

# Modern Digital Technologies and Banking Tools

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**Abstract:** The banking system is a kind of circulatory system of the economy, ensuring, in fact, the stability of the national socio-economic system through the smooth functioning of the financial sector. Modern research shows that the banking sector is ahead of pace introducing the latest digital solutions, so digitalization increases the loyalty of consumers of banking products and services, increases the return on capital of financial and credit institutions. Analysis of the modern development and application of digital solutions by banks makes it possible to track the trajectory of development, to identify positive and negative nuances. Based on a detailed study of the retrospective, it is possible to develop ways to further develop the banking sector and digitalize it. The impact of digitalization on the development of the economy and society is not very clear. At the same time as one of the most significant factors of global economic growth, digitalization carries many risks, both identified at this stage of time and still in its infancy. These contradictions require an increased study of all varieties of digitalization in various sectors of the economy.

## 1 INTRODUCTION


At the present stage, there is an active change and improvement in all aspects of life. Digitalization at the present stage is not something futuristic, but is actively used in many areas. Digitalization is a driver of the development and change of technological development of any industry. In modern conditions, digitalization is more necessary than ever, and the main financial sphere of redistribution of financial resources is the banking system, the bank is a key participant in the market, the development and optimization of which depends on the level of digitalization and introduced financial innovations.


Most large banks at the present stage create ecosystems, actively develop artificial intelligence, create marketplaces, improve the big data analysis system and qualitatively change the technological base. All this allows not only to optimize the work of the credit institution in many aspects at the present stage, but also to simplify interaction with the main consumer - the borrower. Active deepening in the digital aspects of the present and future - the key to


attracting customers and simplifying in interaction with the bank's customers, as well as the ability to consolidate the status of a powerful technological financial player.

The relevance of the research topic is due to the fact that financial technologies in the banking sector actively improve the quality of banking products and develop a mechanism for providing services, as well as facilitate interaction between the bank and the client. Of particular importance is the crisis caused by the pandemic, which has greatly affected the deteriorating financial conditions of many credit institutions.

Under these conditions, the application and improvement of innovative financial solutions are the main driver of stabilization and development of the banking sector. That is why it is necessary to study the extent to which the banking system of Russia at the present stage has developed and applied the latest financial and technological solutions in the field of lending, and to indicate a trend in the future. Digital transformation of the banking sector is based on the peculiarities of changes in state national policy, information technology innovations and management

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processes (Evdokimova, Y., Egorova, E. and Shinkareva, O. (2020). At the same time, creative competition comes to the fore. These components can ensure sustainable development and increase the potential of the economy to meet the needs of society.

The purpose of this study is to analyze the financial and technological solutions in the field of lending applied by Russian credit institutions.

In order to achieve this goal, it is necessary to solve a number of the following problems:

- study the degree of spread of fintech in Russia
- analyze the level of digitalization of Russian banks
  - Identify the main financial and technological solutions in the area of lending
  - to indicate the trend in the development and dissemination of digitalization of banking products and services.

The object of the study is the banking system of the Russian Federation.

The subject of the study is the system of financial and technological solutions in the field of bank lending.

## 2 MATERIALS AND METHODS

The methods of research in this work are diverse, especially analysis and synthesis should be distinguished. The identification of the relationship between qualitative and quantitative changes was actively used. The methods of system analysis, grouping, aggregation and comparison, factor analysis are also used. The study applied methods of tabular and graphical interpretation. The logical sequence of the study involves a more analytical approach, since it reveals the main stages and trends in the development of the digital transformation of the banking sector and its impact on socio-economic systems.

## 3 RESULTS AND DISCUSSION

In order to study the digitalization of Russian banks, it is necessary, first of all, to indicate the general level of digitalization in Russia (Figure 1).

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The degree of spread of fintech in 27 countries

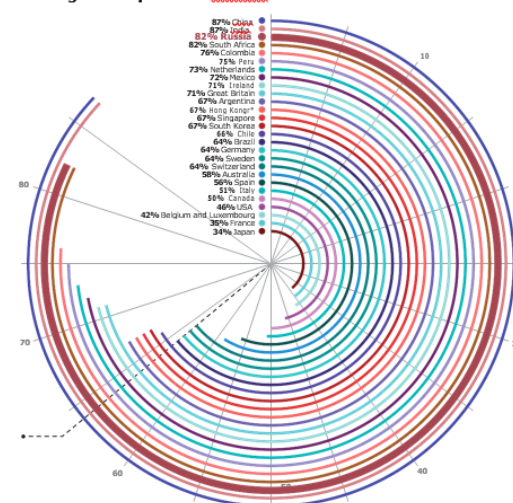


Figure 1: Prevalence of fintech in 27 countries (Bloomchain, 2019).

