

Artículo de investigación

Technological challenges to the bases of banking in the context of innovation management**Технологические вызовы основам банковского дела в контексте инновационного менеджмента**

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Murat Keferov⁹⁵**Alexander Milenkov**⁹⁶**Natalia Ovcharova**⁹⁷**Abstract**

The paper aims to define organizational and technological priorities for the effective functioning of the Russian banking system and banking development. Methods. The study used general scientific methods, a systematic approach, statistical and comparative analysis, expert estimates, generalizations, logical and functional analysis. The analytical and theoretical results of the study revealed the existence of prerequisites for the diffusion of banking and non-banking activities in financial relations in the Russian banking sector. Technological shifts aggravate the question of the future of banking activities. Application of results. The results of this study can be used to design and implement new principles of banking development in the context of its digitalization. Conclusions. Despite the effectiveness of digital technologies, banking does not become outdated but undergoes diffusion.

Key Words: Fintech, innovation management, banking, digital economy.

Аннотация

Целью работы является определение организационных и технологических приоритетов для эффективного функционирования российской банковской системы и развития банковского дела. В исследовании использованы общие научные методы, системный подход, статистический и сравнительный анализ, экспертные оценки, обобщения, логический и функциональный анализ. Аналитические и теоретические результаты исследования выявили наличие предпосылок для распространения банковской и небанковской деятельности в финансовых отношениях в российском банковском секторе. Технологические сдвиги обостряют вопрос о будущем банковской деятельности. Результаты данного исследования могут быть использованы при разработке и внедрении новых принципов развития банковского дела в контексте его цифровизации. Несмотря на эффективность цифровых технологий, классическое банковское дело не устаревает, а развивается.

Ключевые слова: финтехника, инновационный менеджмент, банковское дело, цифровая экономика.

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Introduction

From an economic point of view, a reference to the beginning of the sixth Kondratieff cycle (2018-2050) is worth looking into. The predicted foundations of business and service processes include nano-, bio-, info- and cognitive technologies, which are commonly identified as NBIC technologies. The USA, EU, and Japan are the centers for dissemination of these technologies, being leaders in relevant research and development (Akaev & Rudskoy, 2014).

However, despite their current leadership, the unfolding synergistic effect is one of the key features of NBIC technologies, which substantially equalizes the starting conditions for various states and their national economic systems (Zimon & Zimon, 2019, p. 51; Jantsch, Solana-González & Vanti, 2019, p. 21). Therefore, despite the criticality of the current situation (Ohene-Asare, Gakpey & Turkson, 2018), the Russian economy still has a chance for breakthrough technological development, which forms the basis of the socio-economic development strategy.

Moreover, it is worth considering that the Russian banking sector is a leader in the development of many modern digital technologies. This substantially increases the importance of banking at the current stage of domestic socio-economic development, especially in its key components. Besides, new requirements for banking activities are related to the fact that this new stage of economic development has sharp contradictions in the sphere of internal operational and financial consolidation and the relationship with the global economy. In fact, the Russian banking sector has faced additional challenges in recent years.

The need to ensure effective banking activities under consistent tightening of economic sanctions by the leading Western countries and their allies has become an additional strategic task for the banking sector development.

Therefore, the effective functioning of the Russian banking system in the face of increasing the pressure of sanctions and ensuring domestic financial stability has become the major functional goal of the banking system development in the coming years. Accordingly,

the implementation of national projects and the main strategic goals of the Russian Federation development for the period up to 2024 directly depend on the real situation in the Russian banking sector and on the real prospects for improving banking activities.

In this context, the management and specialists of the Bank of Russia highlight the observed return to positive growth trends of the key banking sector indicators, which began in 2017 (Bank of Russia, 2018b). A consistent decrease in the cost of borrowing is considered the most important achievement since it creates favorable conditions for the development of the national economy in the form of an expanded lending potential (Oreški & Oreški, 2018). Sustainable growth in the number and amount of deposits of the population, as well as a relatively sharp increase in bank profits, is quite substantial.

The purpose of this study is to define organizational and technological capabilities and directions for the effective functioning of the Russian banking system and improving banking activities.

