Scenarios of digital innovation of the payment market in Russia

Olga Mikhailovna Korobeynikova
'Economic security and economy in agro-industry'
department
Volgograd state agrarian university,
city of Volgograd, Russia
korobeinikov77@yandex.ru

Dmitry Aleksandrovich Korobeynikov
Economic security and economy in agro-industry'
department
Volgograd state agrarian university,
city of Volgograd, Russia

LarisaVital'evna Popova
'Economic security and economy in agro-industry' department
Volgograd state agrarian university,
city of Volgograd, Russia
lvpopova@bk.ru

Abstract — **In order to ensure national sovereignty and global competitiveness on the basis of non-resource development, it is necessary to form a model of the digital economy and its diffusion into all spheres of Russian society. It is noted that in the financial sphere the provision of innovative digital infrastructure is much higher than in other areas. The current state of the payment market in Russia is characterized by high susceptibility to innovation, its subjects implement part of the tasks of the digital economy, which allows us to consider the national payment system and the subjects of the payment market as one of the points of implementation, transmission and acceleration of digital innovation in the economy. On the basis of the statement of tasks of the digital economy for the payment sphere, three scenarios of development are considered: conservative, innovative and forced. The innovative scenario assumes the activation of investments in the expansion and integration of payment systems and payment services that serve the sources of economic growth in the sectors of high-tech industries. The forced scenario is characterized by accelerated economic growth and includes a set of measures to create a digital financial ecosystem that combines markets and industries on the basis of innovative platforms and standardized technologies of payment systems. Realization of the accelerated scenario is presented in three stages: inclusion of consumers of payment services to all sectors of the economy and stakeholders of the payments market in the digital economy with the transition of payment systems and payment services digital technical and technological standards; the formation of new segments of the payment market and the corresponding competencies; formation of a unified digital environment, which is provided by the institutional and infrastructural measures. The proposed approaches to the implementation of the forced scenario of innovating the payment market correspond to the priorities and forecasts of long-term socio-economic development of Russia.**

I. INTRODUCTION

It is determined by the forecast of long-term socio-economic development of the Russian Federation that to ensure national sovereignty and global competitiveness on the basis of non-resource development we need the formation of a model of the digital economy and its diffusion in all spheres of Russian society. The set ambitious tasks of technological breakthrough should be solved systematically, but not all industries and spheres are equally ready for innovation.

The main reason for the different readiness for the application of innovations is the uneven infrastructure provision of the regions of the countries and individual areas. Thus, for the social sphere, especially in remote areas of the country, the problem of logistics and infrastructure support for the introduction of digital innovations and the formation of the ecosystem of the digital economy is still relevant. And if the work on the creation of General communication networks of high-speed Internet of recent generations is actively conducted by the state, the modernization (and in some cases the installation) of peripheral digital equipment in organizations and institutions of the municipal sector is difficult. As a result, the level of use of personal computers and the Internet in Russia is lower than in developed countries; there is also a noticeable gap in digital skills and digital literacy among different groups of the population. According to the developers of the program "Digital economy of the Russian Federation" in 2016, the proportion of Russians using

broadband Internet access was 18.77%, while 71.29% of the population used mobile access. The average speed of Internet traffic in Russia increased to an average of 12.2 Mbit / s (however, the average values poorly characterize the territorial gap in the speed of traffic).

In the financial sector, the provision of innovative digital infrastructure is significantly higher, and the level of its openness and accessibility allows us to consider the payment sector (primarily it's banking segment) as a point of growth, which can become an accelerator and a conductor of digital innovation for other areas.

II. Materials and Methods

The problem of stimulating economic growth, finding its accelerators and points of innovative growth, scenario planning was investigated in the works (Leinonen H., Soramaki K., 1999), (Levine R., Loayza N., Beck T., 2000), (Nelson R., Phelps E., 1996), (Shepitko, R. S., A. I. Koshkarev, 2012), (R. Yu. Skokov, 2013), (Zavivaev, N. S. Shamin, 2015) and others.

