

ARTIFICIAL INTELLIGENCE AND BANKING: ENHANCING MARKET ADVANTAGE

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Abstract: *the article is devoted to the development and application of AI in the financial market, including the definition of AI, its types, main AI technologies and trends in their development. It also discusses the use of AI in certain sectors of the financial market, the conditions for the development of AI technologies, and the possible risks of introducing AI by financial organizations. Special attention is paid to a review of global trends in AI regulation.*

Keywords: *artificial intelligence, financial markets, finance, digital technologies, digital platform, online services*

Introduction. The banking sector, due to its penchant for using technological innovations, became one of the first sectors of the economy to actively implement artificial intelligence (AI) technologies. AI technologies are powerful tools for deep transformation of banking activities and provoke major shifts in the structure of financial markets and their regulation. The use of AI technologies is leading to radical changes in the business model of traditional banks, their corporate structure and competitive forces, as well as the emergence of completely new operating models, methods and tools for interacting with customers. Banks around the world, including Uzbekistan, are using AI to improve customer service and understand their needs, increase revenue, reduce operating costs and ultimately strengthen their competitive position in markets.

Taking into account this trend and in order to create favorable conditions for the accelerated implementation of artificial intelligence technologies and their widespread use in the country, on February 17, 2021, the Decree of the President of the Republic of Uzbekistan "On measures to create conditions for the accelerated implementation of AI technologies" No. PP-4996 was adopted. This document laid the legal foundation for the further development of AI technologies and determined its main directions. At the same time, the Research Institute for the Development of Digital Technologies and AI was created under the Ministry for the Development of Information Technologies and Communications, which is engaged in fundamental and applied scientific research in the field of AI, establishes cooperation and jointly implements projects with leading foreign innovation and scientific institutions, as well as issues of implementing AI technologies

in economic sectors. It is important to note for the further development of a favorable environment for the development of AI technology by the Decree of the President of the Republic of Uzbekistan dated August 26, 2021 No. PP-5234 "On measures to introduce a special regime for the use of AI technologies." The document is aimed at creating a favorable and optimal ecosystem for the development of innovative business models, products and methods of providing services based on AI technologies, their implementation and application in practice.

In recent years, the situation has changed dramatically - thanks to the development of technology, computing processors have become more efficient for data analysis, and their cost now allows them to be used not only in scientific research, but also in real business processes in various sectors of the economy [1].

Literature review. The intensive development of solutions based on artificial intelligence and neurotechnologies has led to an increasing demand for them from the state and business, including an explosive growth in venture capital investments in AI-based fintech startups. The term FinTech refers to technology-based financial innovations that create new business models, applications, processes or products with corresponding material impacts on financial markets and institutions and on the provision of financial services [2].

The impact of AI technologies on the transformation of the financial sector is discussed in many works. Deutsche Bank researchers in their report explore the process of transforming the traditional banking system into a digital ecosystem under the influence of new technologies [3]. The works [4, 5] discuss various types of business models of fintech projects. Article [6] is devoted to the study of trends in the formation of the global fintech market. The work [2] is devoted to the study of risk management in the fintech sector. The authors emphasize that for the sustainable development of fintech projects, it is necessary to minimize their possible negative impacts on consumers and investors. The work [7] also notes that the business models of fintech startups are not always consistent with the need for stability in the financial sector; in particular, innovations in payments can affect the stability of the infrastructure of financial systems.

Research methods. The methodological basis of the study is an institutional approach to managing the development of artificial intelligence technology, including analysis and practical generalization of the essence. An analysis and synthesis method was used, with the help of which the management structure of artificial intelligence technology was analyzed, as well as the growth rate of real total income of the population in a regional context.

Analysis and results. Today, AI is already widely used by financial market participants in various business processes: for interaction with clients, risk management, analytics, monitoring and transactions, and so on. At the same time, the potential for

further expansion of the use of AI by financial institutions appears significant. AI can improve the efficiency of financial institutions and the quality of services they provide. Nevertheless, the intensive development of AI technologies, especially in terms of generative AI, creates not only new opportunities, but also carries certain challenges and risks, and therefore, on the one hand, it is necessary to create conditions for the development of AI technology, and on the other, to determine directions of regulation development.