Methodology

When assessing the results of banking activities in recent years, it is worth considering the institutional components in the form of actively expanding electronic document management. Furthermore, the authors used the scientific method, systematic approach, statistical and comparative analysis, expert evaluation, synthesis, logical and functional analysis. The research covers the period of 2007-2019 and includes the data from McKinsey Innovation Practice, Rosstat, Central Bank of Russia (CBR), Sberbank and the Bank of Russia.

Results and discussion

Besides, several international recommendations are being effectively implemented in the banking system, respectively adapted to the requirements and characteristics of the Russian financial market. The most important indicators of the banking sector activity from a system point of view can be detected using the data in Table 1.

Table 1. Selected macroeconomic indicators of the Russian banking sector (billion rubles; as of the beginning of the year)

	2013	2014	2015	2016	2017	2018
Assets (liabilities) of the banking sector	49,510	57,423	77,653	83,000	80,063	85,192
% of GDP	72.6	78.5	98.0	99.5	92.9	92.6
Own funds (capital) of the banking sector	6,113	7,064	7,928	9,009	9,387	9,397
% of GDP	9.0	9.7	10.0	10.8	10.9	10.2
% of the banking sector assets	12.3	12.3	10.2	10.9	11.7	11.0
Loans and other funds granted to non-financial organizations and individuals	27,708	32,456	40,866	43,985	40,939	42,366
% of GDP	40.6	44.4	51.6	52.7	47.5	46.0
% of the banking sector assets	56.0	56.5	52.6	53.0	51.1	49.7
Securities purchased by banks	7035	7822	9724	11777	11450	12311
% of GDP	10.3	10.7	12.3	14.1	13.3	13.4
% of the banking sector assets	14.2	13.6	12.5	14.2	14.3	14.5
Deposits of individuals, billion rubles	14,251	16,958	18,553	23,219	24,200	25,987
% of GDP	20.9	23.2	23.4	27.8	28.1	28.2
% of the banking sector liabilities	28.8	29.5	23.9	28.0	30.2	30.5
% of the cash income of the population	35.7	38.0	38.7	43.4	44.7	47.7
Deposits and funds in accounts of non-financial and financial organizations (excluding credit)	14,565	16,901	2,3419	27,064	24,322	24,843
% of GDP	21.4	23.1	29.6	32.5	28.2	27.0
% of the banking sector liabilities	29.4	29.4	30.2	32.6	30.4	29.2
Balanced financial result (profit minus loss) received by credit institutions	1,011.9	993.6	589.1	192.0	929.7	789.7
The amount of profit on profitable credit organizations	1,021.3	1,012.3	853.3	735.8	1,291.9	1,561.7
The share of profitable credit institutions in the total number of credit institutions, %	94.2	90.5	84.9	75.4	71.4	75.0
The amount of losses on loss-making credit organizations	9.4	18.7	264.1	543.8	362.2	772.0
The share of loss-making credit institutions in the total number of credit institutions, %	5.8	9.5	15.1	24.6	28.6	25.0

The table was compiled based on: Russian Finances, 2016. (Rosstat, 2016, p. 304); Russian Finances, 2018 (Rosstat, 2018, p. 399); Banking Sector and Bank Supervision Report, 2017 (Bank of Russia, 2018b, p. 101).

Along with the above-mentioned positive results of the banking activities, a set of measures to improve the financial situation of several Russian large banks has proved effective, which directly affected the entire sector of credit institutions. Reorganization of banks revealed the advantages of the Banking Sector Consolidation Fund, which became the main tool of objectively necessary additional capitalization of credit institutions. As a result, restoring the stability of several banks contributed to the increasing stability of the

entire banking system. This reorganization increased the attention to the problems of underestimating the accumulated credit risks in the entire banking sector.

Thus, there is a consistent strengthening of the banking sector in the Russian economy. This resulted in the policy of strict conservative management of banks' commercial activities, accompanied by an increase in operational efficiency. In terms of systemic development of

the domestic banking sector, the most important thing is the consistent growth of total assets of the banking sector, which have reached the level of gross domestic product.

In general, the modern banking sector of the Russian Federation fully complies with world requirements on several key indicators, which is reflected in the data in Table 2).

