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ASSESSMENT OF THE PENETRATION LEVEL OF FINTECH, REGTECH AND SUPTECH TECHNOLOGIES IN UZBEKISTAN'S FINANCIAL SYSTEM

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Abstract. This article assesses the extent to which FinTech, RegTech and SupTech technologies have been adopted within Uzbekistan's financial system. Drawing on the diffusion of innovations theory and the classification of SupTech generations, a four-level assessment scale encompassing technology adoption, infrastructure and the institutional environment is developed. An analysis of data from the Central Bank of Uzbekistan, Global Findex and the Ministry of Internal Affairs indicates that FinTech has reached Level 3, while RegTech and SupTech remain at Level 2. The adoption of digital payment services has progressed more rapidly than the development of protective technologies, with this disparity coinciding with a 68-fold increase in cybercrime between 2019 and 2024. The article proposes measures to support the development of the RegTech market, facilitate the transition towards data-driven supervision and improve sectoral statistics.

Keywords: FinTech, RegTech, SupTech, digital payments, financial inclusion, remote identification, regulatory sandbox, open banking, central bank, Uzbekistan.

Аннотация. В статье оценивается степень внедрения технологий FinTech, RegTech и SupTech в финансовую систему Узбекистана. На основе теории диффузии инноваций и классификации поколений SupTech разработана четырёхуровневая шкала оценки, охватывающая внедрение технологий, инфраструктуру и институциональную среду. Анализ данных Центрального банка Республики Узбекистан, базы данных Global Findex и Министерства внутренних дел показывает, что уровень внедрения FinTech достиг третьего уровня, тогда как RegTech и SupTech находятся на втором уровне. Развитие цифровых платёжных сервисов опережает внедрение технологий обеспечения безопасности. Данная диспропорция наблюдается на фоне увеличения количества киберпреступлений в 68 раз за период 2019–2024 годов. В статье предложены меры по развитию рынка RegTech, переходу к надзору на основе данных и совершенствованию отраслевой статистики.

Ключевые слова: FinTech, RegTech, SupTech, цифровые платежи, финансовая инклюзия, дистанционная идентификация, регуляторная песочница, открытый банкинг, центральный банк, Узбекистан.

INTRODUCTION

Over the past decade, financial technologies have fundamentally transformed the structure of the global financial system. Alongside the transition of payment, lending and investment services to digital channels, the approaches used to regulate and supervise these activities have also evolved. In the academic literature, this transformation is examined through three interrelated areas: technologies used to deliver financial services (FinTech), technologies that automate financial institutions' compliance with regulatory requirements (RegTech), and technologies that facilitate the digitalisation of supervisory authorities' activities (SupTech) [10; 16].

In Uzbekistan, the digitalisation of the financial sector became one of the priority areas of the economic reforms initiated after 2017. The adoption of the laws "On Payments and Payment Systems" and "On Personal Data" in 2019 [2; 3], the approval of the Strategy for Reforming the Banking System in 2020 [6], and the adoption

of a separate Presidential resolution on the development of financial technologies in 2025 [7] demonstrate the continuity of government policy in this area. Consequently, the number of users of remote banking services increased from 4.5 million in 2017 to 82.9 million in 2025 [22].

Nevertheless, quantitative growth does not necessarily indicate that technologies have been adopted uniformly or extensively across the financial system. The 68-fold increase in recorded cybercrime between 2019 and 2024 [23], which coincided with the rapid expansion of payment services, highlights the importance of ensuring balanced development between customer-facing financial technologies and technologies supporting risk management and supervision. Existing national studies have primarily focused on FinTech and payment systems [31, 37-38, 40], while a comparative assessment of all three areas using a unified set of criteria has not yet been identified in the reviewed literature.

Accordingly, this study seeks to determine the extent to which FinTech, RegTech and SupTech technologies have been adopted within Uzbekistan's financial sector and to identify differences in their respective levels of development. The "three speeds" hypothesis is proposed as the working hypothesis of the study. It assumes that these three technological areas are developing at different rates, with FinTech advancing considerably faster than RegTech and SupTech.

