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"GLOBAL DIGITAL INTEGRATION: THE RELEVANCE OF ENSURING MICRO AND MACROECONOMIC SUSTAINABLE GROWTH THROUGH TECHNOLOGICAL AND INDUSTRIAL DEVELOPMENT IN THE TRANSITION TO A GREEN ECONOMY BY 2030"

«ГЛОБАЛЬНАЯ ЦИФРОВАЯ ИНТЕГРАЦИЯ: АКТУАЛЬНОСТЬ ОБЕСПЕЧЕНИЯ УСТОЙЧИВОГО МИКРО- И МАКРОЭКОНОМИЧЕСКОГО РОСТА ЧЕРЕЗ РАЗВИТИЕ ТЕХНОЛОГИЧЕСКОЙ И ИНДУСТРИАЛЬНОЙ ПРОМЫШЛЕННОСТИ В ПЕРЕХОДЕ К ЗЕЛЁНОЙ ЭКОНОМИКЕ К 2030 ГОДУ»

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05.01.00 – Axborot texnologiyalari, boshqaruv va kompyuter grafikasi
05.01.01 – Muhandislik geometriyasi va kompyuter grafikasi. Audio va video texnologiyalari
05.01.02 – Tizimli tahlil, boshqaruv va axborotni qayta ishlash
05.01.03 – Informatikaning nazariy asoslari
05.01.04 – Hisoblash mashinalari, majmualari va kompyuter tarmoqlarining matematik va dasturiy ta'minoti
05.01.05 – Axborotlarni himoyalash usullari va tizimlari. Axborot xavfsizligi
05.01.06 – Hisoblash texnikasi va boshqaruv tizimlarining elementlari va qurilmalari
05.01.07 – Matematik modellashtirish
05.01.11 – Raqamli texnologiyalar va sun'iy intellekt
05.02.00 – Mashinasozlik va mashinashunoslik
05.02.08 – Yer usti majmualari va uchish apparatlari
05.03.02 – Metrologiya va metrologiya ta'minoti
05.04.01 – Telekommunikasiya va kompyuter tizimlari, telekommunikasiya tarmoqlari va qurilmalari. Axborotlarni taqsimlash
05.05.03 – Yorug'lik texnikasi. Maxsus yoritish texnologiyasi
05.05.05 – Issiqlik texnikasining nazariy asoslari
05.05.06 – Qayta tiklanadigan energiya turlari asosidagi energiya qurilmalari
05.06.01 – To'qimachilik va yengil sanoat ishlab chiqarishlari materialshunosligi
05.08.03 – Temir yo'l transportini ishlatish
05.09.01 – Qurilish konstruksiyalari, bino va inshootlar
05.09.04 – Suv ta'minoti. Kanalizatsiya. Suv havzalarini muhofazalovchi qurilish tizimlari
10.00.06 – Qiyosiy adabiyotshunoslik, chog'ishtirma tilshunoslik va tarjimashunoslik
10.00.04 – Yevropa, Amerika va Avstraliya xalqlari tili va adabiyoti
08.00.01 – Iqtisodiyot nazariyasi
08.00.02 – Makroiqtisodiyot
08.00.03 – Sanoat iqtisodiyoti
08.00.04 – Qishloq xo'jaligi iqtisodiyoti
08.00.05 – Xizmat ko'rsatish tarmoqlari iqtisodiyoti
08.00.06 – Ekonometrika va statistika
08.00.07 – Moliya, pul muomalasi va kredit
08.00.08 – Buxgalteriya hisobi, iqtisodiy tahlil va audit
08.00.09 – Jahon iqtisodiyoti
08.00.10 – Demografiya. Mehnat iqtisodiyoti
08.00.11 – Marketing
08.00.12 – Mintaqaviy iqtisodiyot
08.00.13 – Menejment
08.00.14 – Iqtisodiyotda axborot tizimlari va texnologiyalari
08.00.15 – Tadbirkorlik va kichik biznes iqtisodiyoti
08.00.16 – Raqamli iqtisodiyot va xalqaro raqamli integratsiya
08.00.17 – Turizm va mehmonxona faoliyati

Ma'lumot uchun, OAK Rayosatining 2024-yil 28-avgustdagi 360/5-son qarori bilan "Dissertatsiyalar asosiy ilmiy natijalarini chop etishga tavsiya etilgan milliy ilmiy nashrlar ro'yxati"ga texnika va iqtisodiyot fanlari bo'yicha "Muhandislik va iqtisodiyot" jurnali ro'yxatga kiritilgan.

