

Digitalization of Payments: Trends and Prospects

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ABSTRACT

The financial market as a whole and its infrastructure with payment instruments, in particular, are undergoing a transformation stage under the influence of such external factors as: the dynamics of consumer demand, changes in the state system and business environment. Digital technologies and initiatives implemented by regulators play an important role in this improvement process. Russia is among the top ten leading countries that demonstrate progress in the growth of cashless payments and the penetration of fintech into settlement algorithms. The growth of public confidence in new types of payment instruments largely predetermines the market prospects and its development trends for the coming years.

Keywords: national payment systems, fintech, central bank digital currencies (CBDC), blockchain, the Faster Payments System (SBP).

Introduction

National payment systems are understood to be a set of financial institutions that organize the process of transferring funds to recipients, or, as stated in the law, “a set of money transfer operators” [1].

The main purpose of national payment systems is to organize a system of non-cash payments within the country, which is a reliable and transparent system of transferring funds between organizations and individuals within the framework of business transactions and, in essence, is the circulatory system of the economy, without which the economy cannot function.

In recent years, one of the important tasks of the Russian national payment system has been to maintain payment sovereignty in conditions of increased risks due to the impact of negative foreign policy factors on the Russian economy.

The issues of proper organization of the payment system have been raised by many authors, including Malan [2], Graf [3], Mehta [4], Bago [5], Gimigliano [6], Awrey [7], and others.

Malan [2], in his analysis of the payment system, emphasized the growing importance of non-banking organizations in the payment and clearing system and pointed out that such growth would inevitably give rise to new risks and would entail the need for changes in the regulation of the payment system.

Graf [3] highlights the growth in the number of digital financial institutions in recent years, including neobanks, and the growth in the share of services in the banking sector, including in the area of payments, provided by neobanks.

Mehta [4] emphasizes the importance of taking into account the change in the payment paradigm in recent years, the sharp rise of mobile payments, which payment systems must take into account when organizing the infrastructure for money transfers.

Bago's work [5] highlights the trend of reducing cash payments in recent years in the national economy and the growth of non-cash payments and mobile payments. Fintech has allowed for a reduction in transaction payments for money transfers in recent years, and an increasing number of payment organizations are emerging that do not have a banking license, which forces banks to more actively implement digital payment technologies as a service for their clients.

Gimigliano's article [6] emphasizes that payment systems have essentially become the basis for deepening European integration and for the deeper penetration of European economies and their increased interaction, essentially “ the payment system has become a normative paradigm in the European harmonization process ”.

In connection with the active introduction of digital technologies in the sphere of payments, additional risks arise associated with technological risks of making payments, as well as the risks of the emergence of so-called shadow banking, that is, different types of payment institutions that do not always fit into the existing regulation of financial services. The issue of the risks of "shadow banking" was raised by Awrey [7]. The article notes a sharp increase in " the shadow payment platforms (SPPs), which are rapidly increasing their turnover in connection with the development of digital financial technologies.

Shadow banking institutions offer banking services (money transfer, currency conversion, deposits at interest, simple money storage, lending), while these institutions usually do not have a banking license and are not subject to banking regulation by national central banks. Therefore, such institutions, on the one hand, offer cheaper and faster financial transactions to clients, primarily due to the fact that they do not have to comply with the rather strict regulatory requirements that national central banks impose on commercial banks. On the other hand, shadow banking institutions bear additional risks to their clients that are minimized in the official banking system, since payment guarantees and guarantees of safety of funds are often absent in shadow banking systems.

The problems of development and trends of prospective improvement of the national payment system are also studied by Russian scientists: D.A. Kochergin [8], L.G. Prokopova [9], Yu.S. Ezrokh [10], Klachkova O.A. [11], Sakharov D.M. [12], Klyuchevskaya N. [13] and others. This topic is especially relevant at the present stage, when many international payment systems have left the national market.

Methodology and discussion

The introduction of digital technologies into the national payment system contributes to the successful economic development of the country. Given the competition in this market, the consumer receives customer-oriented products. Some scientists interpret the digitalization of the national payment system as an additional factor in reducing income inequality and a stimulator of growth in the quality of life [9]. Without digitalization, it is difficult to ensure the competitiveness of financial and credit institutions.

The acceleration of the development processes of national payment systems associated with the introduction of new technologies is a consequence of the influence of a number of factors:

- changes in consumer demands for the payment instruments they use;
- transformation of financial institutions providing financial services (the trend towards increasing their customer focus);
- development of ecosystems and platforms for businesses to conduct trade transactions;
- strengthening the positions of fintech companies in the field of settlement and payment services;
- acceleration of innovation processes, emergence of new products and offers in the field of payments and settlements;
- digitalization of communications of all users of national payment systems;
- support in the development of payment systems from market regulators (central banks and other regulators).