Table 2. Comparison of individual indicators of the banking system in Russia and other regions of the world

		2008	2010	2013	2016
Banking assets, % of GDP	Russia	68	73	79	93
	European countries	322	328	299	277
	Great Britain	531	502	426	392
	USA	94	86	90	91
Return on assets, %	Russia	2.4	1.8	1.9	1.2
	European countries	0.0	0.3	0.1	0.2
	Great Britain	-0.2	0.3	0.1	0.1
	USA	-0.1	0.6	1.1	1.0
Return on equity, %	Emerging countries	1.1	1.0	1.2	0.0
	Russia	18.3	11.7	14.9	10.3
	European countries	-2.8	5.5	3.0	3.8
	Great Britain	-4.6	5.2	1.3	1.2
	USA	-1.0	5.6	9.4	9.3
	Emerging countries	17.0	13.0	17.4	13.1

The table was compiled based on: The 2008-2017 Decade in the Russian Banking Sector: Trends and Factors. Economic Research Report Series (Bank of Russia, 2018a).

With all the positive aspects noted, one must not, however, overlook the amount and share of losses in the banking sector, the slowdown in the growth of banking assets, the decrease in profitability indicators, the loss of investment priorities by commercial banks in the real economy, reduction of financing in the means of production, especially those focused on innovative technologies.

Conflicting results of banking activities are reflected in retail lending. Primarily, by such indicators as the amount of debt load of the population and the proportion of problem loans in retail. In the first case, calculated as the ratio of retail loan debt to the gross domestic product, Russia shows one of the lowest levels in the world with an indicator of 13.2% compared to 71-76% in developed countries and 28-39% in developing countries for the beginning of 2018. At the same time, the share of problem loans in

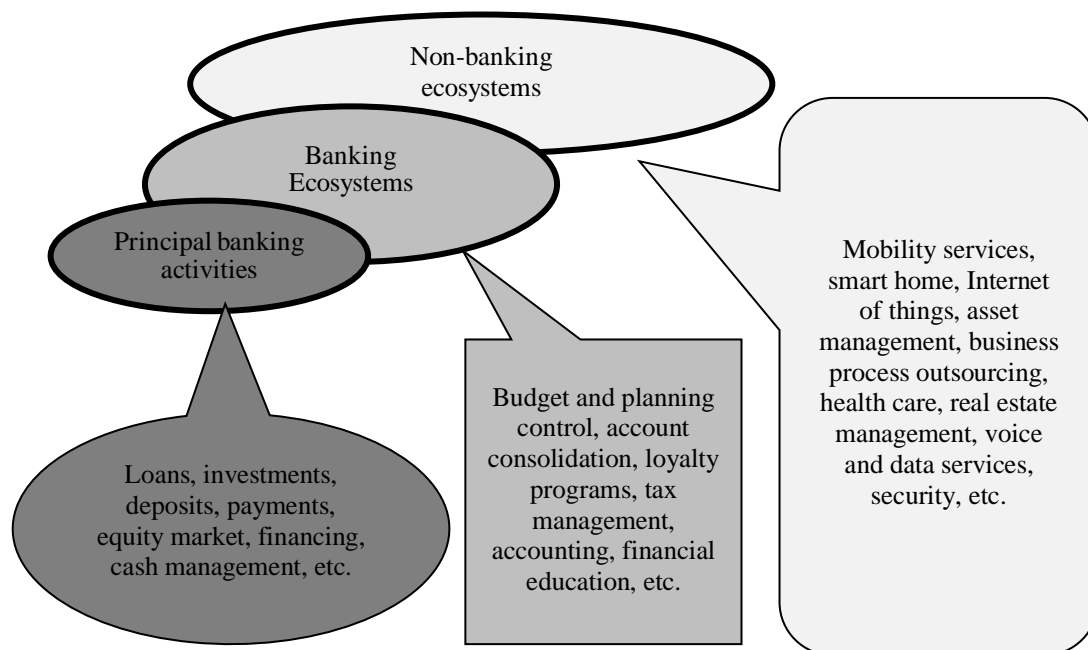
the Russian banking system has already exceeded 10% against an average world level of 3.7% (Kuzina & Krupenski, 2018).

These multidirectional trends in debt loans of the population and problem loans clearly illustrate significant problems in the quality of banking activities related to consumer loans. Russia has a developed practice of providing predominantly short-term loans for the purchase of consumer goods at high-interest rates. As a result, considering the relatively low incomes by international standards, servicing limited retail loans creates considerably more problems compared to economically developed countries. In such circumstances, the need to increase the share of long-term loans secured by real estate and other assets with a corresponding reduction in the share of short-term consumer lending becomes an explicit requirement.