As can be seen from the figure presented, the level of digitalization in Russia is 82%, which is a very good result. Russia is among the top 3 countries in terms of digitalization, while the level of distribution of fintech is much ahead of many European countries. This indicator is decisive, as it characterizes the level of technological innovation in the country as a whole. This applies to many sectors of the economy, including banking. If we consider the level of digitalization of companies in Russia and abroad, we can note that about 70% of company executives in the world have a well-developed digital transformation program. In Russia, this indicator is 63%.

The pandemic of coronavirus infection has forced banks to adapt to new technological conditions. According to the Boston Consulting Group, Russian banks turned out to be the most ready for digital changes. In 2019, Russia took first place in terms of penetration of contactless payments (Apple Pay and Samsung Pay), and 3rd place in terms of penetration by fintech service, as already noted above. And in 2 years, Russian banks closed about 3200 physical branches, which indicates a high level of optimization of remote banking and the provision of services. All this indicates a high level of development of fintech in the banking sector of Russia (Tadviser, 2020). As for the main players and "engines" of fintech in the banking area, there are 7 of them, and they are non-banks: Tinkoff Bank, Module Bank, Point, Rocketbank, Yandex.Money, Touch Bank, Talkbank.

Table 1: Rating of leading digital banks by customer base size (Tadviser, 2019).

No	Bank	Country	Number of clients (mln. of people)
1	ING Diba	Germany	8,5
2	Capital One 360	USA	7,8
3	USAA Bank	USA	7
4	FNBO Direct	USA	6
5	Rakuten Bank	Japan	5
6	Tinkoff Bank	Russia	5
7	TIAA Direct	USA	3,9
8	Discover Bank	USA	3,5
9	Alior Bank	Poland	3

According to the table, it can be noted that the Russian Internet bank Tinkoff Bank, along with the Japanese Rakuten Bank, share fifth and sixth place in the ranking of the world's leading digital banks with a customer base of 5 million people, which is very significant. It should be said that the opening of Tinkoff Bank was the first step towards the digitalization of the banking system of the Russian Federation. For more than ten years, he has been specializing in completely remote customer banking, without having regional branches, but working with the population in all cities of Russia. Other digital banks operate in Russia, but it is Tinkoff that is the only domestic bank in the top ten most popular leading digital banks in the world.

Table 2: Rating of Russian banks by digitization level.

Bank	Digitisation rating
Tinkoff Bank	1
VTB	2
Sberbank	3
Raiffeisenbank	4
Alfa-Bank	5
Sovcombank	6
Otkritie FC Bank	7
Home Credit Bank	8
Ak Bars	9
Ural Bank for Reconstruction and Development	10
Promsvyazbank	11
Bank "St. Petersburg"	12
Vostochny Bank	13
Gazprombank	14
MTS Bank	15

As for the level of digitalization of the main large banks of Russia, a digitisation rating can be distinguished, data - for February 2020 (Banki.ru, 2020).

Deloitte experts identify 3 groups of banks for digitalization: Latercomers (Lagging), Adopters (Followers), Smart Followers (Advanced Followers)

and Champions (Champions). According to the above table, three Russian banks belong to the Champions category, nine banks to the Advanced Users category, and three more to the Followers category. It is also worth noting the active interaction of Russian banks with a partner - Skolkovo, which gives an advantage in the launch and adaptation of new digital services.

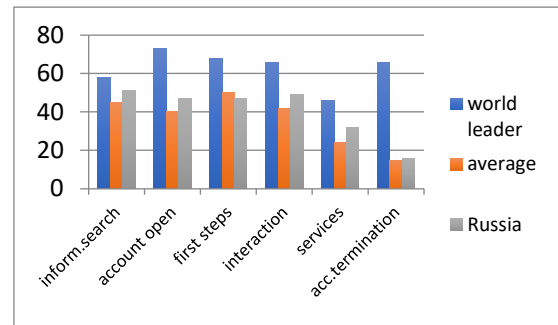


Figure 2: Index of digitalization of banks by stages of the client path (Deloitte, 2020).

