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The Impact of Fintech Development on Financial Inclusion in the Regions of Uzbekistan

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Abstract: This study examines the relationship between fintech development and financial inclusion across the fourteen administrative regions of Uzbekistan. National indicators indicate fast progress, with the account ownership rate among adults increasing almost double to 60% by the 2025 Global Findex survey, and the number of licensed fintech companies from 24 in 2018 to 103 in 2025. These national aggregates mask differences between urban areas (Tashkent) and rural areas (Karakalpakstan and Surxondaryo). A mixed method is used to create an analytical framework that integrates a Regional Financial Inclusion Index (RFII) (the access, usage, and quality components) with a Regional Fintech Development Index (RFDI) (the penetration of payment-infrastructure and instant-payment-system). Based on national and comparative evidence, the discussion suggests that, so far, the advancement of fintech has helped to increase access to accounts, but not necessarily their depth in terms of formal saving and borrowing, with the potential for the latter gap to be greatest outside Tashkent. The following recommendations are made: expansion and targeted improvement of agent banking, financial literacy programs in the respective regions, and specific targets for the 2026-2030 National Strategy on financial technology development.

Keywords: financial technology; financial inclusion; regional disparity; digital economy; Uzbekistan.

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1. Introduction

Financial technology (fintech) has dramatically transformed the ways for households and firms to access formal financial services in emerging economies. In countries with traditionally weak branch networks and high rural population levels, fintech is often seen as a "lifting paddle" to help bring the financial system beyond the branch network without necessarily investing in the proportional physical network. [1] In Uzbekistan, its number of licensed fintech businesses grew from 24 in 2018 to 103 in 2025, which represents a 4.3-fold increase, or over 50% of the fintech sector is payment services companies [2]. National Instant Payment System has processed more than UZS 360 trillion (more than \$30 billion) in transactions during the first ten months of 2025 and more than \$12.2 billion in transactions in May 2026 in a single month [3].

In November 2025, Presidential Resolution No. PP-359 extended Central Bank of Uzbekistan's duties to cover fintech development and assigned the regulator to create the National Strategy for Financial Technology Development for 2026-2030, develop an Innovation Hub and FinTech Office and operate a \$50 mln venture fund for early-stage fintech companies [4].

But there is an uneven geography of inclusion, in national averages. The 2025 Global Findex survey finds that almost twice as many adults now have a financial account, up from 32%, with 60% having such an account, but few have a formal savings account in a bank (10%) or have taken out a formal loan (12%), and many of the unbanked are using informal arrangements rather than a bank or financial institution to obtain credit or savings accounts; the main reasons reported by the unbanked are household account by proxy, insufficient funds, missing documentation, distance and service cost [5].

Comparative literature indicates that, when digital finance can replace physical infrastructure, it can help reduce, rather than deepen, spatial inequality: In Zhejiang Province, China, digital financial inclusion reduced the urban-rural income gap by alleviating credit constraints for rural households and small enterprises [6]. The same applies to Central Asia in general: Fintech-related variables like internet penetration, mobile subscriptions and POS terminal density are correlated with economic development outcomes across the region [7]. Meanwhile, country specific efforts in Uzbekistan warn of regulatory weaknesses, cyber security threats, and financial illiteracy as barriers to fintech becoming a real avenue for inclusion [8], [9].

Nevertheless, country-wide analysis of the relationship between the development of fintech and the achievement of financial inclusion in Uzbekistan's fourteen administrative regions is limited. This research aims to examine the connection between the level of financial inclusion and the development of fintech in the region based on a composite index methodology and panel data for the period 2019-2024 in Uzbekistan.

2. Materials and Methods

Research design. The study is descriptive analytical, secondary panel data for the 14 administrative regions, 12 regions of Uzbekistan, Republic of Karakalpakstan and Tashkent city in the period 2019-2024. No primary data was collected from human or animal subjects; therefore an institutional ethics committee or Institutional Review Board approval was not required or sought.

Data sources. The statistical data on payment infrastructure and Instant Payment System were taken from statistical bulletins of the Central Bank of Uzbekistan, and statistical data on the gross regional product (GRP), population and urbanization were taken from statistical bulletins of the State Statistics Committee of the Republic of Uzbekistan (stat.uz), with the information on payment infrastructure and indicators of the Instant Payment System being used for benchmarking with the Global Findex database and country data summary of the World Bank 2025.

Regional Financial Inclusion Index (RFII) The dependent variable was created by applying the standard three dimension approach of cross-country financial inclusion indices to Access (commercial bank branches and mini-banks per capita, and automated teller machines per capita of adults); Usage (share of adults with an active bank account or an e-wallet); and Quality (share of adults reporting to take out formal credit or saving formally in last 12 months). All indicators were standardized in the range of zero to one with a min-max method, and the three sub-indices were summarized with equal weight per region-year, to obtain a composite RFII for each region-year.

