

## THE IMPACT OF FINANCIAL TECHNOLOGIES ON THE TRANSFORMATION OF THE FINANCIAL INDUSTRY AND INCREASING ECONOMIC EFFICIENCY

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### Abstract

The process of continuous structural changes in the financial system based on the principles of innovative technologies has a significant impact on the composition and quality of products and services, which is reflected in international practice. The study of the characteristics of financial technologies in the national economy, their impact on the functioning of the global and domestic financial system, the main technological directions and indicators of the financial technology industry market, and the measures and goals developed in Uzbekistan in this regard are among the urgent issues.

**Keywords:** Financial technologies, FinTech-industry, neobank, RegTech, Embedded Finance, insurance technologies.

### Introduction

Learning about international advances in digital technologies will lead to a high level of quality in the financial services sector of the national economy, which will help address issues related to the development of innovative financial technologies. Advanced financial technology solutions will improve the efficiency of the financial sector and at the same time generate higher revenues. Such solutions are based on innovations and digital technologies in the automation of repetitive processes related to data processing and storage, communication and financial services for private and corporate consumers.

The mutual integration of finance and technology, including tools and platforms using modern technologies, is an innovative process in optimizing financial services.

In turn, financial technologies (FinTech) provide an opportunity to optimize various costs and improve the quality of services and operations. The growth of the e-commerce market, the widespread use of the Internet, including mobile devices, directly support the main factors influencing the development of the technical base for providing services, improving the banking system and increasing the return on investment. All this implies the digital transformation of individual processes and services, as well as optimization of the timing of the provision of financial services. As a result, on the one hand, it becomes possible to perform the necessary operations regardless of time and space factors, and on the other hand, it becomes possible to reduce various costs and simultaneously improve the quality of service.

FinTech technologies enable financial institutions to process and analyze large volumes of data to provide quality services to clients, increasing the efficiency of internal and external management. In particular, the implementation of artificial intelligence systems and analytical



systems that process big data will be very effective, helping credit institutions to more accurately assess risks, review contracts faster, and determine creditworthiness to make the right decisions.

A separate trend in the development of FinTech is the development and implementation of new products and services that fully take into account customer demand in the digital economy. Today, financial management services are provided through mobile applications that allow you to control expenses and plan a budget, and the volume of money transfers and instant payments on the Internet is growing rapidly. FinTech is an integral part of the modern banking sector, and its importance will only increase in the future.

### Literature Review

In world practice, the potential for innovation and the use of new technologies as a result of ongoing processes of transition to a global knowledge economy that transforms knowledge and scientific discoveries into products are considered as the main factors in the growth of local, national and global economies [9].

FinTech provides financial services using big data, artificial intelligence and machine learning, robotics, blockchain, cloud technologies, biometrics and other innovative technologies.

The early era of financial technology was associated with the creation of methods for transmitting information via radio, telephone and telegraph, which reduced the time spent on transmitting information and making management decisions on financial assets from several weeks to several hours, which was the initial factor in increasing the efficiency of organizing operations in the financial market [7].

Modern fintech and small innovative business emerged in the 21st century in connection with the development of start-ups that began to form alternative banking instruments and services to fill a gap in the financial market or manage financial assets. The introduction of the P2P lending service by Zopa, the world's first non-bank lending company in the UK, was the first step in the development of this sector [11].

FinTech is associated with advanced technological development and is a product of the new world order formed as a result of the movement of scientific and technological progress in the socio-economic system. However, FinTech is not an unambiguous product of technological development, since it develops through alternative devices of financial market actors after society first satisfies its initial needs with the help of new technologies [12].

Thus, FinTech is, on the one hand, a set of technologies used by financial market participants to improve the efficiency of transactions with financial assets, and on the other hand, a new institutional player uniting technologically advanced financial businesses as a direct competitor to traditional financial market participants.

In particular, the emergence of FinTech as an independent market entity is due to the lack of the ability of traditional participants, primarily banks, to timely apply and implement innovative technologies that lead to increased efficiency in managing financial assets while reducing transaction costs during operations, as well as to fully monitor the trends of the new era [13].

From a business perspective, FinTech is a group of IT businesses that develops products and services that enable financial institutions to increase their competitiveness and business activity in the financial market [4].

Fintech is a group of technologies created on the basis of digital technologies to improve the efficiency and security of work with financial assets [2]. It is an independent participant in the financial market and focuses its main activities on the implementation of advanced digital technological practices in the field of financial asset management [14].