When analyzing the six stages of the client's life cycle, Russian banks showed a significant level of digitalization at all stages of interaction with the client. Above the average, respondents estimated the level of the following processes: searching for accessible information about banks, offered products and cooperation conditions (in Russia, it is 6 p. higher than the global average); opening an account (+ 7 p.); daily interaction of the bank with the client (+ 7 p.); provision of additional banking services (+ 8 p.). Below the average global estimate was the index of assessment of the first steps of the client when working with the bank (-3 p.).

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The main financial and technological solutions include:

1. In the field of payments and transfers (online payment services, online translation services, P2P currency exchange, B2B payment and transfer services, cloud cash desks, smart terminals, mass payment services, payment processing and support of payment channels);

2. In the field of digital banking (automated banking systems and banking infrastructure, scoring systems, digital services and products, loyalty programs);

3. In the area of financing (P2P consumer lending, P2P business lending, crowdfunding);

4. In the field of capital management (roboediting, programs and applications on financial planning, social trading, algorithmic exchange trading);

5. In the area of business support - electronic accounting, legal and financial instruments;

6. Insurance (P2P insurance, smart insurance);

7. In the field of regulatory technologies (customer identification and data validation - KYC solutions, automation of data processing and compliance, data protection, risk analysis and possible solutions).

At the same time, banks are also actively digitalizing the following types of activities:

- Artificial intelligence. Artificial intelligence helps optimize many lending processes, as well as information submission.

- Biometrics. Thanks to biometrics, verification processes are simplified, while interaction between the bank and the client is simplified.

- Cloud technology. Cloud technology helps to develop banking applications, analyze the market and work with data, as well as reduce the burden and reduce costs in the field of digital technology.

- Robotization. Robotization allows you to optimize the processes of providing banking services and products, simplifying the lending process and reducing the burden on bank staff, while minimizing the likelihood of error.

- Mobile technology. Mobile banking is the basis of the digital environment of banks at the moment. This is a mandatory element in the digitalization system and its qualitative development will optimize the interaction of customers with banking products and services, as well as increase loyalty.

- Big Data and data analysis. Without big data and analysis, the bank cannot work at the present stage. This mechanism allows you to increase the profit of the bank, both in the short term and in the long term. A huge analyzed array of data increases the ability to use targeted applications, optimize debts, collect customer information and many other strategic areas of activity.

It can be noted that the main direction of digitalization in the banking sector is focused on mobile applications, P2P lending and the development of digital solutions that help optimize customer interaction processes. Mobile banking is a priority. However, it is necessary to expand the Internet throughout the country, which will increase the number of active users of online banking applications.

To this end, the national program "Digital Economy" was created. More than 1 trillion rubles from the federal budget and 535.3 billion rubles from extrabudgetary sources for a period of 6 years are allocated for the development of the Russian digital economy. According to the targets of the national program, by 2024, 97% of Russian households and 100% of socially significant infrastructure facilities should have broadband access to the Internet. Now these indicators are at the levels of 72.6% and 30.3%, respectively.

Besides, it is planned to create eight basic data-processing centers (DPC) in federal districts. The share of Russia in the global volume of data storage and processing services should grow from the current 0.9% to 5%. The Bank of Russia also contributes to the development of digitalization by developing infrastructure. The Marketplace project has already been launched - an electronic channel for the sale of financial products, which is expanding (Bank of Russia, 2018).

## 4 CONCLUSIONS

In general, the trend of digitalization of the banking sector of Russia is positive. Digitalization fundamentally transforms previously used management mechanisms, enhances their effectiveness (Evdokimova Y., Shinkareva O. and Bondarenko A., 2018). Banks put a lot of effort and resources into optimizing digital solutions and their development. The Central Bank is also developing and improving digital infrastructure, which will be based on:

- remote identification (biometric),
- Distributed Registry Technology – Masterchain,
- digital profile,
- financial marketplace (which is already functioning and is actively developing),
- Express Checkout,
- fully electronic document flow,
- increased use of simple and enhanced electronic signature.

The comprehensive coverage of digitalization opportunities, the involvement of financial, regulatory, technological components, as well as the presence of systematic regulation and supervision of the activities of financial and credit institutions provides good starting opportunities for the further development of positive aspects of digitalization in the banking sector and the reduction of digital risks that invariably accompany this process.

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