Regional Fintech Development Index (RFDI). The independent variable was created using four indicators: Point-of-sale and QR-payment terminals per 10,000 adults, number of registered fintech and payment agents in the region, per cent of the volume of transactions in the Instant Payment System carried out from the region, and the penetration rate of mobile internet. The stat.uz was used as the source of data for control variables: GRP per capita, urbanization rate, adult literacy/education rate.

Estimation strategy. The model specified was a fixed-effects panel regression: $RFII_{it} = \beta_0 + \beta_1 RFDI_{it} + \beta_2 GRP_{it} + \beta_3 Urban_{it} + \beta_4 Educ_{it} + \mu_i + \varepsilon_{it}$, with region i identifying the region and t identifying the year, and μ_i representing time-invariant regional heterogeneity. A Hausman test was included to test for fixed-effects specification versus a

random-effects alternative and to report the statistical significance at the $P < 0.05$ and $P < 0.01$ levels. Data analysis was designed to be carried out in Stata (StataCorp LLC, College Station, Texas, USA).

Ethics and reproducibility. All aggregate and publicly reported statistics and secondary administrative data used in this study are used exclusively and have been firmly identified by reporting dates and sources; no individual borrower, household or firm-level records have been used and reporting dates and sources are clearly identified and cited. The Results section presents the analytical index framework as well as the direction of evidence available from national and comparative sources; values for the individual regions and years are to be substituted from the author's compiled regional data set before final submission, since the regional breakdown of some Central Bank and Global Findex series was not publicly disaggregated at the time of writing.

3. Results

The analytical structure of the RFII and RFDI along with the direction of the regional pattern suggested by the reviewed evidence are summarized in Table 1.

Table 1. Analytical framework for the regional patterns of financial inclusion, directional, based on reviewed national and comparative evidence; values of region-year RFII/RFDI to be inserted from the author's own data set.

Region group	Expected Access	Expected Usage	Expected Quality
Tashkent city	High	High	Moderate-High
Tashkent region / Samarqand	Moderate-High	Moderate	Moderate
Fergana Valley regions	Moderate	Moderate	Low-Moderate
Karakalpakstan / Surxondaryo / Xorazm	Low	Low-Moderate	Low

Table 2 presents the national baseline values of the RFDI proxy indicators and the corresponding RFII usage/quality benchmarks, which are used as the reference levels for measuring regional deviations when regional data are replaced.

Table 2. The national baseline values for RFDI and RFII components proxies are the latest year for which there is reporting data. Figures are national aggregates; region-level values are to be computed from the author's regional dataset. Sources.

Indicator	National value	Reference year
Licensed fintech/payment companies	103 (up from 24 in 2018)	2025
Monthly Instant Payment System transaction value	≈\$12.2 billion	May 2026
POS/QR terminal turnover	≈UZS 360 trillion (≈\$30 billion)	Jan-Oct 2025
Commercial bank branches (national)	≈800 branches (≈33,000 people/branch)	historical estimate
Three largest banks' asset share (concentration)	59.47%	2021
Adults with a financial account	60%	2025
Adults saving formally / borrowing formally	10% / 12%	2025

When the RFII is broken down by dimension, it is easier to see where regional differences are likely to be most pronounced. Bank networks are historically more concentrated in Tashkent and other regional capitals and the concentration of bank assets

is still high as the 3 largest banks accounted for 59.47% of the sector assets in 2021 [10]; and banking sector is also state-owned, which is reflected in the legacy of urban bank networks [11]. Based on this structural concentration, it can be expected that the scores on the Access sub-index will be most widely spread out across regions as compared to the scores on the other two dimensions of the RFII, with Tashkent city having higher scores than the scores of the other regions, and Karakalpakstan, Surxondaryo and Xorazm having lower scores than the scores of the other regions.

Looking at the Usage dimension, the number of licensed fintech companies has more than doubled since 2018, and the amount of turnover in the Instant Payment System indicates a very strong performance at the national level [12]. The regional spread on the Usage sub-index is expected to be narrower than on the Access sub-index but is still likely to be skewed towards the regions with more merchant QR-acceptance networks, such as Tashkent and other urban regional centres, where usage depends on penetration of mobile internet services and penetration of agent networks not on the proximity of physical branches.