Issues of theory and methodology of payment markets, payment infrastructure was considered in the works of Russian and foreign experts (Bech M. L., Preisig C. & Soramaki K., 2008), (Ercevik K., Jackson J., 2009), (Yu.I. Korobov, 2015), (Travkina E. V., S. B. Kovalenko, 2016), (Stiglitz J. E., Bhattacharya A., 1999).

Some aspects of digitalization of the Russian economy, its separate spheres of innovation and modern payment systems were developed (I. D. Anikina, A. V. Gukova, A. A. Golodova, A. A. Chekalkina, 2016), (Diana Dmitrievna Burkaltseva, Olga Valerievich Boychenko, Olga Sergeevna Sivash, Nicholas Maksimovich Mazur, Snezhana Anatolievna Zotova, Alexey Valyevich Novikov. 2017), (Diana Dmitrievna Burkaltseva, Olga Sergeevna Sivash, Oleg Valerievich Boychenko, Lyubov Vasilievna Savchenko, Tatiana Nikolaevna Bugaeva, Snezhana Anatolievna Zotova, 2017), (Yu.A. Kozenko, 2013), (A. Razin S., T. P. Nazarova, 2016), etc.

Conducted by the authors of the study (O. M. Korobeynikova, 2012), (O. M. Korobeynikova, and D. A. Korobeynikov, 2015) and the current legislative practice in Russia it is shown that the payment market and its subjects have acquired qualities that characterize not only the institutional readiness for integration into the digital economy, but also the ability to transmit the impulses of digital innovations in the settlement and payment chains from organizational and technical-technological entities to users of services, creating conditions for the formation of digital environments of internal (economic entities-users of payment services) and external (between these economic entities).

Nevertheless, there are no unified approaches to innovation of the payment sphere through the introduction of digital technologies in a separate region and state in the modern profile literature.

We applied General methodological scientific principles (unity of theory and practice, objectivity, complexity), as well as a systematic approach to assessing the holistic picture of the

current state of money circulation and the payment market in the context of digital innovation.

III. Results and Discussion

A. Challenges of the digital innovatisation in the payment field

The current state of the payment market in Russia is characterized by high susceptibility to innovation, its subjects are already implementing part of the tasks of the digital economy, which allows us to consider the national payment system and the subjects of the payment market as one of the points of implementation, transmission and acceleration of digital innovation in the economy.

Thus, in the framework of the objectives of the digital economy in the creation of innovative digital ecosystems we solve problems by creating an adaptive ecosystem payment market and improving the institutional, infrastructural and technological basis of the functioning of the national payment system and by creating conditions for the occurrence of constituent entities of the payment market in the overall ecosystem.

The task of using digital data as a key factor in the production of the payment market is solved by standardizing digital payment and settlement services, adapting Russian cryptographic and other ways to protect digital data to the operations of the payment market, as well as the introduction of digital platforms for working with information.

Effective internal and cross-border interaction of business, the scientific and educational community, the state and citizens is provided on the scale of the payment market in solving the problems of supporting specialized scientific and educational activities; conducting information and consulting activities to promote digital interaction with business structures and citizens; cross-cutting interdisciplinary research; creating a methodological framework for the development of digital competencies in the payment market.

To solve the problem of the digital economy to create institutional and infrastructural conditions for the formation and (or) development of high-tech business entities and high-tech markets, the payment market should provide protectionism of digital interaction of entities, promote the creation of specialized institutions of the digital economy; should contribute to the development of communication networks of Russian origin and information processing centers of Russian origin; support industry standards of the digital economy in the field of training and retraining.

The end result of the digital economy will be the creation of the conditions for the growth of the digital economy, the development of the digital knowledge-based society (Panchenko, 2013), through the development of the digital knowledge society, to improve the welfare of the population of Russia, the quality of life, the availability of digital financial services, the growth of the Financial

B. Scenarios of digital innovation of the payment market

The tasks can be solved within the framework of the scenarios of the long-term socio-economic development of

Russia Forecast, which provides three possible scenarios for the development of the domestic economy: conservative, innovative and forced (designated as the target).