In recent years, the Russian national payment system has been developing at a very fast pace. Digital technologies are being actively introduced into the payment transfer system. If a couple of decades ago, payments for services and products were made in cash, today non-cash forms in the form of bank cards, fast payment systems, Internet banking, etc. are more popular [11]. In Russia, payments through the fast payment system have been growing very actively in recent years, compared to other countries (see Fig. 1).

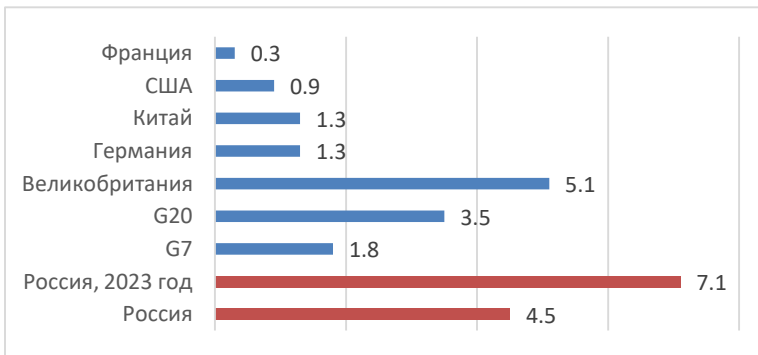


Fig. 1 - Popularity of fast payment systems in different countries (number of transfers per person per month, 2022)

Sources : “It’s prime time for real time”, ACI Worldwide, 2024, [14, p.11].

In terms of the “number of transfers per person per month” indicator in 2022 (4.5 transfers per person per month), Russia surpassed Germany, where there were only 1.3 transfers per person per month, and China, where there were also 1.3 transfers

per person per month in 2022. In the United States, this indicator was only 0.9 transfers per person per month. The Russian Fast Payment System (SBP) is currently in the phase of its active development. Thus, according to data for 2023, the number of monthly transactions per person exceeded 7 times [14].

In the modern world, the unification of fintech companies with credit institutions has become one of the factors accelerating the digitalization of all types of payments. The consumer wants to receive financial and non-financial services in real time, which explains the intensive transformation of cash management service standards within the framework of the created payment alliances. The ability to reduce the time for financial transactions has become a significant factor that has contributed to the growth of payments through mobile devices, when the user can transfer money, pay for a purchase, or buy securities through a brokerage application with two swipes of his fingers on the smartphone screen.

The volume of mobile and classic POS terminals in Russia as of the beginning of 2024 increased by 15%, amounting to more than 4.5 million devices [14]. The popularity of payment applications in social networks is due to a combination of such competitive advantages as:

- 1) information about potential users of the service;
- 2) innovative data processing algorithms;
- 3) a significant client base;
- 4) high popularity of platforms, especially among young people and mature people (they form the “solvent population of the state”).

With the development of digital financial services, financial regulators are beginning to take into account the growth of digital technologies in their regulation and are introducing new regulations to non-bank financial institutions to reduce the risks of users of financial services of such institutions.

The main trends in the development of payment systems in recent years are:

- 1) accelerated transition to cashless payments and reduction of cash payments in a number of countries;
- 2) creation and improvement of multi-banking systems with a single interface;
- 3) the growing popularity of the fast payment system (SBP), which provides instant transactions;
- 4) use of cloud solutions to expand the functionality of national payment systems;
- 5) integration of business applications and payment systems, which allows to increase the volume of transactions concluded by businesses due to the acceleration of the contract conclusion procedure and the acceleration of the financial settlement procedure for this transaction.

The purpose of digital technologies implemented in payment systems is to reduce the number of technical errors, automate financial procedures, reduce payment terms, and reduce the cost of payments. The most recent direction in the development of payment systems is the increasingly widespread introduction of central bank digital currencies (CBDC) into payments.

Digital payment systems of Russia: development prospects

The national payment system of Russia very actively uses new financial technologies that satisfy consumer service requests and are characterized by a high level of innovation. The development of the national payment infrastructure of Russia corresponds to world standards of financial services, and often outstrips them (see Fig. 1) and corresponds to global trends in the field of information security.

Modern electronic technologies formed the basis for the creation and distribution of such systems as the SBP (fast payment system), the National Settlement Depository (NSD) and the MIR card transfer payment system. The share of non-cash payments for goods and services in the volume of retail trade confirms the high level of development of the national payment system. If we talk about the dynamics of the growth in popularity of the fast payment system (SBP) in Russia, then "as of 01.01.2024, more than 220 banks, including all systemically important ones, as well as over 1.5 million TSPs, are connected to the system" [14]. Table 1 clearly shows the results of a comparative analysis of the functionality of fast payment systems in different countries.