FinTech is a new business in the 4IR<sup>1</sup> direction, created as an independent alternative to traditional financial businesses (for example, banks) through the complete digitalization of economic relations in transformation processes as a mechanism for increasing efficiency with the development of the digital economy [3]. In economic practice, FinTech deeply penetrates the traditional financial business sector, and neobusiness is becoming an increasingly important supplier of digital technologies and services for traditional financial market participants [10].

FinTech in the practice of the financial market of Uzbekistan is an independent participant in the financial market, developing products and services offered by traditional actors (banks), and is considered to represent a group of neo-businesses using advanced digital technologies to manage financial assets.

### Research Methodology

Scientific works of foreign and domestic economists devoted to the specifics of the research area were studied. The research methodology used was a comparative analysis of literature, logical and structural analysis, statistical and dynamic methods, grouping, economic-statistical analysis and comparative analysis, formal-logical methods of sample observation.

### Analysis and discussion of results

FinTech is based on the use of new technologies such as specialized software applications, artificial intelligence and big data to make financial services easier and more efficient for businesses and consumers. The global FinTech market is constantly growing due to the transformation of traditional financial services as a result of technological advances, and this industry includes mobile banking, payment technologies and investment programs.

In our opinion, it is more correct to consider financial technology as an integrated industry that intensively uses a group of technologies consisting of computer and Internet technologies in order to provide quality financial services and improve the overall efficiency of the financial asset management process.

Considering that more than half of the world's population does not have access to traditional banking services, the level of development and implementation of FinTech technologies in global practice is at an early stage, and the implementation of these technologies will open up qualitatively new opportunities in the field of financial services, while accelerating the processes of transformation of these solutions.

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<sup>1</sup> 4IR is an acronym for the fourth industrial revolution, Industry 4.

**Neobanks** are digitally enabled financial institutions that provide their services through mobile and/or web applications. These banking institutions offer services to customers without having physical offices, branches, or outlets. Neobanks can pay high interest rates on deposits and charge very low transaction fees for financial transactions by minimizing infrastructure costs. Since many people around the world are not covered by modern financial services, neobanks are becoming increasingly important in serving them. Today, the world leaders in this field are PayPal, Square, and Alipay.

According to a Fortune Business Insights report, the global neobanking market, valued at US\$98.4 billion in 2023, grew by 45.6% in 2024 to reach US\$143.29 billion. In 2025, this figure will be US\$210.16 billion, and by 2032, it will reach US\$3406.47 billion with a CAGR of 48.9% [9].

**RegTech** (regulatory technology) is the application of new technologies to improve the management of enterprises and ensure timely compliance with regulatory requirements. RegTech is based on compliance management and involves the automation and optimization of compliance processes, such as monitoring changes in the regulatory environment, assessing risks, and ensuring compliance with applicable laws and regulations. RegTech solutions enable organizations to proactively manage their compliance obligations, reducing the risk of fines associated with non-compliance.

RegTech solutions provide real-time updates on regulatory changes and provide early warning of various events. Valued at \$1 billion in 2022, the global market value of this technology is expected to reach \$66.9 billion in 2032, growing at a CAGR of 22.6% from 2023 to 2032. The major leading companies in the global market include ComplyAdvantage, Trunomi, ClauseMatch, Elliptic, and Behavox.

**Artificial intelligence** (AI) as a software package is distinguished from other software systems by its unique learning and adaptation capabilities, autonomous decision making, understanding of the content of complex problems, cognitive functions, natural language processing, predictive analysis, multimodality and interdisciplinary capabilities.

The global artificial intelligence market value reached \$17 billion in 2024 and is expected to grow at a CAGR of 17 percent until 2033, reaching \$70.1 billion in 2033. The global market leaders are JPMorgan Chase, Goldman Sachs and Nubank.

**Embedded Finance** is the integration of financial services such as payments, lending or banking into non-financial offerings. It allows users to seamlessly access financial services using the tools they already use. It is the integration of financial services (such as credit products) into non-traditional financial platforms such as marketplaces, social networks or gaming apps via APIs.

However, the development of Embedded Finance requires financial institutions to have high-level technologies, provide services in full online mode and quickly integrate with partners. A

2 Forecast figures are based on information from [www.fortunebusinessinsights.com/](http://www.fortunebusinessinsights.com/)



special feature is the availability of a set of all necessary financial services for reporting in a closed information system, as well as for paying taxes and other fees.

