



## DIGITALIZATION OF THE BANKING SYSTEM: DIGITAL TRANSFORMATION OF THE ENVIRONMENT AND BUSINESS PROCESSES

**Shirinova Shokhsanam Sobir qizi**

*PhD, teacher of the department "International finance and credit" Tashkent Financial Institute. Tashkent, Uzbekistan. [shokhsanam2828@gmail.com](mailto:shokhsanam2828@gmail.com)*

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### Abstract

The article presents the development of information technology as a great impact on the economy, human behavior and society as a whole. An analysis the variety of technologies available is enabling people to shift to new ways of interacting with each other and with businesses. The study determined that it is the global banking sector that has undergone significant changes over the past few years, mostly due to the digitalization of both the environment and business. The variety of technologies available is enabling people to shift to new ways of interacting with each other and with businesses. Customers are using more and more channels for obtaining banking services, using new platforms for interacting with banks. At the same time, technologies are adapting to changes in human behavior, resulting in ever more efficient and low-cost business development solutions. As a result of the digitalization of banking processes, the customer experience is expanding.

**Key words:** digitalization, technology, fintech, blockchain.

### Introduction

The term "digitization" means the transformation of information into digital form. However, in a business context, digitalization usually refers to two types of changing operating models. The first is the transfer of communications to digital channels, and the second is the automation of routine operations. These changes are closely related [Abdrakhmanova G. I. et al., 2019].

The use of digital technologies and the analysis of large data arrays makes it possible to create fundamentally new banking products. Digital and technology companies (fintech companies, telecommunications players, IT companies) are entering the financial services market, and large traditional banks are creating ecosystems, focusing on the most profitable components within the banking value chain and beyond. The domestic banking sector is moving in the same direction as the world. Service models are changing significantly under the influence of digital technologies (machine learning, artificial intelligence, blockchain [Swan M., 2017], P2P lending, robo-advising), as well as as a result of the development of an integrated network economy. Barriers for non-bank players to enter the market are being reduced, and telecommunications and IT companies are launching financial services and products based on their competencies. Large and technologically advanced banks create their own ecosystems that open up new, non-traditional sources of income. These trends determine the direction of the industry, and it is important for banks to take them into account in their strategies.

### **Literature review**

In foreign literature, various methods for assessing the effectiveness of digitalization in the banking sector are also widely discussed in the scientific community.

The article by V. Shepinin and A. Bataev analyzes an innovative form of a financial institution - a pretender bank, which involves banking business only in the form of remote access using mobile communication channels. This for a financial institution has appeared not so long ago and therefore has not been studied enough, so the analysis of the relevant credit institution is of vital importance. One of the main tasks in the study of innovative projects is to assess the economic efficiency of their activities [39. C.77-78].

Joshi D. has researched that all banking from home without visiting and spending time in queues, and all services available 24x7, is the main attraction of the banking system. Even after providing so many services, customer perceptions differ in terms of service quality. This study reveals customer perceptions of the quality of e-banking services. The respondent was asked to answer on various aspects of the quality of service, such as confidentiality, transparency, reliability, technical complexity, ease of transaction [19. C.133-141].

The scientific article by Travkina E. reveals the features of the impact of innovation processes on the transformation of financial services, outlines the principles of financial innovation, and presents the classification of financial services in terms of segments of the services provided. The problems in the functioning of banks in the modern banking ecosystem are highlighted and opportunities for changing the structure of their activities are presented. The possible risks associated with the innovative activities of banks are analyzed in detail, and general aspects of their regulation are presented [44. C.71-99]

Schmidt D. says that today, businesses from many industries are realizing that the transition to a digital business is a major challenge. Digital transformation is having a major impact on the banking industry as customer expectations drive the need to adapt strategies, processes and IT. So far, research on digitalization in banking has either focused on a strategic level, a customer perspective, or an internal perspective [40. C.11-78].

The banking sector is a typical example of the consumer archetype. The demand for innovation here is mainly dictated by consumers. Their main requirements are to reduce the time for banking transactions, the possibility of their implementation in 24x7 mode, more convenient use of banking products and services, the ability to receive other services along with banking using a single interface. These needs are the driver of innovation in the industry [Megargel A. et al., 2017].

The pace of new ideas, technologies and business models is very high, so the key factors for competitiveness and maintaining customer loyalty are the speed of bringing products to market and their quality.