Table 1 – Comparison of the functionality of the fast payment system with the main foreign analogues

	SBP (RF)	Faster Payments (UK)	TIPS (EU)	IBPS (PRC)	RTP (USA)	FedNow (USA)*
C2C transfers	☐	☐	☐	☐	☐	Only Me2Me
C2C by demand recipient	☐	-	-	☐	-	Only payment bills
C2B payment in TSP	☐	☐	☐	☐	☐	Only payment bills
C 2 B - payment at merchants using QR code	☐	☐	☐	☐	-	-
B2B	☐	☐	☐	Partially **	☐	-
B2C (except returns)	☐	☐	☐	☐	☐	-
C2G	☐	☐	☐	☐	-	-
Subscriptions	☐	☐	☐	☐	-	-

Mechanism calculation	Real time	Deferred payment (3 times a day)	Real time	Deferred payment (6 times a day)	Real time	Real time
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Sources: World Bank data – WorldBank Fast Payment Toolkit , information from the US Federal Reserve website about FedNow and data from the Bank of Russia, [14, p.30]

As can be seen from Table 1, the Russian fast payment system has an extended functionality with a mechanism for conducting transactions in real time. For example, the TIPS (EU) and RTP (USA) systems can also make online payments, but lack the "C2C on request of the recipient" function. Payment system Chinese payment system Internet Banking Payment System (IBPS) has this functionality, but when making transactions it uses a deferred settlement mode - payments are made only 6 times within 24 hours.

Despite the departure of a number of international payment systems from the Russian financial market, domestic payment cards are developing very actively. An example is the MIR payment system with an ever-expanding range of financial and non-financial services. The Central Bank of Russia has been actively working to ensure the operability of MIR cards in countries friendly to Russia. The second promising area of use of the MIR payment system is its use for P2P payments in the EAEU member states. An additional area of development of payment systems is the active development of payment systems within the Wildberries , Sber and Yandex marketplaces and ecosystems , which are actively working to implement payments within their services so that there is no need to involve external banking services. These organizations are actively developing their own purchase lending, offer storing money in accounts within the system at interest, and offer a number of other financial transactions.

The digitalization of national payment systems will accelerate further after the introduction of central bank digital currency (central bank digital currency (CBDC)). According to experts, the active implementation of the digital currency of central banks will have a positive effect on the national financial market.

The stages of implementation of this introduction of the central bank digital currency in Russia are shown in Table 2.

Table 2. Digital ruble: from idea to implementation: an overview of the main stages of the digital ruble implementation project.

<i>Date</i>	<i>Event</i>
October 2020	Publication advisory reports
2020–2021	Discussion published advisory reports
April 2021	Publication concepts digital rubles
December 2021	Development of a prototype of the digital ruble platform
2022	Testing and refining the platform prototype
May 2023	Commissioning of the digital ruble platform
August 2023	Entry into force of basic norms of legislation on the digital ruble

August 2023	Piloting operations with real digital rubles
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Sources: [14, p.35].

The project was launched in October 2020, when a consultative report on this topic was officially published. Discussions on the document continued throughout 2020-2021, after which the concept of the digital ruble was published in the spring of 2021. Operations began in test mode in May 2023. Since August 2023, the launched pilot has been tested in the financial market with real transaction conditions and active participants with a limited number of participants. Based on the results of the implementation of the central bank's digital currency in the payment system, it is planned to:

- reducing costs for all participants in the national payment system;
- creation of comfortable conditions for non-cash transfers;
- expansion of the list of services that can be paid for with the digital ruble.

In addition, the digital ruble is highly likely to become a tool for stimulating the small and medium-sized business segment and enterprises from the high-tech sector of the Russian economy. Many financiers place hopes on the digital ruble in terms of promoting interstate cooperation and the activities of economic ecosystems. The Bank of Russia is actively working to ensure the security of the national payment system, including from the most likely threats and cyberattacks .

Another direction of development of payment systems is the active implementation of blockchain technologies in payments and settlements. In recent years, blockchain technologies have been actively implemented not only in the activities of cryptocurrency institutions, but also in the activities of financial institutions that operate according to the classical model of financial transactions. There are already bond issues based on blockchain technologies, attracting financing to businesses using tokens issued on the basis of blockchains , investing in precious metals using tokens and in shares.

It can be argued that blockchain technologies have occupied a stable niche in the financial services sector, and the further development of national payment systems will be inextricably linked with the deeper penetration of blockchain technology into the financial services sector.

Conclusions

The development of national economies is inextricably linked with the strengthening of digitalization of national payment systems, the introduction of fintech technologies, tools, and the development of fintech institutions, more active interaction between classical financial institutions and fintech companies.

Digitalization of national payment systems will reduce the time it takes to complete a financial transaction, reduce the cost of a financial transaction, and reduce the risks associated with manual processing of financial documents.

Digitalization of national payment systems is inevitable, since active competitors are organizations developing cryptocurrency operations, which plan to

become real competitors of classical financial institutions and take over some of the clients currently served by classical financial institutions.

Digitalization of national payment systems using blockchain technologies will facilitate cross-border settlements.

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