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MUNDARIJA

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IMPROVING THE MECHANISMS FOR ASSESSING INTERBANK COMPETITION IN THE DIGITAL BANKING SERVICES MARKET

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Abstract. This study examines interbank competition in Uzbekistan under the expansion of digital banking services. The analysis uses the Herfindahl–Hirschman Index, the Lerner Index, the Net Interest Margin, and econometric methods based on quarterly data for 2018–2024. The results show a gradual decline in market concentration and banks' pricing power, while digital-service growth is associated with stronger competition. The study proposes the Integrated Interbank Competition Assessment Mechanism (IBKBM-2026), which combines digital transaction share, diversification, management linkages, and optimal growth indicators. Its practical application at "Business Development Bank" JSC showed improvements in customer activity, digital-service market share, loan quality, and deposit growth. The findings may support more comprehensive assessment of competition in the digital banking sector.

Keywords: interbank competition, digital banking, fintech, market concentration, HHI, Lerner Index, IBKBM-2026.

Annotatsiya. Ushbu tadqiqotda raqamli bank xizmatlarining rivojlanishi sharoitida O'zbekistondagi banklararo raqobat jarayonlari tahlil qilingan. Tahlilda Herfindal–Hirshman indeksi, Lerner indeksi, sof foiz marjasi hamda 2018–2024-yillardagi choraklik ma'lumotlarga asoslangan ekonometrik usullardan foydalanilgan. Natijalar bozor konsentratsiyasi va banklarning narx belgilash imkoniyatlari pasayib borayotganini, raqamli xizmatlarning kengayishi esa raqobatning kuchayishi bilan bog'liqligini ko'rsatdi. Tadqiqotda raqamli tranzaksiyalar ulushi, diversifikatsiya, boshqaruv aloqalari va optimal o'sish ko'rsatkichlarini birlashtiruvchi Banklararo raqobatni integratsiyalashgan baholash mexanizmi (IBKBM-2026) taklif etilgan. Mazkur mexanizmning "Biznesni rivojlantirish banki" ATB faoliyatida qo'llanishi mijozlar faolligi, raqamli xizmatlar bozoridagi ulush, kreditlar sifati va depozitlar hajmida ijobiy o'zgarishlar bilan bog'liq bo'lgan.

Kalit so'zlar: banklararo raqobat, raqamli bank xizmatlari, fintech, bozor konsentratsiyasi, HHI, Lerner indeksi, IBKBM-2026.

Аннотация. В исследовании анализируется межбанковская конкуренция в Узбекистане в условиях развития цифровых банковских услуг. В ходе анализа использованы индекс Херфиндаля–Хиршмана, индекс Лернера, чистая процентная маржа и эконометрические методы на основе квартальных данных за 2018–2024 годы. Результаты показывают постепенное снижение концентрации рынка и ценовой власти банков, а также связь между расширением цифровых услуг и усилением конкуренции. В работе предложен Интегрированный механизм оценки межбанковской конкуренции (IBKBM-2026), объединяющий долю цифровых транзакций, диверсификацию, управленческие взаимосвязи и показатели оптимального роста. Применение данного механизма в АКБ «Банк развития бизнеса» сопровождалось положительными изменениями в активности клиентов, доле цифровых услуг, качестве кредитного портфеля и объёме депозитов.

Ключевые слова: межбанковская конкуренция, цифровые банковские услуги, финтех, концентрация рынка, HHI, индекс Лернера, IBKBM-2026.

INTRODUCTION

The rapid development of digital technologies and the expansion of FinTech companies are taking competition among banks to a new level. By 2025, the global digital banking market had reached USD 8.2 trillion[1] and the number of digital service users had grown to 5.8 billion—a 15.1% year-on-year increase[2].

1 Global Digital Banking Report 2025 // McKinsey & Company. — 2025. — URL: https://www.mckinsey.com
2 Number of digital banking users worldwide in 2026 // Statista. — 2026. — URL: https://www.statista.com

In Uzbekistan, digitalisation has been identified as a strategic priority under the “Digital Uzbekistan–2030” Strategy, approved by Presidential Decree No. PF-6079 of 5 October 2020 [1]. In addition, Presidential Decree No. PF-5992 of 12 May 2020 set the target of increasing the share of assets held by banks without state participation in total banking-sector assets to 60% by 2025 [2].