The national formal loans and formal borrowing rates of 10% and 12%, respectively, suggest little scope for the regional variations from these rates to be large in absolute terms, but they may be large in relative terms, as the ability to access formal credit varies across regions, driven by income stability, the availability of credit, and financial knowledge [13]. According to this basis, the absolute regional difference of the three dimensions of the Quality sub-index is expected to be the lowest among the three dimensions, and the dimension most expected to be less affected by the development of fintech infrastructure alone, suggesting that fintech development so far is not much of a depth-of-inclusion phenomenon, but more of an access-and-usage phenomenon.

4. Discussion

The tech side of the fintech seems to be replacing the branch network, not just augmenting it. The introduction of the national card platforms Uzcard and Humo, which were designed to be open-API and the adoption of a unified QR-payment framework, had been aimed to decrease the fragmentation and minimise the expenses on the last mile financial access. The intent of the national card platforms (Uzcard and Humo) with open API design and unified QR-payment framework was to reduce the fragmentation and its expenses on last mile financial access. This general mechanism is also confirmed in comparative evidence from Central Asia, and in the analysis of digital financial inclusion in other transitional economies, it has been identified as a factor that can significantly reduce urban-rural gaps by alleviating credit constraints that are faced by many small businesses and households in rural areas [14].

However, fintech is likely to face some constraints given to specific regions of Uzbekistan to overcome the inclusion gap. Financial illiteracy, a lack of trust in cyber security and the continued dominance of traditional banking institutions are cited as ongoing challenges to fintech adoption across the country [8] and are especially binding in less educated and less well supported areas of the country. The explanation of the access and usage sub-indices of the RFII is higher than its dependence on the quality sub-index, which requires more trust and more income stability and financial knowledge than infrastructure for digital payment [15].

A policy architecture now being put in place provides a potential pathway to help fill these regional divides if it is explicitly regionalized. The 2026-2030 National Strategy for Financial Technology Development, the new Innovation Hub and FinTech Office and its corresponding venture fund are broadly national in scope; if region-specific targets or expansion quotas for agent banking were included these would be more aligned with the access and distance related barriers that have been documented in regions further from Tashkent.

More general assessments of the financial system provide further evidence of these structural credit constraints: not until 2021 did retail deposits reach 10% of GDP, the lowest level in Europe and Central Asia, and even then, they were surpassed only by Lithuania, and SMEs' share of banking assets at year-end 2017 was just 15%, much lower than the EU average. Spatial specialisation in SME financing and mobilization of retail deposits is likely more pronounced outside Tashkent, which suggests that the Quality sub-index of the RFII will be the lowest in agriculturally dependent regions, where SME penetration and retail deposit mobilization have traditionally been lowest.

It is important to be careful when applying the Zhejiang experience of digital financial inclusion to the Uzbekistan situation, as the experience shows that this can reduce the income gap between urban and rural residents. The experience in Zhejiang is indicative of a more developed financial system, characterized by significantly larger retail deposit and SME lending markets, more advanced digital infrastructure, and greater fiscal power at the provincial level to facilitate joint investment in last-mile availability of digital services compared to regional financial systems in Uzbekistan. The potential for a narrowing impact on regional inclusion gaps as a result of the directional mechanism, and the extent to which this impact is found in the Chinese case, should not be taken as a given when considering Uzbekistan, and should only be treated as an upper bound until estimated region-specifically using the panel model specified below in the Methodology section.

Limitations. The RFII and RFDI framework presented here uses secondary data, mostly at the national level, at the time of writing, for which values of region-year, panel regression coefficients and their significance must be calculated by the author before submission, based on the author's own compiled regional dataset. The equal weight for sub-indices to come to a total index is a simplifying assumption that should be compared against other methods of weighting the sub-indices such as principal component analysis as a robustness check.

5. Conclusion

For this purpose, this study has created an analytical framework that examines the relationship between the financial inclusion and the development of fintech in the regions of Uzbekistan, in which the Regional Financial Inclusion Index and the Regional Fintech Development Index are used in a fixed-effects panel model, directly addressing the objective of this study. The evidence available nationally and internationally suggests that the growth of fintech is primarily a driver of increased access to accounts rather than the quality of formal saving/borrowing, and that the areas with the lowest financial infrastructure density, such as Karakalpakstan, Surxondaryo, and Xorazm, are likely to have the largest access-depth gaps; and closing these gaps will require complementary investment in financial literacy and documentation simplification as well as in infrastructure. Expansion of agent-banking in areas where there are no banks or few branches should be prioritized; financial literacy programs should be scaled and rolled out regionally in conjunction with providing the infrastructure; the National Strategy for Financial Technology Development, 2026-2030, should include measurable targets for regional financial inclusion as well as for the national-level fintech-market targets.

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