

# Monitoring of Russian banking system in terms of digital transformation

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**Abstract.** The main characteristics of modern financial and credit institutions are flexibility, ability to adapt to changes in conditions of risk and uncertainty. The process of adaptation may have low efficiency without intensive monitoring of financial and credit institutions' operation in direction of improving their technological basis. The article is devoted to some aspects of monitoring directions of financial and credit institutions' transformational development. The social environment acts as a final consumer of banking services and determines the features of the transformation process in the Russian Federation. The research results can be used in generalized form in managerial and financial environment to improve effectiveness of the infrastructure development based on informational and technology platforms. The main contribution of the research is to identify changes in the mechanism of relationship of managed and managerial systems, identification of modern communication tools, reasoning of emergence and development of social and economic directions of financial and credit institutions' transformational development.

## 1 Introduction

Conditions for the on-line work in financial and economic space have been created in Russia for the past twenty years. Individuals have unlimited opportunities for connection to the services of commercial banks, currency and stock exchanges and other institutional structures of the financial and credit market.

## 2 Materials and Methods

As a part of the struggle with "illegal money laundering", the Central Bank of the Russian Federation (CB RF) exercises targeted operation to control the "economic purity" of the transactions in financial market. In recent years, a large number of investors, who did not work earlier in the stock market, have emerged in the economic space of the country, i.e. individuals, not having professional knowledge in the investment field, but willing to find any methods to retain and increase their savings (non-qualified investor). Not the main, but one of the reasons was the desire of many

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individuals to convert declining in the parity relationship Russian national currency and to retain or improve their economic situation by applying various financial tools. The representatives of the CB RF are not only seeking to analyze the list of the used financial tools, but also testing the reasons for the citizens' financial activity; they are trying to identify the targeted factors which served as a basis for this activity with hope on percentage reduction in the inputs. In the meantime, the regulator's representatives are concerned about low financial qualification of the investors, directing their assets to the funds accumulation projects implementation, using complex investment products, having unpredictable pricing mechanism, the effective application of which is available only for qualified investors, having knowledge and competencies on their use, experience and economic forecast of the funds reduction. Emergence of a large number of new investment substitutes and mass increase in the procedures of processing complex investment projects, including investment insurance of life, structural bonds and other, has been recorded. Very often, the investors are misinformed by financial and credit consultants about presence of a coupon with protection of the principal debt amount on bonds and other similar products.

The methodological basis of the research was the combination of methods and techniques of scientific knowledge, such as methods of comparison and generalization, systemic, formally-logical, and fact-based.

### 3 Results

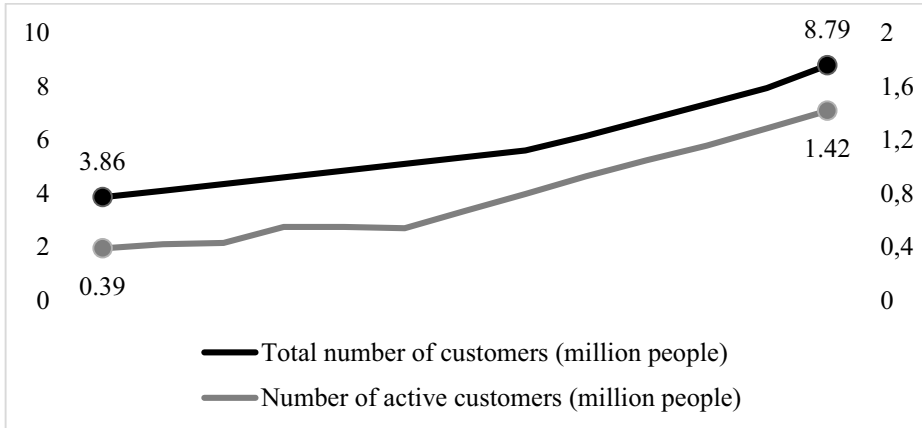
According to the assessment of the CB RF, which sees certain signs of financial pyramids in complex integrated products, currently inputs in doubtful investment projects exceed 600 billion rubles and large part of this portfolio was formed in 2020. Moreover, the regulator recommended in writing to commercial banks and stock institutions to test investors for the knowledge of the complex integrated products application mechanism prior to processing the sales transactions. [1]