Until recently, the market relied primarily on traditional AI solutions. However, recently the capabilities of computer data processing and computing power have increased significantly, which has created conditions for the active development and application of generative AI. Currently, solutions using traditional AI are most widespread in the financial market. Such models have been improved so much that in some cases they can be used without the involvement of highly specialized experts. AI is gradually becoming a general-purpose technology and is capable of transforming business processes and market practices of financial organizations (Table 1).

Table 1

Using of AI in financial organizations

Application area	Application	AI type
First line: front office	Chatbots	AI algorithms based on natural language processing
	Smart Marketing Tools	AI algorithms with deep learning elements for generating personalized offers
	Algo trading, investment consulting and asset valuation	AI algorithms based on regression models for assessing indicators
Second line: checking and processing operations	Scoring	Applications based on AI algorithms for credit scoring, available also to clients
	Confirmation of transactions, processing of documents	AI algorithms connected to payment information and risk management for instant decision making
Third line: operational accounting	Transaction monitoring	AI algorithms capable of tracking suspicious transactions in real time and alerting users
General	Software development, optimization	End-to-end service function for business processes

Source: Application of artificial intelligence in the financial market. Report for public consultation. Bank of Russia. Moscow, 2023 [8].

One of the main areas of use of AI in the financial market is scoring, which allows financial organizations to more accurately segment clients into homogeneous groups, determine their needs and risk profile. AI-driven credit scoring systems can be fully automated and offer instant decisions based on analyzed data, complementing traditional scoring methods. For example, analyzing utility bill payments allows you to add new variables to your credit scoring model and more accurately calculate a credit score for customers who have insufficient credit history. This approach creates the conditions for creating a more comfortable ecosystem for clients, where they have access not only to individual personalized products, but also to comprehensive financial services proactively focused on their needs. “Smart” scoring based on AI makes it possible to effectively use not only financial information, such as credit history or disposable income, but also other so-called alternative data about the client: financial habits, geolocation, information from social networks, and so on (Fig. 1).

One of the first successful AI applications to gain widespread adoption was the automated credit authorization system introduced by retailer Marks & Spencer in 1991 in the UK. The Behavioral Scoring program made it possible to automatically process about 90% of loan applications and similar transactions and offer a solution based on the analysis of data on place of residence, credit history and account transactions [9].



Source: Transforming [Paradigms. A Global AI in Financial Services Survey](#). World Economic Forum. Cambridge Centre for Alternative Finance (January 2022).

Figure 1. Use of “alternative” data for scoring (% of the number of organizations surveyed)

The use of “alternative” data, as well as the use of AI models itself, can be useful in finding new relationships or hidden dependencies. However, the use of such data in the

financial sector raises a number of concerns among both clients and regulators regarding the protection of confidentiality and ethical use. For this reason

The legislation of some countries restricts the uncontrolled use of such information in AI algorithms, fearing unintentional discrimination against applicants or other harm to them [10].

Anti-fraud is another area in which the use of AI mechanisms is expanding. Thanks to the ability to analyze large volumes of data, identify atypical transactions and track anomalies that are difficult for humans to notice, AI technologies have made it possible to develop detection procedures by reducing resource intensity detection of fraud to a new level, surpassing the classic analysis of control risk factors. In real time, AI algorithms are able to mark events as suspicious and block transactions that are unusual for the client (for example, signs of credit card fraud) or connect an employee of a financial organization to conduct a more detailed check and analysis of documents and images (insurance fraud, distortions in financial statements) However, it is important to note that fraud is an atypical transaction that is not directly observable. A sharp change in client behavior can lead to disruption of habitual relationships, failures in the algorithm, and therefore to the exact opposite result. For these reasons, many financial institutions continue to rely on traditional audit and control systems, or a combination of both. In the field of monitoring customer requests and resolving claims, AI can be used to classify incoming requests, automatically read and process data. The development of generative AI significantly simplifies and optimizes the interaction between the financial institution and the applicant. Chatbots and voice assistants take over routine functions throughout the entire claim resolution process[11].

While banks in Uzbekistan have a customer database, it is necessary to convert this data into a convenient format. As a solution to this problem, foreign banks have implemented a unified Data Warehouse (DW) system, which is a data warehouse. The introduction of DW will allow banks to solve other limitations, such as replacing obsolete systems and processing data in real time. By updating data in real time, modern DWs allow instant notifications to be sent to clients. Thus, in order for banks in Uzbekistan to be able to provide chatbot and robo-advising services, it is necessary to have high-quality customer databases. Next, chatbots and roboadvisors must have access to quality information to provide adequate information to customers.