The aim of the study is to assess the penetration levels of these technologies using a unified system of indicators and to develop recommendations for addressing the identified differences in their development. To achieve this objective, relevant theoretical approaches are reviewed, a methodology for assessing technology penetration is developed, statistical and institutional data relating to each technological area are analysed, developments in the regulatory framework are examined, and practical recommendations are formulated on this basis.

LITERATURE REVIEW

One of the earliest studies to systematically examine the FinTech phenomenon was conducted by D. Arner, J. Barberis and R. Buckley. The authors divide the evolution of financial technologies into three stages and characterise the period following the 2008 global financial crisis as a phase during which emerging technology companies began competing directly with traditional banks [14]. In another study, they conceptualise RegTech not merely as a component of FinTech but as an approach to rethinking financial regulation itself. From their perspective, regulatory practices should evolve from a documentation-based model towards a data-driven framework [13].

P. Gomber, J.-A. Koch and M. Siering systematised research on digital finance and FinTech and proposed a framework for analysing these developments through financial functions, technologies and institutional participants [29]. T. Philippon demonstrated that the cost of financial intermediation in the United States had changed relatively little over the preceding century and argued that the principal economic significance of FinTech lies in its potential to reduce these costs [35]. A. Thakor, examining the relationship between FinTech companies and banks from the perspectives of competition and cooperation, emphasised that technological innovation primarily transforms the mechanisms through which banking services are delivered rather than the fundamental economic nature of banking activities [39]. The Financial Stability Board (FSB), in its assessment of the implications of FinTech for financial stability, identified cybersecurity and operational risks as important areas requiring supervisory attention [28].

Within the field of RegTech, T. Butler and L. O'Brien define regulatory technologies as tools designed to automate financial institutions' processes for interpreting regulatory requirements, ensuring compliance and reporting on their fulfilment [17].

The principal theoretical contributions relating to SupTech have been developed by the Financial Stability Institute of the Bank for International Settlements (BIS). D. Broeders and J. Prenio examined the experiences of central banks that were among the early adopters of supervisory technologies [16]. S. di Castri and co-authors subsequently classified SupTech development into four generations. The first generation involves manual supervision and spreadsheet-based processes, while the second introduces partial automation of data collection and processing. The third and fourth generations incorporate big data architectures and artificial intelligence-based analytical capabilities [25].

N. Bagherifam and co-authors, in a systematic review of 59 studies published between 2017 and 2025, found that RegTech and SupTech can enhance the flexibility and transparency of supervisory processes. However, their widespread adoption requires further progress in addressing cybersecurity challenges, algorithmic transparency and regulatory fragmentation [15].

E. Rogers's diffusion of innovations theory provides an important methodological foundation for assessing the depth of technology penetration. According to this theory, adopters of innovations are classified into five categories: innovators, early adopters, the early majority, the late majority and laggards. The diffusion process is generally represented by an S-shaped curve [36]. Internationally comparable indicators of financial inclusion are provided by the World Bank's Global Findex database [24, 41].

Among studies focusing on Uzbekistan, J. Valiyev and I. Kotāne examined opportunities for improving the payment system and highlighted the potential application of artificial intelligence in fraud detection [40]. A. Sadikov analysed the contribution of payment organisations to FinTech development, reporting that peer-to-peer (P2P) transfers through the UZCARD and HUMO systems reached UZS 224.3 trillion in 2023, representing an increase of 56% compared with 2022, while QR-code payments increased threefold [37].

S. Khamraeva identified payment services, neobanks and Islamic finance as the principal segments of Uzbekistan's FinTech industry [31]. A. Habibullaev proposed the phased introduction of eXtensible Business Reporting Language (XBRL), RegTech and distributed ledger technologies to strengthen the protection of shareholders' rights [30].

Sh. Shamakhmudova considers the national payment systems UZCARD and HUMO to be the infrastructural foundation of Uzbekistan's FinTech ecosystem. The author identifies four principal functions performed by these systems: transactional infrastructure, identification platforms, data sources and regulatory anchors. According to the study's findings, digital wallets and instalment payment services have reached a relatively mature stage of development, whereas investment platforms and insurance technologies (InsurTech) remain at an early stage [38].