Representatives of the CB RF are concerned that many of the above investors were confused with regards to the work with similar tools. They are also concerned about the lack of understanding of the non-qualified investors' possible end results, which in general may influence on the domestic financial market stability and finally lead to discrediting the issue of the individuals' wide participation in financial and investment projects.

In conditions of sanctions from the part of industrialized countries, with the purpose to attract finance, many commercial banks are revising the strategies of their financial support and are paying attention to internal sources, therefore the projects for the population's funds attraction are being formed. The commercial banks, that are constantly developing and improving their infrastructure and a set of the applied investment projects, have the best opportunities to attract the individuals' funds. For many commercial banks there is nothing new in providing individuals with the services on the assets trust management, financial consulting, corporate and investment banking, structural financing, merger and acquisition transactions, processing of structured investment products, brokerage services, etc. For example, almost threefold increase of the client base of Russian brokers was recorded for the past 2020, which can be seen in the figure 1. [2]

In recent years, the financial and credit sphere has been swept by the trend of the digital services rapid growth; technologies of the banking business are being corrected and fully changed, which leads to digital transformation of the banking operation. A developer of the performance management systems of applications and operational IT-analytics, the AppDynamics company, provides the data that 85% of all world consumers use mobile

applications to manage finance in current activities. Along with this, the experts of the audit company and the world's largest network of professional services KPMG referred an artificial intelligence (72%), predictive analytics and Big Data (61%), machine learning and chat bots (56%), robotization (56%) and optical recognition (44%) to the breakthrough and much-in-demand technologies. [4]



**Fig. 1.** Increase of the client base of brokers in 2020

All the emerged and largely applied information technologies act as an intangible asset and at the same time the catalyst for the process of changing traditional business operations technologies in the financial and credit sphere, and served as a basis for the digital transformation implementation. Digital channels of cooperation with clients have been introduced, such as Internet banking, mobile applications, integration of banks with social networks, chat bots, online feedback forms, messengers, etc. For example, appearance of chat bots in various messengers opened up opportunities for the investors to work on the transactions involving the purchase and sale of securities and currency in St. Petersburg and Moscow stock exchanges.

Implementation of the clients' consumer demands by applying digital technologies has proven its superiority due to close interaction with clients, ubiquity of use, low costs, high speed, and full availability of financial and credit services of the maximum range on a 24-hour basis, which is based on constant rotation of the innovative elements of existing service models with the purpose to reduce cost and increase efficiency of business operations. The mechanism of interaction with clients through Web resources is currently applied by more than 90% of Russian commercial banks, which gives opportunities to the clients to receive services distantly based on the banking system. Banks, implementing distant account services, provide services of cards distant unlocking, personal data online updating, and confirmation of transfers for large amounts and perform all basic transactions, increasing degree of client's service and level of competitiveness in financial market.

## 4 Discussion

The CB RF forms a digital image of financial and credit system by implementing technologies of the Faster Payments System, the Unified System of Identification and Authentication (USIA) with the use of a blockchain platform, financial marketplace, and biometrics. Emergence and introduction of new information technologies will lead to the possibility of transition to a higher level of recording client's opinions and

preferences from prediction of his actions to complete adjustment to his habits and wishes based on reading preferences with help of facial expression.