If we consider the payment market and its elements as accelerators and drivers of the digital economy, the conservative scenario will obviously be ineffective.

The innovative and accelerated scenario (if the latter is preferred) in the digital economy implies accelerated economic growth through increased investment (including foreign investment) in the expansion and integration of payment systems and their elements serving the sources of economic growth. The innovative scenario assumes the activation of investments in the expansion and integration of payment systems and payment services that serve the sources of economic growth in the sectors of high-tech industries. The target scenario, characterized as forced in the program, differs from the previous one by accelerated economic growth.

A forced scenario for the development of a single payment space may include a set of measures to create a digital financial ecosystem that unites markets and industries on the basis of innovative platforms and standardized technologies of payment systems. By implementing the forced scenario, it is possible to ensure synergy effect for the related socio-economic spheres.

C. The architecture of the payment market according to the scenario

In the framework of these scenarios, we associate the solution of the tasks of digital innovation in the payment sector with the gradual development of new market segments based on innovative platforms and technologies (Fig.).
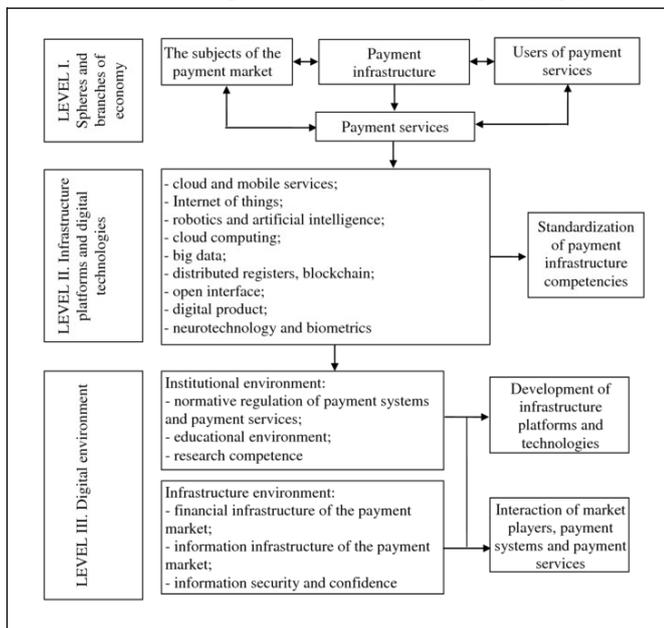

Fig. 1.   Realization of the accelerated scenario of innovatisation of the payment market

The modern payment market is represented by the interaction of supply (on the part of payment systems offering services in the form of payment services) and demand (on the part of consumers of payment services). Along with the traditional demand for payment systems services, the digital economy will stimulate demand for hybrid products of payment systems and other (including non-financial) sectors of the economy (spheres of activity). Such hybrid products can give rise to a symbiosis of payment services and services in the areas of health and education, public and municipal services, services under the "smart city" project and so on.

Innovative areas (big data operations, open interfaces, distributed registries, blockchain, cloud computing, robotics and artificial intelligence, Neurotechnology, biometrics, etc.) in the global financial community and in the Russian market are recognized as key drivers in terms of the transformation of business models for innovative digital type. Cloud technologies allow economic entities to place huge amounts of information in the cloud, reducing the cost of storage and transmission of information. Big data technologies allow us to achieve a qualitatively new level of generalization and accuracy of information analysis in the presence of appropriate tools and algorithms. Artificial intelligence and robotics replace human labor, greatly increasing its productivity and functionality. Distributed registers are already sufficiently proven technology in the financial market, which has proved its promise. The technological direction of open interfaces is actively discussed in the professional banking community in connection with the use of blockchain technologies. The technology of open interfaces, recognized in the European Union, Japan, the USA and other developed countries, allows not only banks but also other organizations to access customer accounts in compliance with established rules and algorithms. Blockchain technology is gradually being introduced into the practice of leading domestic banks. The trend of biometric information processing directly affects the interests of individuals, and when finding ways to overcome ethical conflicts, the technology of identification and creation of a single database of individuals will make it possible to carry out operations on behalf of individuals without their direct presence. The dynamics of development of new segments of the payment market will determine the nature of the long-term development strategy for innovative or forced scenario.