The literature review indicates that international research increasingly examines FinTech, RegTech and SupTech as interconnected components of financial sector digitalisation, whereas studies focusing on Uzbekistan have primarily concentrated on payment services and the FinTech market. RegTech and SupTech have received comparatively limited attention in the national research context, and the reviewed literature does not provide a comprehensive comparative assessment of the penetration levels of all three technological areas based on unified criteria.

RESEARCH METHODOLOGY

The study draws on annual reports and statistical data published by the Central Bank of Uzbekistan, the World Bank's Global Findex database, analytical reports of the Asian Development Bank, official data from the Ministry of Internal Affairs, relevant national academic studies and regulatory legal acts.

The research employs statistical analysis, including the examination of trends and growth rates, content analysis of regulatory legal acts, comparative analysis and qualitative assessment methods.

The penetration level of each technology is assessed using a four-level scale across three dimensions: technology usage, infrastructure and supply, and the institutional environment. The assessment framework is based on the diffusion of innovations theory and the classification of SupTech generations. The specific criteria underlying the scale are presented in the Results and Discussion section.

Artificial intelligence tools were used for approximately 10% of the research preparation process.

ANALYSIS AND RESULTS

To assess the level of technology penetration, each technological area was examined across three dimensions. The usage dimension reflects the extent of adoption among the population and financial institutions. The infrastructure and supply dimension captures the number of market participants and the availability of technological solutions. The institutional environment dimension evaluates the maturity of the regulatory framework and government policy.

Each dimension was assessed using a four-level scale, in which Level 1 represents the initial stage, Level 2 the emerging stage, Level 3 the developed stage and Level 4 the mature stage.

To enhance the objectivity and consistency of the assessment, specific criteria were established for each level. The quantitative thresholds applied to the usage dimension are derived from the cumulative proportions of adopter categories in Rogers's diffusion of innovations theory: 2.5%, 16% and 50% [36].

For example, when more than half of the population uses a particular technology, its adoption is considered to have reached the "late majority" stage (Table 1).

Table 1.
Criteria for assessing the level of penetration¹

Level	Usage	Infrastructure and supply	Institutional environment
1 – initial	Up to 2.5% of the population or organizations (innovators); pilots only	An idea or isolated pilot projects; no providers on the market	Mentioned only in strategic documents; no dedicated regulation
2 – emerging	2.5-16% (early adopters)	Implemented in individual organizations; few providers	Dedicated regulations at the draft or early stage
3 – developed	16-50% (early majority)	Used by most organizations; a competitive market has formed	Dedicated laws and rules in force
4 – mature	Above 50% (late majority)	Unified infrastructure integrated into the system	Data-driven regulation and regular monitoring

The usage dimension was assessed separately for each technological area. For FinTech, the assessment was based on the proportion of adults using digital payment services. For RegTech, it was determined by calculating the arithmetic mean of the scores assigned to four core functions: electronic Know Your Customer (eKYC), anti-money laundering and anti-fraud monitoring, regulatory reporting, and regulatory change management. For SupTech, the assessment was based on the generation classification developed by the Bank for International Settlements (BIS), with the first generation corresponding to Level 1 and the fourth generation to Level 4 [25].

The overall penetration level was calculated as the arithmetic mean of the scores assigned to the three dimensions and rounded to the nearest integer. The corresponding mean values are presented in parentheses in Table 4.

The digital infrastructure of Uzbekistan's banking sector expanded considerably between 2017 and 2025 (Table 2).