For the successful development and implementation of innovations, banks should define a long-term strategy of purposeful work in this area with clear goals for the three types of innovations. Effective work with process innovations is impossible without a plan for the digitalization of internal processes. To ensure the necessary speed to bring new products to the market, a key factor in product innovation, it is necessary to create partnerships and ensure the availability of the necessary competencies in both technology and human resources. When working with innovations in building a business model, it is important to focus on increasing non-banking sources of income by developing our own ecosystems and partnerships [Megargel A. et al., 2017].

The central bank can contribute to this process by continuing to create a favorable climate for banks to work with innovation and by actively supporting the financial infrastructure, including non-traditional institutions for the banking industry, such as accelerators, business incubators and independent fintech companies.

### **Methodology**

At the beginning of the article, research and detailed questions were posed, as a result of which the goal and hypothesis were obtained. The empirical part of this article is a comparison of the results of the literature analysis and qualitative statistical data. Based on the results of the development of the theory, the subject areas were determined, with the help of which the research questions are solved. Since the chosen topic on the impact of digitalization on retail banking is a broad subject area, only the most important areas of activity are considered. Other areas were not included due to the scope of this work. Recommendations for action are developed and written using an analysis for the respective areas of activity. The specific procedure and associated framework conditions of the methodology are explained in detail in the results chapter.

### **Analysis and Results**

Product innovations in the banking industry are driven by technological and digital trends such as big data analysis, machine learning, advanced analytics, artificial intelligence, robo-advising, and blockchain, which makes it possible to perform operations without the participation of intermediaries and a back office. It is on the basis of end-to-end technologies that fundamentally new ones are created, including banking products with commercial potential, services, opportunities and services that previously required the personal presence of individuals and legal entities in the bank, and now switched to the online environment, customized offers, discounts, investment services and chatbots to help clients select products.

The main motivation for the release of product innovations in banks is to attract new customers and retain old ones by fully satisfying their needs. It now takes no more than a week to open a bank account and issue a card, in some banks it takes one day. Interbank transfers are made in minutes. This acceleration of processes has facilitated the transition of a client from one bank to another, which has made increasing customer loyalty one of the main tasks for banks.

Therefore, to attract and retain customers, banks are releasing fundamentally new digital products. For example, Tinkoff Bank launched a mortgage broker service that allows you to apply for a loan online and significantly reduce the number of visits to the bank, as well as an investment service that allows you to open a brokerage account remotely and manage your assets online<sup>1</sup>. Otkritie Bank has implemented a function to identify a user by photo when making money transfers, based on machine learning technologies. Biometric identification will gain popularity: it will allow not only to identify the client, but also to remotely conclude an agreement between the consumer and the bank when opening a new account.

Most banks provide personalized cashback services with a purchase selection feature, and some use predictive analytics to create customized offers. For example, VTB Bank, in addition to financial aspects, takes into account the age and lifestyle of the client, and the bonus program of Sberbank

"Thank you" is able to distinguish customers depending on their interests<sup>3</sup>. Personalization helps to enhance the effect of using loyalty programs. Relationships with the

client develop: the number of interactions is reduced, but at the same time they become more effective.

Communication plays an integrating role in securing customer loyalty. In addition to personalization of offers, banks need to develop omnichannel service. It involves not just communication with the client through various channels (multi-channel), but the integration of these channels into a single system, which allows you to create a more accurate and informative CRM system and then use the received data to create a more personalized approach. For example, after implementing a CRM system using omnichannel capabilities in Turkish DenizBank and getting front office employees access to information about customer actions in other channels, it was possible to increase customer retention by 70%, and the share of loans issued using predictive analytics methods by based on the data obtained, amounted to 40% of the total number of loans issued [Anthony L. et al., 2017].

The main benefit of digital transformation for commercial banks is to reduce costs and speed up operations. According to a study by McKinsey, end-to-end digitalization of key processes in a traditional bank, namely the sale of new products or service in branches, can reduce their cost by 40–60% [Aptekman A. et al., 2017].

However, there is a gap in the Russian financial services market between large banks and small and medium-sized credit institutions. The latter are significantly behind the leading banks and fintech companies in terms of the development of digital competencies. The largest banks, with the right people and ambitious leaders, are investing in digital technologies and benefiting greatly from their use due to economies of scale. The money transfer service launched by Otkritie Bank, which uses a photo as an identifier, aims to create a fundamentally new approach to online transfers and offer users additional situational scenarios for transfers [Blumberg S., Stür C., 2016]. Thus, the introduction of artificial intelligence elements into its IT landscape by VTB Bank allowed it to build a comprehensive system for monitoring critical business processes and IT infrastructure [Andreeva M., 2017].