Remote banking will not disappear completely, but a significant part of the revenue streams from transactions will flow into the embedded finance sector. In particular, the global market value is estimated at \$ 63.2 billion in 2023 and is expected to reach \$ 291.3 billion in 2033, increasing by an average of 15.8% per year from 2023 to 2033. In world practice, Amazon, Shopify, Apple, Stripe and Plaid are considered leaders in this field. It is expected that the development of embedded finance in Uzbekistan will lead to great success in the coming years.

**Blockchain technology** is an advanced database mechanism that enables open data exchange in a business network, where the database stores data in blocks linked together in a chain and there is no centralized storage center. Today, the application of this technology is directly related to the development of the digital economy, and its scope of application is limitless.

The structure of blockchain technology is based on certain principles, such as the absence of data centralization in a single center, confirmation and storage of information about all transfers on all computers connected to the system, storage of all transfers in the form of block chains and simultaneous availability of information about transfers for all users, confirmation of all transfers with an electronic digital signature, the use of 32-bit abstract numbers as user addresses, the use of a special consensus protocol and various algorithms for conducting transactions on the blockchain without intermediaries, as well as the possibility of more efficient implementation of digital currencies backed by fiat money.

The FinTech blockchain volume is expected to grow to \$31.84 billion in 2029, with a CAGR of 46.92% from 2024 to 2029. The leaders in this technology in the global market are Coinbase, Ripple, Binance, Kraken, and Gemini.

**Open Banking** - is a group of Internet banking methods based on the use of open banking protocols and providing advanced capabilities with a guaranteed level of user data protection. Open banking is a financial services model that completely changes the way financial data is exchanged and accessed, allowing external developers to access financial data from traditional banking systems through application programming interfaces (APIs). The global market size is expected to reach \$135.17 billion by 2030, with a compound annual growth rate of 27.2% from 2023 to 2033. Plaid, Revolut, HSBC, Barclays, BBVA are considered to be companies with particularly high potential.

**BNPL-услуги** (buy now, pay later - купи сейчас, заплати потом) — это сервис, позволяющий совершать рассрочку платежей за покупки у партнеров, не прибегая к стандартным кредитным продуктам банков и микрофинансовых организаций. Поскольку этот метод не требует от покупателя кредитной истории, эта информация не видна кредитным бюро. Поставщик услуг подчеркнет это как преимущество.

Основной доход BNPL-услуги формируется за счет комиссий, получаемых от предприятий. Возможность купить сейчас, а заплатить позже увеличивает объем продаж и, соответственно, доход и оборот предпринимателя. Обычно предприятия платят 4–6





процентов от покупной цены за услуги BNPL. Стоимость этой отрасли на мировом рынке оценивается в 14,55 млрд долларов в 2024 году и достигнет 80,2 млрд долларов к 2034 году. Она будет расти со среднегодовым темпом 21,8% в период с 2024 по 2034 год. Основными игроками на мировом рынке в этой области являются Klarna, Afterpay, Affirm, Zip и Sezzle.

**BNPL-services** (buy now, pay later) - are a service that allows you to make installment payments for purchases from partners without resorting to standard credit products of banks and microfinance organizations. Since this method does not require a credit history from the buyer, this information is not visible to credit bureaus. The service provider will highlight this as an advantage.

The main income of the BNPL service is formed by commissions received from businesses. The ability to buy now and pay later increases sales volume and, accordingly, the entrepreneur's income and turnover. Typically, businesses pay 4-6 percent of the purchase price for BNPL services. The value of this industry on the global market is estimated at \$ 14.55 billion in 2024 and will reach \$ 80.2 billion by 2034. It will grow at an average annual rate of 21.8% from 2024 to 2034. The main players in the global market in this area are Klarna, Afterpay, Affirm, Zip and Sezzle.

**Insurtech** is a digital technology that enables effective interaction between a company and its clients when providing insurance services, allowing both parties to rationally use time and financial resources. Fintex provides a wide range of methods, solutions and innovations that allow clients to manage their funds in various areas. Fintech focuses on innovations that solve specific problems in the insurance industry.

In international practice, with the development of the digital economy, the following innovative technologies are considered the main development trends in the field of insurance technologies:

- 1. Embedded insurance (InsurTech).** This model, which integrates insurance directly into products or services, takes insurance beyond the traditional point of sale of the provider. Insurance becomes an integral part of the purchase process for the client, and not just signing a contract.
- 2. Application programming interfaces (APIs) and digital ecosystems.** These platforms enable the creation of comprehensive and personalized insurance solutions, enabling seamless data exchange and collaboration between insurers, technology companies, and other service providers.
- 3. Automation and virtualization of active processes.** Digital twins are unique for assessing insurance risks and managing claims.