Table 2
Key indicators of the digital infrastructure of Uzbekistan's banking sector²

Indicator	2017	2025	Growth, times
Users of remote banking services, million	4.5	82.9	18.4
Bank cards in circulation, million	19.2	68.3	3.6
ATMs and information kiosks, units	5,632	40,090	7.1
Number of credit institutions (banks and non-bank credit institutions)	104	269	2.6
Bank assets, UZS trillion	167	925	5.5

The more than eighteenfold increase in the number of remote banking users, together with the fact that the reported figure exceeds twice the country's population, suggests that individual customers may use multiple banking and payment applications simultaneously. In 2025, the volume of transactions conducted through mobile applications reached UZS 646 trillion (approximately USD 55 billion), representing a 60% increase over the previous year. Meanwhile, the number of QR codes deployed at retail and service outlets reached 139,000 [19, 32]. The share of non-cash payments in total turnover increased from 34% in 2021 to 40% in 2024, while the monthly transaction volume of the Instant Payment System exceeded USD 10.2 billion in July 2025 [38].

Presidential Decree No. PF-246 of 10 December 2025 stipulated that, from 1 April 2026, payments for government services, electricity, natural gas, drinking water, alcoholic beverages, tobacco products, fuel, and goods and services valued at more than 400 times the base calculation amount must be made exclusively through bank cards or electronic payment systems [8].

Considerable developments were also observed on the supply side of the market. The number of FinTech companies increased from 24 in 2018 to 103 by September 2025, while local companies had attracted more than USD 260 million in foreign investment by that point in 2025 [33]. The number of payment organisations reached 47 by the end of 2025 [19]. At the same time, the minimum charter capital requirement for payment organisations increased from UZS 10 billion, effective from 1 July 2024, to UZS 20 billion from 1 July 2025 [10].

¹ Source: developed by the author based on [25, 36].

² Source: compiled by the author based on data from [19, 22].

The increase of only three payment organisations over the year, alongside the doubling of minimum capital requirements, suggests a possible transition from quantitative market expansion towards a greater emphasis on institutional capacity and qualitative development. Leading payment service providers have evolved from basic electronic wallets into broader financial ecosystems. For example, the number of registered users of the Click payment service exceeded 20 million in 2025 [37]. The sale of the HUMO payment system to Paynet for USD 65 million in January 2025 [38] also illustrates the increasing participation of the private sector in payment infrastructure.

The crypto-asset segment has likewise developed into a formally regulated market. The National Agency of Perspective Projects is responsible for licensing and supervising service providers operating in this sector. From 1 January 2026, a special legal regime was introduced to regulate the circulation of stablecoins as a means of payment [7]. The relevant procedures were subsequently established through a regulation approved by a joint resolution of the Agency and the Central Bank [11].

On the demand side, according to Global Findex 2025 data, the proportion of adults in Uzbekistan holding an account at a financial institution increased from 44.1% in 2021 to 59.7%. Nevertheless, this figure remained below the global average of 79% [24, 41].

Different sources report varying estimates of digital payment adoption. According to the Global Findex survey, 49.9% of adults had made or received a digital payment [41], whereas an analysis by the Asian Development Bank, based on Central Bank data, reported a corresponding figure of 72% [32]. This difference may be associated with variations in survey periods and methodologies. In particular, as the Global Findex survey was conducted in 2024, it does not capture subsequent developments in digital payment adoption. Notably, account ownership among women, at 60.7%, was slightly higher than among men, at 58.5% [41].

Beyond payment services, however, the adoption of other digital financial services remains at a comparatively earlier stage. According to Global Findex data, the proportion of adults saving through formal financial institutions increased from 2.6% to 9.2% [24, 41]. In the 2025 data cited by the Asian Development Bank, the corresponding figure was 7.4%. The same source indicated that nearly half of the population kept savings in cash at home, while 39% did not save at all [32].

The decline in the share of cash in the money supply from 21.5% on 1 January 2024 to 19.2% on 1 January 2025 [20] is also consistent with the expansion of non-cash payment practices.

According to the assessment criteria presented in Table 1, the digital payment adoption rate of 72% exceeds the 50% threshold and therefore corresponds to the “late majority” stage. Accordingly, the usage dimension was assigned Level 4.

The infrastructure and supply dimension was assessed at Level 3. Although 103 FinTech companies and 47 payment organisations were operating in the market, the availability of providers in the investment technology and InsurTech segments remained comparatively limited.