However, the assessment of interbank competition under digital transformation has received limited attention as an independent area of dissertation research in Uzbekistan.

The objective of the research is to develop mechanisms for assessing and improving the level of interbank competition amid the development of digital banking services. The object of the study is the digital services and interbank competition processes of commercial banks in Uzbekistan, with “Business Development Bank” JSC (BRB) serving as the practical case study. The subject of the study is the economic relations arising in the process of assessing and improving the level of interbank competition.

The study applies scientific abstraction, comparative and structural analysis, induction and deduction, as well as economic, statistical, and econometric estimation methods. Market power and concentration are measured using the Herfindahl–Hirschman Index (HHI), the Lerner Index, and a Net Interest Margin (NIM) proxy[3]. The theoretical foundation integrates classical, industrial organisation, and modern platform competition models, including two-sided market theory[4]. A ten-stage econometric procedure was conducted using quarterly data for 2018–2024, comprising up to 28 observations: unit root tests (ADF and KPSS), Engle–Granger cointegration analysis, an ARDL bounds model, multivariate OLS regression with a full set of diagnostic tests (Breusch–Pagan, White, Breusch–Godfrey, RESET, Jarque–Bera, and VIF), robustness checks across six specifications (M1–M6), the Chow structural break test, Granger causality analysis, and a VAR(1) model with impulse response and variance decomposition analyses[5].

Classical competition indicators show a gradual decline in market concentration in Uzbekistan’s banking sector. The HHI fell from 1,580 in 2021 to 1,097 in 2025, representing a decrease of 30.6% and moving the market from a moderately concentrated to a low-to-moderately concentrated category. The Lerner Index declined from 0.44 to 0.21, representing a decrease of 52.3%, while the NIM contracted from 5.4% to 4.5%, indicating the weakening of pricing power amid increasing competitive pressure. Over the same period, the private banks’ share of total assets increased from 24.2% to 36.5%, while the number of remote service users grew 5.8-fold and the volume of fast payments reached UZS 1,389.7 trillion.

Table 1.
Dynamics of competition and structural indicators of Uzbekistan’s banking system (2021–2025)[6]

Indicator	2021	2023	2025	Change 2021→2025
HHI (asset concentration)	1,580	1,421	1,097	**−30.6%**
Lerner (market power)	0.44	0.36	0.21	**−52.3%**
Net Interest Margin, NIM (%)	5.4	4.9	4.5	**−0.9 p.p.**
State-owned banks’ asset share (%)	75.8	67.7	63.5	**−12.3 p.p.**
Private banks’ asset share (%)	24.2	32.3	36.5	**+12.3 p.p.**
Remote-service users (mln)	14.2	36.5	82.9	**×5.8**
Fast-payment system volume (bln UZS)	~52,000	603,800	1,389,661	**substantial increase**

Commentary on Table 1. The table reveals two parallel structural shifts. First, all three competition metrics—the HHI, Lerner Index, and NIM—decline steadily, indicating intensifying competition and weakening market power. Second, the ownership structure is rebalancing: private banks’ share of assets rises by 12.3 percentage points, while state banks’ share falls correspondingly. Meanwhile, total assets nearly tripled from UZS 312 trillion to UZS 924.8 trillion. The decline in the HHI was associated with the entry of Uzum Bank and TBC

3 Panzar J.C., Rosse J.N. Testing for «Monopoly» Equilibrium // Journal of Industrial Economics. — 1987. — Vol. 35, No. 4. — P. 443–456; Lerner A.P. The Concept of Monopoly and the Measurement of Monopoly Power // The Review of Economic Studies. — 1934. — Vol. 1, No. 3. — P. 157–175.

4 Rochet J.-C., Tirole J. Platform Competition in Two-Sided Markets // Journal of the European Economic Association. — 2003. — Vol. 1, No. 4. — P. 990–1029.

5 Engle R.F., Granger C.W.J. Co-integration and Error Correction // Econometrica. — 1987. — Vol. 55, No. 2. — P. 251–276; Granger C.W.J. Investigating Causal Relations by Econometric Models // Econometrica. — 1969. — Vol. 37, No. 3. — P. 424–438.

6 Compiled by the author from data of the Central Bank of the Republic of Uzbekistan, tijorat banklari moliyaviy hisobotlari and banking-system statistics (www.cbu.uz).