**4. Self-service portals.** As the level of digital transformation increases, the lack of a convenient customer portal significantly increases the likelihood of customers leaving for another company.

**5. AI for predictive analytics and underwriting.** Artificial intelligence and machine learning algorithms allow insurers to analyze large volumes of data from various sources, including wearables and social media, to create more accurate risk profiles.

**6. Improving cybersecurity risk assessment.** The digital transformation of all sectors of the economy requires increased security against cyber threats, which creates both challenges and opportunities for the insurance industry.

**7. Repetitive Process Automation (RPA):** It typically uses intelligent software to handle time-consuming and repetitive customer tasks.

**8. Voice control technologies in insurance.** Such tools significantly improve the customer experience. Users can access and change their policies using voice commands.

**9. Low code/no-code technologies.** These tools help organizations build and deploy applications without extensive programming knowledge.

**10. Drones and robotic insurance technologies.** Drones are being developed for aerial photography of real estate properties to collect information to create fully descriptive images and more accurate risk assessments, allowing for real-time insurance event research.

While global InsurTech funding levels in the international market will be relatively stable in 2024, the revenue generated will grow at a CAGR of 45.6% through 2030, from \$22.1 billion in 2023 to \$306.5 billion by 2030. Companies like Lemonade, Hippo, Root Insurance, Wefox and Trov are currently leading the way in providing such technologies.

FinTech combines finance and technology to make financial transactions more convenient, efficient, and attractive. The main goal of FinTech is to make financial services more accessible to all segments of the population. In particular, this allows for the expansion of the geographical coverage of financial services by reducing various difficulties and barriers to access to credit, investment, and other financial services in developing countries where a significant portion of the population does not have access to traditional banking services.

The development of the AI sector in the Republic of Uzbekistan and its widespread implementation in the industry is considered a strategic issue and will be continuously developed until 2030 based on measures developed by the government, including increasing the volume of software products and services created on the basis of artificial intelligence to 1.5 billion US dollars; increasing the share of services provided on the basis of artificial intelligence on a single portal of interactive government services to 10%; the number of scientific laboratories working in the field of artificial intelligence will be increased to 10, and powerful computing servers will be launched; one of the main goals is to ensure that the



Republic of Uzbekistan is among the top 50 countries in the Government AI Readiness Index [1].

At the initiative of leading experts in the field of financial technologies of Uzbekistan, a non-governmental non-profit organization, the FinTech Association, was created in 2022, which is a unique platform for constructive dialogue between regulators and mobile businesses. As part of its support, advanced expert technologies are being developed, as well as concepts of financial technologies and approaches to their implementation, taking into account international experience.

Retail trade networks in Uzbekistan offer customers a deferred payment for products. As a result of the participation of financial institutions in this process, developing their own tools in 2019-2020, the total gross product turnover (GMV) in the BNPL and POS financing market - loans issued directly at points of sale - amounted to 450-500 million US dollars in 2023.

Retail chains in Uzbekistan offer customers a deferred payment for products. As a result of the participation of financial institutions in this process, developing their own instruments in 2019-2020, the total gross product turnover (GPT) in the BNPL and POS financing market - loans issued directly at points of sale - amounted to 450-500 million US dollars in 2023.

It should be noted that in order to regulate BNPL services based on credit rules, it would be advisable for the central bank to introduce an obligation for banks to send all information to credit bureaus.

In Uzbekistan, the Alif Nasiya and Uzun Nasiya services account for two-thirds of the payment system market. Alif Uzbekistan received \$5 million from the British fund Cur8 Capital to develop its Alif Nasiya installment payment service, and Uzun received more than \$100 million, which was used, among other things, to finance lending to unsecured individuals and installment products.

According to a study conducted by KPMG KPMG Caucasus and Central, in 2022, the total share of non-cash payments and transfers amounted to 58 percent of Uzbekistan's gross domestic product, and the market turnover amounted to \$36.2 billion, of which 29 percent will come from payment organizations. By 2027, the turnover in the non-cash transactions market is projected to more than double, and their total volume will be in the range of \$107–125 billion<sup>3</sup>.

The number of fintech startups in Uzbekistan has grown significantly: in 2023, \$2.75 million was invested in fintech startups, indicating that this sector is becoming the leading one in attracting venture capital in the country. Today, the FinTech market in Uzbekistan is developing relatively freely, creating favorable conditions for startups and the introduction of new products. The fact that fintech in Uzbekistan is at an early stage of development compared to developed markets gives entrepreneurs the opportunity to gain a foothold in the local market [5].