Major players should use their resources and competencies to carry out full-scale digital transformations - this will allow them to further break away from competitors and gain a foothold as industry leaders. Small and medium-sized credit institutions, in turn, must find their niche in the market in order to maintain a competitive advantage. Large investments in end-to-end digital technologies are very risky for them. Therefore, medium and small banks need to find their product niche and develop in it. For example, Rocketbank's clients are mostly young people, and all of its products and services are aimed at this segment of consumers.

The lack of investment in the digitalization of business processes should not stop small players who would like to carry it out. To do this, you can focus on other options for developing key technological competencies, such as using third-party platforms or outsourcing for certain functions. Both large and small banks can use end-to-end technologies such as big data analytics to create credit risk prediction scoring models. Large banks are already adopting new approaches to work with large data sets based on a single platform (such as Data Lake) in order to use advanced analytical methods and external sources of information, for example, from mobile operators [Murati A. et al., 2018].

The use of analytical methods for in-depth analysis of large amounts of data will improve the accuracy of calculations, such as credit scoring, individual offers to customers and for efficient allocation of resources. Another example is a method for optimizing the

coverage of a territory by a network of branches or ATMs based on dynamic modeling and analysis of client flows.

The main directions for transforming the business model in the banking industry are the formation of their own ecosystem, the development of partnerships with other companies, such as IT companies, and the creation of fundamentally new business lines based on the use of end-to-end technologies, such as blockchain.

Currently, there is a transition from the bank format in the form of branches and remote banking services to a financial ecosystem serving both B2B and B2C clients, which will increase attention to the consumer and his needs, as well as build partnerships with other companies. Partner services will contribute to meeting all the daily needs of customers, which for the owner of the ecosystem (Fig. 2) will allow serving them on the principle of "one stop shop". In this regard, the need for new competencies can carry both certain risks and opportunities for the owners of the ecosystem to receive a certain share of the income of partners. Their own ecosystem will also allow banks to grow their customer base and increase loyalty.

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The success of the innovative transformation of the banking sector will depend on a number of factors. Credit institutions should review their strategy and identify areas for further development. Most likely, for the leading banks, this is a full-scale digital transformation with subsequent transformation and creation of business processes in the form of an ecosystem. For other banks that do not have enough investments and competencies, the most correct solution may be to provide basic services under a foreign brand.

Within companies, it is necessary to create a favorable climate for working with innovations.

Success factors can be:

1. Having a clear strategy and ambitious goal setting. The most winning digital transformation program should contain the following elements: ambitious goals, the process of creating and developing new business models, calculating the costs of implementing the program, digitalization activities and identifying the risks arising from digital transformation [Ruznyaev A.M., 2018]. Therefore, the strategy should include a development plan for three types of innovation: product, process, and business model innovation.

2. Conclusion of partnership agreements. The development of partnerships with banks, fintech companies, non-banking companies (telecommunications and IT companies) will make it possible to supplement existing competencies with new ones to gain a competitive advantage. Active cooperation with the Central Bank is also needed to help it, as a regulator, develop an enabling environment conducive to innovation. Banks should closely monitor and evaluate the activities of fintech companies and startups in the market, identify the most promising ones and acquire them or create strategic partnerships with them.

3. Development of digital competencies. A digital transformation program requires new skills, such as searching and collecting information using digital devices, processing a large amount of unstructured data, including using artificial intelligence. As part of human resources management, this is the search for young talented specialists who are ready to master digital technologies, as well as be able to deeply understand the needs of customers.

4. Transformation of the company's corporate culture. The culture of effective work with innovations implies an agile approach to their development, encouragement of cross-functional interaction, providing employees with the necessary freedom of action - non-material motivation factors are especially important for young promising specialists [Gupta S. K., Bansal A., 2018; Moeckel C., 2018].

Thus, a digital bank can be understood as a bank, most of whose products and services are provided in digital (electronic) form. At the same time, its clients mainly use digital channels in their daily communication with the bank. The infrastructure of such a bank is optimized for real-time digital interactions, and the internal culture implies a high speed of decision-making and technological change.

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