For two years of the Faster Payments System existence, more than one hundred and forty-two million transfers were committed, for the total volume of more than one trillion rubles, with the size of transactions in 2020 of 15 times more than the same indicator in 2019. The citizens got opportunities to transfer funds free of charge or at minimum tariffs in the amount not exceeding 100 thousand rubles a month by mobile phone number (the limit is planned to be increased up to 150 thousand rubles from October 01, 2021) both to themselves and other recipients, regardless of the banks if they are connected to the system which now counts 211 participants. The CB RF coordinates issues on connecting of c2b/b2c, c2cpull services, schedule for the transfers between individuals upon the recipient's inquiry, transfers from legal entities to individuals, and payments by QR-codes. [5]

Many services of commercial banks are implemented online. According to the data of international management consulting company BCG, the COVID-19 pandemic has led to a mass digital transformation of the banking retail, that's why an urgent need to ensure transparency and control of the clients' digital service process emerged. In conditions of competitive struggle for the clients and growth of technological mobility, many clients choose not a bank, but more convenient mobile applications and information programs meeting their demands and having many additional options, satisfying in quality, conditions, and time of service. A developer of the performance management systems of applications and operational IT-analytics, the AppDynamics company has revealed that up to 49% of the users will apply for service to the competing banks in case of failures when receiving a service, which influences proportionally the level of loyalty to a certain financial and credit institution. [4]

Customers appreciate banking systems, meeting demands on the convenience of use, functionality, safety of work with information, and uninterrupted services, which imposes on financial and credit institutions additional duties to maintain high-level of IT-competencies by relevant specialists, to update IT infrastructure and develop mechanisms of labor costs measurement in financial and credit organizations, working with the use of clients' digital service.

## **5 Conclusions**

Adopted on December 29, 2020 Federal Law (FZ) No. 157752-7 "On Introduction of Amendments to Certain Russian Federation Legislative Acts" (on the establishment of a mechanism for interactive distant authentication and identification of a credit organization's client) allows the banks expanding the use of biometrics. Many Russian commercial banks are already using the technology of the client's facial recognition, when entering the office. In case an individual is a bank's client and previously all biometric details were taken (face and voice patterns, etc.), the visitor's data is automatically transmitted to the bank's employee for possible development of individual proposal. The personality verification includes stages of accompaniment in the bank office, navigation in the required departments, and service by the front-line specialists. Similar technologies are applied by the following commercial banks: Alfa-Bank, VTB, Otkritie, PSB, Bank Dom.RF and other.

Customers' recognition at the entrance to the office allows duly identifying the individuals from the so-called "black" list, i.e. unscrupulous persons having credit debt, as well as those who tried to perform any fraudulent transactions or illegal actions previously. In addition, the implementation of automatic communication of the bank information system with the database of the Ministry of Internal Affairs allows timely, already at the stage of the application registration, identifying lost passports with fake photos, not

compliance of the details of the passport provided with the details of a real passport, comparing the data of a certain passport with photos from the credit conveyor with earlier inquiry for this passport, etc.

The queue management terminal provides the client with the proposals, allocated for him, based on his previous inquiries; in the meantime the criteria of recognition may be not only face, but also walk, manner of behavior, emotional facial expression which was read earlier, etc. Self-service devices also verify the client and transmit the information to a specialist, who provides the customer with pre-approved personal offers. For example, the Otkritie bank is working on the information program on the identification of the items list of its customers' needs in order to provide them with personalized proposals already at the time of their appearance in the office, i.e. even before the beginning of communication with the bank's officer. Moreover, in a number of Russian commercial banks, the conditions for service with help of the clients' smartphones were established; similar technologies are applied in the VTB, SberBank, Alpha-Bank, Zenit, and Crimean RNKB. [6]

Many banks have learned to create information programs in accordance with the emerging tactical needs. During the pandemic period, a program-classifier on processing, identifying information and its transmission for execution was created for a robot in the SberBank. The VTB bank created a program to verify and process applications for the preferential lending according to the state support programs for small and medium-sized businesses. Verification of information from the data request from the Federal Tax Service to the decision was performed by the robot-algorithm in 40 seconds with a monthly productivity of up to 1.5 thousand applications per shift. [7]

In present-day conditions the VTB is working on the creation of algorithm-driven programs on the income assessment models, allowing evaluating the income of potential customers based on indirect signs. [8]

Similarly, new robotized algorithms were implemented in the Rosbank to work with VIP and corporate clients, process state bodies' inquiries, in the direction of currency control, mortgages, etc.