Bank in 2022–2023 and the expansion of the Click and Payme fintech platforms. However, the still-dominant 63.5% share of state-owned banks in total banking-sector assets shows that the 60% target established by Presidential Decree No. PF-5992 has not yet been achieved [2].

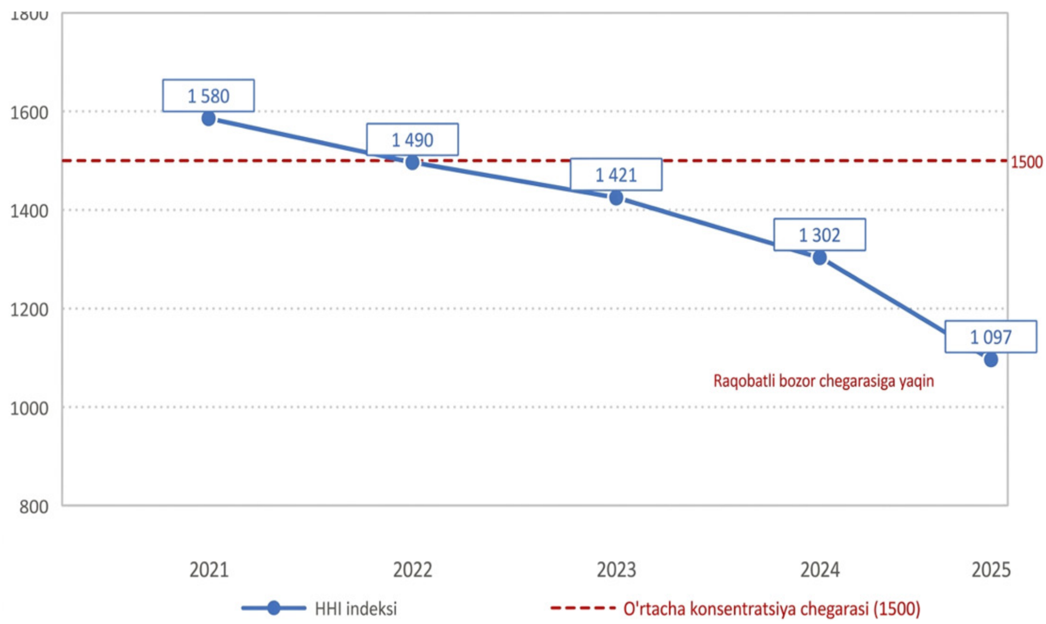

Figure 1. HHI dynamics and the competitive-market boundary (2021–2025), index points.[7]

Commentary on Figure 1. The chart shows the HHI declining steadily, falling below the 1,500 threshold for moderate concentration around 2022 and reaching 1,097 by 2025—close to the boundary of a competitive market. The steepest decline occurred during 2023–2025, coinciding with the entry of new digital banks and the rapid expansion of FinTech platforms. Although the trajectory clearly points towards a more competitive market, the dashed reference line and the relatively high share of assets held by state-owned banks suggest that further institutional and structural improvements may support the development of more balanced competitive conditions.

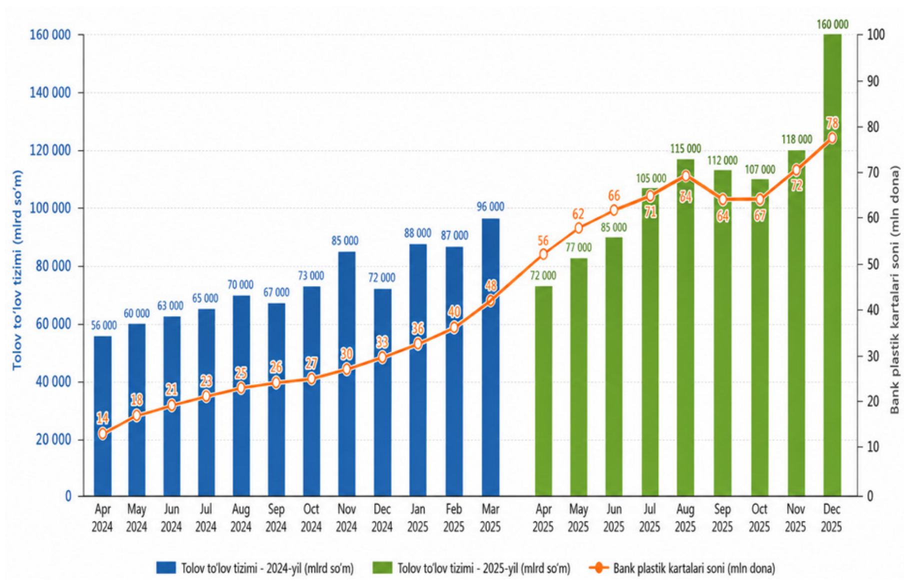

Figure 2. Dynamics of the fast-payment system volume (bln UZS) and the number of bank cards (mln units), monthly, 2024–2025.[8]