The institutional environment dimension was also assigned Level 3. The legislation governing payment systems, the regulatory sandbox and Resolution No. PQ-359 provide an institutional foundation for FinTech development, although a comprehensive data-driven regulatory framework has not yet been fully established.

Consequently, the overall FinTech penetration score was calculated as follows:

$(4 + 3 + 3) / 3 = 3.3$, rounded to Level 3 (developed).

If the Global Findex estimate of 49.9% is used instead, the usage dimension is assigned Level 3. However, the overall assessment remains unchanged:

$(3 + 3 + 3) / 3 = 3$, corresponding to Level 3 (developed).

This indicates that the final classification is not sensitive to the choice between these two data sources.

Nevertheless, substantial differences remain across individual financial service segments. The proportion of adults saving through formal financial institutions, at 9.2%, falls within the 2.5–16% range and therefore corresponds to the “early adopters” stage (Level 2). Investment platforms and InsurTech services also remain at an early stage of development [38].

Since RegTech solutions are primarily used within the internal processes of financial institutions, direct statistical data on their adoption are not readily available. Accordingly, this area was assessed through four core RegTech functions: electronic Know Your Customer (eKYC) procedures, anti-money laundering and anti-fraud monitoring, automation of regulatory reporting, and regulatory change management.

The most advanced level of development was observed in remote customer identification. According to the Central Bank of Uzbekistan, as of 1 January 2025, Face ID technology was used by 28 commercial banks and 15 payment organisations. The number of customers who completed digital identification through the mobile applications of banks and payment organisations increased by 5.4 million over the preceding year, reaching 12.2 million [18].

Furthermore, the MyID identification platform had been integrated with 28 banks and 16 payment systems, with more than 60 million verification procedures conducted through the platform [38]. These indicators measure

different aspects of digital identification: the former represents the number of identified customers, whereas the latter reflects the total number of verification procedures. Taken together, they indicate that eKYC solutions have been widely adopted across the core banking system.

The Central Bank's regulation on information security and cybersecurity in payment systems, registered with the Ministry of Justice on 21 May 2024 under No. 3513, established requirements for two-factor authentication and access controls for confidential information [12].

In the area of anti-fraud and anti-money laundering monitoring, technological adoption has been driven primarily by regulatory requirements. The Law "On Combating the Legalisation of Proceeds from Criminal Activity, the Financing of Terrorism and the Financing of the Proliferation of Weapons of Mass Destruction" [1] requires financial institutions to maintain internal control systems.

Practical outcomes have also been reported. In 2024, following complaints submitted by citizens, UZS 9.5 billion associated with bank card fraud cases was blocked, while the processing of online loans was prevented in 28,138 cases involving a total of UZS 304.1 billion [18].

In September 2026, the Central Bank submitted draft unified requirements for anti-fraud systems used by banks, payment systems and FinTech services for public consultation. The draft envisages real-time identification of suspicious transactions and the application of scoring models based on machine learning and artificial intelligence [27].

Publicly available information on the automation of regulatory reporting and regulatory change management remains limited. In the academic literature, technological solutions in these areas, including the introduction of the eXtensible Business Reporting Language (XBRL) standard, have primarily been discussed as proposals rather than established practices [30].

A specialised domestic market for RegTech providers is also still developing. RegTech functions are predominantly implemented through banks' internal technological solutions or complementary products offered by FinTech companies.

Overall, RegTech development in Uzbekistan has been shaped primarily by regulatory requirements rather than independent market demand.

The usage dimension was assessed separately for each of the four core functions. Since Face ID technology was used by 28 of the country's 36 commercial banks, representing approximately 78%, the eKYC function was assigned Level 4 [18, 22].

Anti-money laundering and anti-fraud monitoring was assigned Level 3, reflecting its mandatory status under national legislation and the availability of documented practical outcomes.

For regulatory reporting automation and regulatory change management, publicly available evidence of implementation remains limited, while relevant solutions are primarily discussed at the proposal stage. Consequently, each of these functions was assigned Level 1.