Examples of successful products that can serve as models for startups in the FinTech sector in Uzbekistan include: Klik, Rayme, Oson, Paynet and Uzun — mobile payment systems offer

<sup>3</sup> Based on information from <https://www.spot.uz/ru/2024/05/02/fintech/> and [startupbase.uz/ru/news/overview-of-the-fintech-industry-opportunities-and](https://startupbase.uz/ru/news/overview-of-the-fintech-industry-opportunities-and)



the population of Uzbekistan convenient and secure ways to pay for goods and services using mobile devices.

*Uzcard and Humo* are leading organizations in the field of payment systems, implementing non-cash payments and transfers in the Uzbek market and can serve as a model for startups in the field of developing payment solutions.

*Insurance Market* is the first online platform in Uzbekistan for selling insurance services, where you can buy auto insurance policies online, including compulsory civil liability insurance policies for vehicle owners - CCLIPVO and voluntary CASCO insurance policies. Provides accident insurance services for trips abroad.

*IMAN and Alif* are Islamic finance startups in Central Asia. Alif is a technologically innovative neobank offering a wide range of financial services, including lending and payment solutions, taking into account Shariah principles. IMAN is a marketplace that connects sellers, buyers and investors based on the principles of Islamic finance.

*Jett startup* is an investment platform that unites brokers, fintech companies and retail investors, making the stock market more accessible to a wider audience in Uzbekistan. The fact that more than 70 percent of transactions on the Uzbek Stock Exchange are carried out through Jett confirms the platform's position in the local market. The platform increases the financial literacy of the population, improves the efficiency of relations between investors and joint-stock companies.

*Humans, Hambi and OQ* are multifunctional applications that combine various services on one platform. Among the super apps in the Uzbek market, Humans was the first to offer users mobile communication services, financial transactions without commission, a bank card and a cashback system.

In Uzbekistan, the FinTech sphere is developing rapidly and has great potential, there is a growing interest in the effective implementation of digital financial solutions, the main factors for this are the digitalization of financial services, the introduction of mobile payments, support for startups, optimization of the microfinance and lending system.

## Conclusion

FinTech technologies in global practice is at an early stage, and the implementation of these technologies will open up qualitatively new opportunities in the field of financial services, simultaneously activating transformation processes.

FinTech increases the efficiency of financial transactions by automating, simplifying and accelerating repetitive processes that require excessive time, effort and costs. Stimulates innovation in the financial sector, allowing the creation of new business models, services and products. The creation of new innovative technologies in itself opens up new opportunities for investment and financing.

Another key indicator is that FinTech increases competitiveness in the financial sector by bringing new players to the market, forcing traditional financial institutions to adapt and improve service quality. All traditional financial institutions are starting to implement technological innovations to meet customer needs and improve competitiveness in the market. Thus, FinTech, which has become the driving force of the digital economy, has a huge potential



to develop the financial industry, accelerate and improve its transformation, and improve the convenience, efficiency and transparency of financial services.

Addressing the following issues affecting the development of the digital economy will further increase the importance of financial technologies:

1. As a result of transparent market competition, innovative companies with greater flexibility and adaptability can successfully compete with the main players in the traditional market, while simultaneously reducing tariffs and stimulating the development of new products and services. In particular, this requires the banking sector to abandon less innovative activities that dominate its more conservative sectors.
2. The introduction of new technologies will reduce the cost of customer service by eliminating the need for large branches and will ensure electronic interaction between consumers and regulatory authorities, which in turn will lead to a reduction in the cost of financial services.
3. Improving the mechanisms for providing remote services to consumers based on innovative technologies will lead to a reduction in various barriers to entry into the services market and the creation of convenient access to services.
4. Increases the transparency of the economy and the effectiveness of measures to combat money laundering and terrorist financing. The main factors influencing the pace of development of the financial technology market in Uzbekistan are financing, technology development, government infrastructure and regulation, demand from the population and business, the activity of financial companies in providing FinTech services, as well as the availability of human capital. At the same time, the insufficient level of financial literacy of the population and the high level of regulation of the financial technology market by the Central Bank are the main problems in the development of a promising transformation of the financial system of Uzbekistan. In the medium term, the FinTech industry will continue to develop as a result of the increasing penetration of financial technologies into existing service markets and their expansion into international markets.

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