7 HHI calculated by the author on the basis of data of the Central Bank of the Republic of Uzbekistan and commercial banks' financial statements (Herfindahl–Hirschman index).

8 Compiled by the author from data of the Central Bank of the Republic of Uzbekistan and the «Tezkor to'lovlar tizimi» (Fast Payment System) statistics (www.cbu.uz).

Commentary on Figure 2. The figure illustrates the parallel growth of digital payment infrastructure indicators. Fast-payment volume rose from approximately UZS 56,000 billion in April 2024 to about UZS 160,000 billion by December 2025, while the number of bank cards increased from 14 million to 78 million units. This co-movement indicates an expanding competitive environment supported by digital channels—a dimension that asset-based indicators such as the HHI do not fully capture, since fintech platforms with relatively limited balance-sheet assets, such as Click and Payme, may nevertheless account for substantial transaction volumes.

In the multivariate OLS regression ($R^2 = 0.818$), the coefficient for remote-service users was $\beta = -1.144$ ($p < 0.001$). The Engle–Granger cointegration test (statistic = −4.124, $p = 0.008$) indicated a long-run relationship, while the Granger causality test ($F = 8.67$, $p = 0.008$) provided evidence of predictive causality. Robustness checks across six specifications (M1–M6) and the Chow structural break test supported the stability of the findings. A 1% increase in the share of digital transactions was associated with an approximately 1.8% increase in a bank's market share after a one-quarter lag.

The principal scientific contribution is the author's Integrated Interbank Competition Assessment Mechanism (IBKBM-2026), which addresses certain methodological limitations of traditional indicators—the Panzar–Rosse statistic, the Lerner Index, the Boone indicator, and the HHI—when applied in a digital banking environment. It combines four interrelated components into a single quantitative indicator: a Digital Transaction Share category split (DTS, weight 0.25), an Integrated Diversification Index (DIV, 0.25), a Linkage and Coherent Management mechanism (BUM, 0.30), and an Optimal Growth Normalisation Index (OOM, 0.20). The structure and weighting of the mechanism were informed by the study's econometric findings ($\beta = -1.144$, $p < 0.001$; $R^2 = 0.818$).

The application of the mechanism at "Business Development Bank" JSC was associated with several measurable changes. The early-warning classification based on 70% and 50% thresholds was accompanied by a reduction in the share of non-performing digital loans from 8.5% to 4.5% and a decrease of UZS 825 billion in problem loans. The integrated diversification approach was associated with a 4-point reduction in the assessed level of competitive risk. Customer activity increased from 65% to 78%, while the digital-service market share rose from 12% to 15%. Following the normalisation of portfolio growth from 15% in 2024 to 11% in 2025, retail deposits increased from UZS 2.2 trillion to UZS 4.2 trillion, representing an increase of 91%. Overall, BRB's IBKBM score rose from 53.5 to 76.0 points, representing an increase of 42.1%.

Group analysis showed that state-owned banks had a statistically higher average NPL ratio than private banks (4.22% versus 3.74%; $t = 3.32$, $p = 0.003$; Cohen's $d = 0.664$). These findings indicate differences in asset quality between the two groups of banks and may inform further improvements in banking-sector ownership and risk-management practices.

Conclusion and Suggestions

In conclusion, competition in Uzbekistan's digital banking market is gradually strengthening. At the same time, the relatively high share of assets held by state-owned banks and the limited ability of traditional indicators to reflect digital-market processes support the relevance of the proposed IBKBM-2026 methodology. It provides a methodological and practical basis for improving interbank competition assessment and supporting the further development of Uzbekistan's digital banking ecosystem. The principal results were published in 10 scientific works, including 6 articles in journals recommended by the Higher Attestation Commission, and presented at 4 national and international conferences.

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