The average score across the four RegTech functions was calculated as follows:

$$(4 + 3 + 1 + 1) / 4 = 2.25, \text{ corresponding to Level 2.}$$

The infrastructure and supply dimension was assigned Level 2, reflecting the early stage of development of a specialised domestic RegTech provider market. The institutional environment dimension was assessed at Level 3, as anti-money laundering requirements are established in national legislation.

Accordingly, the overall RegTech penetration score was calculated as follows:

$$(2 + 2 + 3) / 3 = 2.3, \text{ rounded to Level 2 (emerging).}$$

According to the classification developed by the Bank for International Settlements (BIS) [17], supervisory processes in Uzbekistan predominantly correspond to second-generation SupTech. At this stage, data collection and processing are partially automated, while supervisory reporting continues to operate largely on a periodic basis.

The pilot introduction of a centralised anti-fraud service by the Central Bank represents an initial practical step towards incorporating elements of third-generation SupTech. By the end of 2024, 34 banks and 9 payment organisations had been connected to this service [18].

During 2025–2026, the development of SupTech became a distinct priority within government policy. Presidential Resolution No. PQ-359 of 27 November 2025 provided for the introduction of open banking by 1 September 2026, including secure and standardised data exchange among banks, payment organisations and FinTech market participants [7].

The National Strategy for the Development of Financial Technologies for 2026–2030, approved by the Central Bank in September 2026, envisages the application of artificial intelligence to detect financial crimes, automated data collection through application programming interfaces (APIs), and the monitoring of operational incidents within supervisory processes [21].

If these measures are fully implemented, supervisory practices could gradually transition from periodic reporting towards continuous data collection, corresponding to third-generation SupTech.

A comparison with neighbouring Kazakhstan provides additional context for assessing Uzbekistan's progress in this area. The National Bank of Kazakhstan is transitioning the supervision of the digital asset market and payment organisations towards a unified intelligent SupTech platform.

The platform encompasses the maintenance of registers and profiles of supervised entities, analysis of regulatory reports, blockchain analytics and automation of supervisory procedures. From the second half of 2026, the supervisory cycle is scheduled to be conducted through this system [34].

In Uzbekistan, comparable initiatives are currently reflected primarily in strategic planning documents.

Accordingly, the SupTech usage dimension was assigned Level 2, corresponding to the second generation of supervisory technologies.

The infrastructure and supply dimension was also assessed at Level 2, as the centralised anti-fraud service operates on a pilot basis, while API-based data collection remains at the planning stage.

Similarly, the institutional environment dimension was assigned Level 2. Although the FinTech development strategy has been approved and a deadline for introducing open banking has been established, a dedicated regulatory framework for supervisory technologies has not yet been fully developed. This corresponds to the Level 2 criterion presented in Table 1.

The overall SupTech penetration score was therefore calculated as follows:

$(2 + 2 + 2) / 3 = 2.0$, corresponding to Level 2 (emerging).

The chronology of regulatory framework development presented in Table 3 provides further insight into the institutional factors underlying the differences in the development of FinTech, RegTech and SupTech (Table 3).

Table 3.

Key regulatory legal acts in the field of Fintech, Regtech and Suptech³

Year	Document or measure	Area
2004	Law on Combating the Legalization of Proceeds from Crime and the Financing of Terrorism (660-II)	Requirement for Regtech
2018	PQ-3832 "On Measures for the Development of the Digital Economy and the Circulation of Crypto-Assets in the Republic of Uzbekistan"	Fintech
2019	Laws "On Payments and Payment Systems" (O'RQ-578) and "On Personal Data" (O'RQ-547)	Fintech, Regtech
2020	PF-5992 "On the Strategy for Reforming the Banking System of the Republic of Uzbekistan for 2020-2025"	Fintech
2022	Central Bank regulatory sandbox; Law on Microfinance (O'RQ-765)	Fintech
2025	PQ-359: innovation hub, USD 50 million venture fund, open banking [7]; PF-246: mandatory shift of certain payments to non-cash form from 1 April 2026	Fintech, Suptech
2026	Regulation on the special legal regime for stablecoins; Fintech Strategy 2026-2030; draft anti-fraud requirements and draft regulatory sandbox regulation	Fintech, Regtech, Suptech

The table indicates that the regulatory documents adopted between 2019 and 2022 were primarily aimed at establishing the institutional foundations of the FinTech market, including the licensing of payment organisations, personal data protection and the testing of innovative financial services. By contrast, RegTech and SupTech emerged as distinct areas of regulatory policy during 2025–2026.

