated into measurable earnings expansion.

**Institutional Background.** Uzbekistan’s banking sector has transformed since 2017. As of late 2024, there were 36 commercial banks: 9 SOCBs controlling 62% of assets, 19 private domestic banks (32.8%), and 8 foreign banks (IMF FSAP, 2025). Total assets reached approximately 769 trillion UZS (around 53% of GDP). The sector remains heavily loan-oriented, with household lending rising to about one-third of the portfolio.

Key reforms include the 2019 Central Bank and banking laws, the 2020–2025 Banking Sector Reform Strategy (emphasizing privatization and commercial orientation), and the “Digital Uzbekistan – 2030” program, which prioritizes e-government integration, digital ID, and fintech infrastructure. Preferential/directed lending, while declining from 39% of loans in 2020 to 24–29% by 2024, still affects SOCB incentives and profitability.

Digital reforms accelerated post-2020. Banks promoted mobile apps during the pandemic; regulatory changes enabled remote onboarding via electronic customer due diligence. By early 2023, the system supported 434,000 POS terminals and over 20,000 ATMs/infokiosks (up from 2,345 in 2016). These changes occurred against a backdrop of improving but incomplete financial infrastructure, with rural digital divides persisting.

**Data and Methodology.** Data are drawn exclusively from official and multilateral sources for 2017–2025 (latest available as of early 2026):

- Profitability and soundness indicators: IMF FSAP Financial System Stability Assessment (2025) and CBU statistics.
- Digital metrics: CBU payment system statistics (remote banking users as of selected dates), World Bank Global Findex (account ownership), and Visa Insights from Uzbekistan (2023).
- Cost efficiency: World Bank/ FRED series on cost-to-income ratio and IMF supplementary tables.

Key variables:

- Dependent: ROA (net profit / average assets), ROE (net profit / average equity), interest margin to gross income (as NIM proxy).
- Digital proxies: Number/percentage of remote banking users; adult account ownership (%).
- Controls/contextual: SOCB share of assets, NPL ratio, preferential lending share.

The econometric framework is deliberately transparent and modest given data constraints. Because bank-level digital adoption figures are not publicly disaggregated for

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all institutions, formal panel regression (e.g., fixed-effects model of the form  $ROA_{it} = \beta_0 + \beta_1 Digital_{it} + controls + \varepsilon$ ) is not feasible here. Instead, the paper employs:

1. Descriptive statistics and time trends.
2. Period comparison (2017–2019 pre-acceleration vs. 2020–2024 post-digital push).
3. Simple bivariate correlations between annual changes in remote user growth (where yearly snapshots available) and changes in ROA/ cost-to-income.

All interpretations remain correlational; causality is discussed qualitatively through documented mechanisms. Limitations are stated explicitly: aggregate data mask bank heterogeneity; macroeconomic shocks (pandemic, commodity prices) and policy lending confound identification; under-reporting of NPLs (IMF notes IFRS Stage 3 at 7.8% vs. regulatory 3.5–4.0%) affects true profitability. No data beyond official releases are used.

**Empirical Results Descriptive statistics.** Remote banking adoption surged. From roughly 2 million users in 2017, the figure reached 14.5 million by 2021 (CBU, post-43% growth in 2020), over 30 million accounts by end-2022, and 74.18 million remote banking service users by October 1, 2025 (CBU data). Individual users at major banks exceeded several million each (e.g., Xalq Bank ~8.19 million, Aloqabank ~6.28 million as of late 2025). Account ownership doubled to 44% of adults by 2021; bank cards in circulation hit 34.2 million by end-2022.

*Table 1*

| Year | ROA (%) | ROE (%) | Interest margin / gross income (%) | Cost-to-income (selected years, %) |
|------|---------|---------|------------------------------------|------------------------------------|
| 2017 | 1.9     | 17.1    | 32.5                               | 50.4                               |
| 2018 | 2.0     | 16.2    | 48.4                               | 69.4                               |
| 2019 | 2.1     | 13.0    | 50.7                               | 45.4                               |
| 2020 | 2.2     | 10.2    | 54.3                               | 42.4                               |
| 2021 | 1.3     | 6.1     | 49.0                               | 42.3                               |
| 2022 | 2.5     | 13.3    | 42.1                               | -                                  |
| 2023 | 2.6     | 14.2    | 40.8                               | -                                  |
| 2024 | 1.4     | 9.2     | 38.3                               | 74.3 (aggregate, IMF)              |

**Table 1. Profitability (IMF FSAP, 2025)**

SOCBs consistently underperformed private banks (2024 ROA: 0.1% vs. 5.1% for domestic private). NPL ratios remained moderate (4.0% regulatory in 2024) but distressed assets were higher.

**Trend analysis and correlations.** The sharpest digital acceleration occurred 2020–2022, coinciding with a temporary ROA dip in 2021 (likely pandemic-related) followed by recovery to 2.5–2.6% in 2022–2023. Cost-to-income improved markedly in 2019–2021 (from 69% to 42%), consistent with substitution away from physical branches. By 2024, higher non-interest expenses (possibly from IT scaling and macro factors) pushed ROA down again. Bivariate changes show positive association between remote user growth periods and efficiency recovery, though not statistically tested at granular level due to data limits.

**Economic significance:** The jump from ~2 million to over 74 million remote users represents a massive expansion of transaction capacity at lower marginal cost per customer. Visa (2023) notes that small businesses adopting digital payments reported 30–40% revenue gains and customer increases, indirectly supporting bank fee income and deposit growth.

**Discussion.** Digital transformation appears to have supported operational efficiency through remote delivery, aligning with international evidence on cost channels. Mechanisms include: (1) reduced physical infrastructure needs (fewer branch transactions); (2) higher transaction volumes generating fee income; (3) improved customer retention and cross-selling via apps. In Uzbekistan, COVID-era promotion of remote services directly boosted user numbers and likely helped stabilize deposits during uncertainty.

However, earnings expansion has been bounded. SOCB dominance and residual preferential lending compress margins and raise provisioning needs. High 2024 cost-to-income (74.3%) suggests that digital investments have not yet fully offset legacy structures (excess staffing, cash reliance). Rural infrastructure gaps and electricity issues (noted in Visa surveys) limit nationwide benefits. Risk profile remains shaped more by macro and policy factors than digital tools alone.

**Strategic implications for banks:** Further integration of digital with core lending (e.g., AI credit scoring) could widen margins, but requires governance improvements post-privatization. For regulators, continued emphasis on data standards and cybersecurity will be essential.

**Conclusion.** Digital transformation in Uzbekistan’s banking sector has significantly expanded service reach and demonstrated potential to support efficiency and, in certain periods, profitability. Remote banking users grew more than 36-fold from 2017 to 2025, alongside rising account ownership and infrastructure. These developments coincided with cost-to-income improvements in the early 2020s and ROA recovery after 2021.



Nevertheless, aggregate earnings potential remains constrained by structural features—SOCB dominance, preferential lending, and uneven digital infrastructure. The answer to the research question is therefore qualified: digital transformation can and has helped expand boundaries, but its full effect depends on complementary reforms in ownership, competition, and physical-digital integration.

Policy implications include accelerating SOCB privatization with digital governance requirements, investing in nationwide broadband, and enhancing data reporting for better monitoring of digital impacts. Limitations of this study—primarily reliance on aggregate data and the correlational nature of findings—highlight the need for future bank-level panel analyses once more granular digital metrics become available. Further research could also explore risk-adjusted returns or customer-level outcomes.

This evidence-based assessment underscores that, in a transitioning economy like Uzbekistan, digital tools are powerful enablers but operate within the broader institutional environment.

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