The next important condition for the implementation and development of chatbots and robo-advising in Uzbekistan is the establishment of close cooperation with specialists from leading fintech companies. Another important condition for the successful implementation of chatbots and robo-advising is planning and assessing potential risks. Successful implementation of the artificial intelligence implementation plan will increase the efficiency of banks, reduce costs and improve the quality of service. Before



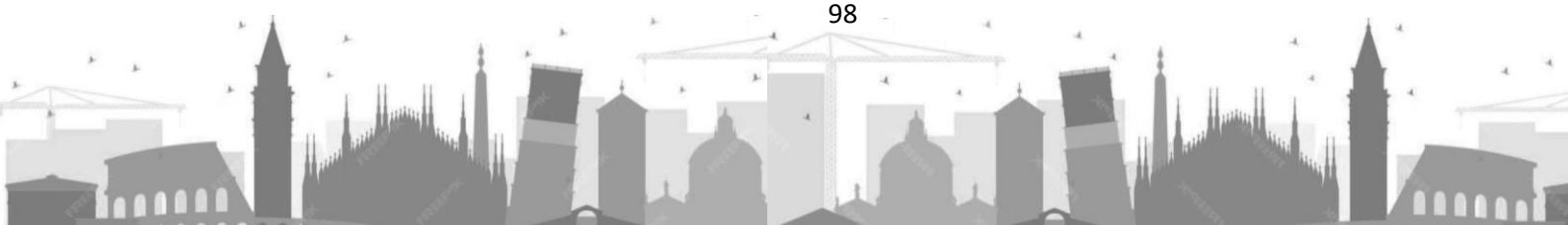
introducing chatbots and robo-advising, banks should carefully study the security issues of these technologies. Therefore, banks should first develop an algorithm of rules and processes regarding data storage and processing. The security of chatbots is ensured by technologies identical to those used in mobile applications. These include two-factor and biometric authentication, behavior analysis technologies and other more advanced artificial intelligence technologies. To ensure maximum security, communication with the chatbot should be encrypted.

In Uzbekistan, banks are actively starting to implement chatbots. For example, the National Bank of Uzbekistan (NBU) is developing a chatbot for the Telegram messenger, which is a popular application among smartphone users. The NBU chatbot will allow the bank to improve the quality of remote services. For example, bank clients will have the opportunity to instantly receive online consultations and learn about new products and promotions for clients. In addition, the NBU chatbot will reduce the workload of the call center and the costs of its maintenance. Thus, chatbots and robo-advising are a new business model that can transform the banking sector of Uzbekistan. These technologies will provide a number of benefits for banks, in particular, they will improve the quality of service, retain the existing customer base and attract new ones. These technologies can help in the fight against fraudulent activities. Based on the above arguments, we can confidently say that chat bots and robo-advising have great prospects for development in the banking sector of Uzbekistan [12].

Conclusions and offers. In general, AI technologies have enormous potential for improving the efficiency of banks and their competitiveness. However, there are numerous external and internal factors that hinder the realization of this potential. Taking into account the above, based on the results of the analysis, the following challenges to the development of AI technologies have been identified:

- insufficient knowledge and skills to implement AI technologies in the country;
- lack of highly qualified personnel in the field of AI;
- lack of open source statistics for AI development;
- weak government support for startups in the field of AI;
- very low level of availability of local services necessary for use in AI projects;
- a small volume of offers from participants in the cloud services market for processing and storing big data;
- lack of a strong regulatory framework for regulation AI technologies;

To effectively solve these challenges and difficulties in the development of artificial intelligence technology, it is proposed to determine the main directions of an integrated approach to the development of AI technology. In particular:



- the first direction is the formation and strengthening of the necessary regulatory framework and expansion of the necessary telecommunications infrastructure and large volumes of data;
- the second direction is improving the qualifications and skills of employees of state and economic management bodies, local governments and supporting the system of training highly qualified personnel in the higher education system;
- third direction: creation, support and expansion of international connections in the field of research and development of AI technologies;
- the fourth direction is the development of information systems and algorithms based on AI technologies, integration with existing systems and implementation, as well as organizing exports to foreign countries in the region.

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