The Promsvyaz bank has launched an algorithm to reveal transactional activity of the users, their popular costs and volume of incomes, which is required to calculate the missing services and identify possible needs in additional finance. The information project on the identification of customers' interest in purchase with the loyalty programs offers is implemented in the Raiffeisen bank. In the Moscow Credit Bank the robotized programs are widely used to analyze the operation of ATMs and terminals. [9]

These researchers note that growth of the artificial intelligence programs and robotization development can lead to a certain reduction in number of the bank officers, primarily call centers and support services. In addition, the use of the algorithm-driven robots does not mean full refusal from the procedures of imposing services to the clients. At the stage of the digital services technologies formation the programs may undergo repeated adjustments. [10]

In scientists' opinion, the largest financial corporations are modeling new financial strategies and introducing technological developments in the systems of innovative tools in work with messengers. [11]

Currently, the banking market has a highly professional structure. The specialists in their works analyze new banking technologies of interaction between banks and their clients using distant communication channels. As competitive advantages of large banks, the researchers allocate technological equipment to the priority directions for the intangible assets management, forming the level of competitiveness in a corporate environment and high degree of attractiveness for the clients. [12]

The following issues are being made relevant in digital economy: expansion of the sales channels and informational and support service, competitive capabilities of the banking

applications use, expansion of the applications' options with simultaneous simplification of their use, as well as introduction of other innovative solutions, meeting the requirements of quality, fast speed, and convenience for the users. [13]

Many financial and credit institutions with large infrastructure have largely reduced the level of "human interaction"; robotized jobs replace the work of a living person based on the software, which has been tested in the Sber. In large banks, telephone communication between the client and the bank's employee is mainly performed by the chat-robots with a programmed back reaction to the client's laughter or discontent. At the same time, even at the offline meeting with a robotized assistant at the Bank's office, the ability to read the client's emotions will allow the information programs replacing the work of a living person without losses in emotional communication with client, showing empathy, empathizing and achieving full goodwill to bank offers with improving the quality of service.

Customer service and routine current processes excluded from the sphere of "human" communication, which includes telephone surveys of the clients with offers for services, as well as informing on accounts and cards, etc. As a tactical reference, large Russian commercial banks, first of all, the Sber, have planned the implementation of the purpose to cover the entire flow of clients' requests with their developments in the field of IT programs.

In other banks, for example, in the Home Credit Bank, the programs for the robot-prompters, aimed at scenario communication and capable to reveal the client's needs based on the interlocutor's phraseological units, and if necessary, to prompt a list of possible banking proposals to an employee, are being formed. Likewise, upon the banks and other financial and credit institutions inquiries the IT companies create algorithm-driven pilot programs on the documents recognition, ecosystem programs, computer vision programs to compare a person's image with a photo in a passport in order to confirm the personality and personal data verification, etc.

The integration processes of the applied toolkit and implemented products in binding with services and products of a non-financial character are being implemented in virtual trading outlets of online stores through third-party products, aggregators, marketplaces, streaming services, and other forms of business applications use on the virtual services platforms, which proves the formation of hybrid service models based on mutual penetration of financial and credit and technological businesses.

Transformational changes are implemented as an element of economic rivalry of financial and credit institutions competing for the clients with the purpose to fully satisfy consumer inquiries.

The conducted monitoring has shown that there is no standard level of target achievements in the field of digital transformation, but at the same time a group of leaders as the most prepared financial and credit institutions in infrastructure provision stands out.

To consider the influence of social and economic directions of the financial and credit institutions' transformational development, based on monitoring of its changes, there was made comprehension of the formed trends of the banking business digital development with the purpose to allocate the main challenges and directions of digital platforms development in future.

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