The infrastructure of the payment market, as well as specialized financial institutions should be involved in solving the problems of the digital economy. The infrastructure of the payment market is represented by the system of education and retraining of personnel for mastering the competencies of the digital economy, legislation, scientific infrastructure, industry standards that take into account the competence of the digital economy, investment and financing, intellectual property.

The accelerated scenario of innovation of the payment market in accordance with the strategy of the digital economy can be implemented in stages. The first level provides for the inclusion of consumers of payment services in all sectors of the economy and the payment market in the emerging digital economy with the transition of payment systems and payment services digital technical and technological standards. At the second level, in the digital environment, innovative platforms

and technologies will form new segments of the payment market and their respective competencies, developed in the system of human resources training. Thus, the first two levels contribute to the formation of a single digital environment (level 3), provided by institutional and infrastructural measures.

Step-by-step implementation of the accelerated scenario of payment market innovation corresponds to the long-term socio-economic development of Russia and the information society development strategy.

IV. CONCLUSION

Modern trends in the development of payment markets are:
- speed growth and ease of innovation, personalization of payment services;
- shift of the demand vector in the payment market from loyalty programs to providing the maximum amount of information;
- shift of the offer vector on the format of interaction (communication) to social platforms and messengers;
- the emergence of new technological players in the financial ecosystem;
- creation of new forms of interaction in the payment market.

The dynamics and trends in the development of the payment market give reason to believe that in the payment sector it is possible to implement a forced (target) scenario of the formation of the digital economy in Russia with the further transmission of digital innovations to other financial and non-financial sectors of the economy.

Currently, the market of payment services in Russia is steadily growing, in the dynamics there is a qualitative improvement of the structure of not only supply but also demand. The share of non-cash payments in the structure of cash turnover is growing, while the number of transactions is growing faster than the growth of payments, i.e. the average value of one transaction is decreasing, which indicates the popularization of payment innovations.

Digital innovations dictate the need for transformations in the banking and payment spheres, including their transfer to other interrelated segments. Today, financial and technology companies are increasingly competing with banks, as FinTech companies offer more modern and advanced solutions for the payment industry. To mitigate competition, the leading Russian banks create their own FinTech laboratories and internal FinTech companies within Russian banking holdings. Banks see the basis for sustainable development in the introduction of new technologies and in offering new products to their customers.

The proposed approaches to the implementation of the accelerated scenario of innovation of the payment market correspond to the priorities and forecasts of long-term socio-economic development of Russia and correlate with the main vectors of building the information society and the digital economy.

Acknowledgment

References

[1] Anikina I.D., Gukova A.V., Golodova A.A., Chekalkina A.A. (2016) Methodological aspects of prioritization of financial tools for stimulation of innovative activities. *European Research Studies Journal.* Volume. 19. № 2 Special Issue. pp. 100-112.

[2] Bech M.L., Preisig C. and Soramaki K.(2008) Global Trends in Large-Value Payment, *FRBNY Economic Policy Peview*.

[3] Burkaltseva D. D., Boychenko O. V., Sivash O. S., Mazur N. M., Zotova S. A., Novikov A. V. (2017) The Construction of the Digital Organizational, Social and Economic Production Mechanism in the Agro-industry, *European Research Studies Journal*, Volume XX, Issue 4B, pp. 350-365.

[4] Burkaltseva D. D., Sivash O. S., Boychenko O. V., Savchenko L. V., Bugaeva T. N., Zotova S. A. (2017) Realization of Investment Processes in the Agricultural Sector of the Digital Economy, *European Research Studies Journal*, Volume XX, Issue 4B, pp. 366-379.

[5] Ercevik K., Jackson J. (2009) Simulating the impact of a hybrid design on the efficiency of the CHAPS large-value payment system, *The Quarterly Review of Economics and Finance,* №49, pp. 1-25.