The draft regulation on the regulatory sandbox, submitted by the Central Bank for public consultation in September 2026, envisages three tracks: innovation, acceleration and technology partnership. It also requires applicants to provide information on the measures implemented to ensure cybersecurity and personal data protection [26]. These developments indicate an increasing emphasis on risk management alongside the continued expansion of the financial technology market.

Development targets for the financial technology sector have also been established for the period up to 2030. Under Presidential Resolution No. PQ-359, the planned measures include increasing the number of FinTech market participants to at least 200, attracting USD 1 billion in investment into start-ups, supporting 100 start-ups through acceleration and incubation programmes, and providing training opportunities for at least 5,000 young people [7]. The findings of the preceding analysis are summarised in Table 4.

3 Source: compiled by the author based on [1-9, 11, 21, 26-27].

Table 4
Level of penetration of Fintech, Regtech and Suptech technologies
into the financial sector of Uzbekistan (scale of 1-4)⁴

Technology	Usage	Infrastructure and supply	Institutional environment	Overall level
Fintech	4 – digital payments ~72%; mobile banking transactions UZS 646 trillion	3 – 103 Fintech companies, 47 payment organizations	3 – law on payments, regulatory sandbox, PQ-359	3 (3.3) – developed
Regtech	2 – average of functions 2.25: eKYC – 4, AML – 3, reporting – 1, change management – 1	2 – local provider market not yet formed	3 – AML requirements, draft anti-fraud rules	2 (2.3) – emerging
Suptech	2 – second-generation Suptech; anti-fraud service in pilot mode	2 – API-based data collection planned	2 – Fintech Strategy 2026-2030, open banking; no dedicated supervisory requirements	2 (2.0) – emerging

The integrated assessment supports the “three speeds” hypothesis proposed in this study. FinTech is approximately one development stage ahead of RegTech and SupTech. However, the distribution of scores across the three assessment dimensions also reveals distinct patterns.

In FinTech, the usage dimension (Level 4) exceeds the institutional environment dimension (Level 3), indicating that market adoption has progressed more rapidly than the development of the corresponding regulatory framework. By contrast, in RegTech, the institutional environment (Level 3) is more advanced than usage and infrastructure (both Level 2), reflecting the establishment of mandatory regulatory requirements ahead of their broader practical implementation. In SupTech, all three dimensions are assessed at Level 2, indicating that both technological implementation and the dedicated regulatory framework remain at an emerging stage of development.

First, the identified differences in development have both theoretical and practical significance. According to Arner and co-authors, RegTech represents a response by regulators and market participants to the emerging risks associated with financial innovation [13]. In Uzbekistan, the development of risk management technologies has progressed at a more gradual pace than the expansion of digital payment services.

According to the Ministry of Internal Affairs, the number of crimes committed using information technologies increased approximately 68-fold, from 863 cases in 2019 to 58,800 in 2024. Their share of total recorded crime rose from 6.2% in 2023 to 44.4% in 2024, while the amount of funds stolen from citizens exceeded UZS 1.9 trillion [23]. These developments highlight the practical relevance of the cybersecurity risks identified by the Financial Stability Board (FSB) as significant risks associated with FinTech development [28].

Second, the analysis indicates that RegTech development in Uzbekistan has been driven primarily by regulatory initiatives rather than independent market demand. This approach can facilitate relatively rapid implementation of essential compliance mechanisms, although it also presents certain developmental challenges.

Financial institutions may perceive RegTech primarily as a mandatory compliance expenditure rather than as a potential source of competitive advantage, which can influence the pace at which a specialised domestic provider market develops. The issue of regulatory fragmentation discussed by Bagherifam and co-authors [19] is also relevant to Uzbekistan, where the FinTech and crypto-asset sectors fall under the regulatory responsibilities of two separate authorities: the Central Bank and the National Agency of Perspective Projects.

Third, the development of SupTech is closely interconnected with the expansion of FinTech infrastructure. Standardised application programming interfaces (APIs) and data formats developed for open banking could also provide supervisory authorities with access to more granular financial data.

Such infrastructure could enable Uzbekistan to accelerate the transition through the intermediate stages described by di Castri and co-authors and progress towards third-generation SupTech [25]. Kazakhstan’s experience [34] provides an example of how this transition can be pursued within a relatively short period.

Finally, financial inclusion indicators, including an account ownership rate of 59.7% and a formal savings rate of 9.2%, indicate that FinTech adoption remains concentrated primarily in payment-related services.

⁴ Source: developed by the author

As Philippon emphasises, the principal economic value of FinTech lies in its potential to reduce the costs of financial intermediation [35]. In Uzbekistan, opportunities to realise this potential more extensively within the savings and lending segments remain substantial.

Furthermore, FinTech activities are predominantly concentrated in Tashkent, while Kazakhstan maintains a higher share of non-cash settlements than Uzbekistan [27]. Consequently, differences in the depth of technology penetration are evident not only across financial service segments but also between regions.

CONCLUSION AND RECOMMENDATIONS

The findings of this study demonstrate that FinTech, RegTech and SupTech technologies have reached different levels of adoption within Uzbekistan's financial sector. FinTech, particularly in the payment services segment, has achieved widespread adoption. RegTech has been implemented to a more limited extent, primarily through remote customer identification and anti-fraud solutions, while SupTech is approaching the transition from the second to the third generation of supervisory technologies.

In the case of RegTech, the development of the regulatory framework has progressed more rapidly than practical implementation. For SupTech, strategic priorities have been established, while the development of dedicated supervisory requirements remains at an emerging stage. Presidential Resolution No. PQ-359 and the Financial Technology Development Strategy for 2026–2030 provide an institutional foundation for accelerating progress in both areas in the coming years.

Based on the identified differences in technological development, the following recommendations are proposed.

1. Developing the domestic RegTech market. It is recommended that the technology partnership track of the Central Bank's regulatory sandbox be used to support RegTech providers. In addition, a dedicated track for RegTech and cybersecurity start-ups could be established within the venture fund created under Presidential Resolution No. PQ-359.

2. Transitioning towards data-driven regulatory reporting. It is proposed to align the application programming interface (API) standards being developed for open banking with supervisory reporting requirements and to introduce machine-readable reporting formats, such as eXtensible Business Reporting Language (XBRL), on a phased basis.

3. Expanding the centralised anti-fraud service to full-scale operation. It is recommended that all banks and payment organisations be connected to the centralised anti-fraud service, that information exchange on fraud cases be made mandatory, and that real-time transaction verification be supported by artificial intelligence-based scoring models.

4. Improving financial technology statistics. It is recommended that the Central Bank regularly publish indicators reflecting the development of FinTech, RegTech and SupTech. These should include the number of unique digital service users, the proportion of accounts opened through electronic Know Your Customer (eKYC) procedures, and indicators measuring the effectiveness of anti-fraud systems.

5. Strengthening coordination between regulatory authorities. Establishing unified data exchange mechanisms and harmonised supervisory approaches between the Central Bank and the National Agency of Perspective Projects is particularly important, especially in the context of the special legal regime governing stablecoins.

Overall, technological development within Uzbekistan's financial sector has progressed at different rates. Customer-facing financial technologies have achieved widespread adoption, while risk management and supervisory technologies are continuing to develop. This difference in the pace of adoption has coincided with an increase in recorded cybercrime, highlighting the importance of further strengthening technological risk management and supervisory capabilities.

The proposed four-level assessment scale provides a framework for evaluating FinTech, RegTech and SupTech against unified criteria and monitoring their development over time.

Promising directions for future research include conducting surveys of financial institutions to examine the adoption of RegTech solutions and empirically evaluating the impact of open banking following its implementation.

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