[6] Yu.A. Kozenko (2013) Prospects for the use of digital payment systems backed by gold [Perspektivy ispol'zovaniya tsifrovykh platezhnykh sistem, obespechennykh zolotom], *Business. Education. Right. Bulletin of the Volgograd business Institute,* no. 4, pp. 184-188.

[7] Korobeynikova O.M., Korobeynikov D.A. (2015) The problems of the transmission of monetary and credit resources in the context of monetary policy [Problemy transmissii denezhnykh i kreditnykh resursov v kontekste provedeniya denezhno-kreditnoi politiki] *Proceedings of Nizhnevolzhskiy agrouniversity complex: science and higher vocational education,* № 2(38), 246-251

[8] Korobeynikova O.M. (2012) Development of local payment systems due to the potential of credit cooperation [Razvitie lokal'nyh platezhnyh sistem za schet potenciala kreditnoj kooperacii] *Proceedings of Nizhnevolzhskiy agrouniversity complex: science and higher vocational education.* № 2(26), pp. 228-233.

[9] Korobov Yu.I. (2015) The development of the banking system: modernisation or transformation? [Razvitie bankovskoi sistemy: modernizatsiya ili transformatsiya?] *Science and society,* № 3(22), pp. 39-41.

[10] Leinonen H., Soramaki K. (1999) Optimizing Liquidity Usage and Settlement Speed in Payment Systems, *Bank of Finland Discussion Papers,* № 16, pp. 1-55.

[11] Levine R., Loayza N., Beck T. (2000) Financial Intermediation and Growth: Causality and Cause, *Journal of Monetary Economics,* Vol. 46 (1), pp. 31-77.

[12] Nelson R., Phelps E. (1996) Investment in Humans, Technological Diffusion, and Economic Growth, *American Economic Review,* Vol. 56 (2), pp. 69-75.

[13] Razin A.S., Nazarova T.P. (2016) non-Profit sector in the Russian economy: traditions and modernity [Nekommercheskij sektor v rossijskoj ehkonomike: tradicii i sovremennost'], *Proceedings of the lower Volga agrodiversity complex: science and higher professional education*, № 2(42), pp.302-307.

[14] Semenyuta O.G., Panchenko N.O. (2013) The banking sector of Russia – the basis of modernization of the domestic economy [Bankovskii sektor Rossii – osnova modernizatsii otechestvennoi ekonomiki] Finance and credit, № 41 (569), pp. 2-7.

[15] Shepitko R.S., Koshkarev I.A. (2012) Categorical contradiction of economic interests of economic entities: evolution, correction [Kategorial'naya protivorechivost' ehkonomicheskih interesov hozyajstvuyushchih sub"ektov: ehvolyuciya, korrekciya] *Proceedings of*

Nizhnevolzhskiy agrouniversity complex: science and higher vocational education, № 1(25), pp. 201-206.

[16] Skokov R.Yu. (2013) Vvedenie v teoriyu rynkov «addiktivnykh blag» [Introduction to the theory of markets of "addictive goods»], *Modern economy: problems and solutions*, 5 (41), pp. 13–20.

[17] Stiglitz J.E., A. Bhattacharya (1999) Underpinnings for Stable and Equitable Global Financial System, N.-Y.: World Bank.

[18] E.V. Travkina, S.B. Kovalenko (2016) Supervision of Bank of Russia behind activity of commercial banks [Nadzor Banka Rossii za deyatel'nost'yu kommercheskikh bankov] Traditional and innovative science: history, modern condition, prospects. Collection of articles of International scientific-practical conference.- Ufa: "Aeterna", pp. 139-141

[19] Zavivaev N.S., Shamin E. A. (2015) State support as a factor of effective development of the information society. [Gosudarstvennaya podderzhka kak faktor ehffektivnogo razvitiya informacionnogo obshchestva] *Proceedings of Nizhnevolzhskiy agrouniversity complex: science and higher vocational education*. № 4(40), pp. 233-239