The implementation of such structural transformations in the main part of Russian banking is possible only with the accelerated development of new banking technologies. This will reduce the transaction costs largely determining the discrepancy of the above trends. The situation is exacerbated by the question of future trends in most banking activities at a high

polarization of opinions and arguments. In this context, it is worth noticing a fairly wide diffusion space in the functioning of the banking and non-banking institutions between the main content of banking activities and the technologically related so-called banking and non-banking ecosystems (Figure 1).

Figure 1. The interaction of the main banking activity with the banking and non-banking ecosystem.



Compiled based on: The Main Directions of Financial Technologies Development for 2018-2020 (CBR, 2018, pp. 12-14); Innovation in Russia as an Inexhaustible Source of Growth (McKinsey Innovation Practice, 2018, p. 39).

In general, the formation of ecosystems has become a priority trend in the financial markets, which is also given priority in the development strategy of the Russian banking sector (CBR, 2018).

In the near future, the modern banking system will be further integrated into a large number of digital financial relations, institutions, organizations and platforms. As a result, the problems of maintaining and developing the internal content of banking activities may become even more acute. These processes will be implemented under the principles of openness and universality on the part of all participants in financial relations, not limited to credit institutions. Therefore, the process of diffusion

of banking and non-banking activities in financial relations becomes objective.

The concept of innovation diffusion has been widely used since the sixties of the last century, when innovations began to spread in the markets for new products, in the development of new production technologies, in adapting social development to new ideas. However, the diffusion of innovations turned out sufficiently long and proceeded with different speed and intensity in different areas. All this led to the emergence of diffusion of innovations theory, which attempts to determine and explain the speeds and characteristics of innovation diffusion in various target spaces (Rogers, 1995). In particular, this theory stresses the importance of

redistribution of innovative products and services between their producers and potential consumers, which is directly related to the diffusion of innovations (Vasin, 2010). The diffusion approach is also actively used in the study of innovative processes in regions with insufficient bank lending (Nosonov, 2015).

Given the specifics of modern development, the need to consider the process of banking activity diffusion is becoming more acute, especially in the conditions of modern intensive technological changes in global digitalization.

It is worth noticing the increasing discussion of development prospects for financial relations in general and banking in particular. Thus, a synthesis of the most relevant areas of the so-called global scientific discussion about the prospects for financial development seems particularly interesting (Danilov, 2019).

The study suggests defining the four most meaningful areas of discussion and controversy. First, the nature and characteristics of the impact and influence of modern development of finance on global and national economic growth. Second, the issues of diverse approaches to assessing financial development. Third, the problems of financial inclusion, especially in the context of its contradictory influence on the overall results of socio-economic development. Fourth, the search for theoretical foundations and practical tools to improve the sustainability of finance when implementing the concept of sustainable development. These problems are acute both at the global scientific level and for Russian scientists.

The question of spatial characteristics of the Russian banking sector development is becoming fundamentally important, which largely reflects the current processes of its substantial nationalization under increasing centralization. Foreign experience shows an unambiguous causal relationship between the centralization of the national banking systems and subsequent restrictions in lending to the regional economic subsystems. Whereas, these restrictions are most noticeable in terms of regional small and medium-sized enterprises and are even further enhanced in times of crisis. In modern Russian conditions, as shown by the studies of several scholars, there is an additional initial predetermination of centralization of the banking system by the active centralization of the national economy, which especially affects regional investment processes (Shanin, 2012). The problem becomes even more complicated when

considering the broader aspects of financing the socio-economic development of regions and innovations (Bozieva, 2017; Tatuev, 2009).

Unlike foreign practice, this is accompanied by a redistribution of available credit resources from the center to the regions. However, small and medium-sized enterprises do not have access to adequate amounts of bank loans (Ageeva & Mishura, 2019).

This situation requires more active banking in the areas of lending to small and medium-sized businesses, which will make certain changes to the spatial features of the domestic banking sector.

Increased competition and the active formation of a competitive environment should become an important outcome of new banking technologies (Andrieș & Căpraru, 2014). The effective competition space is an integral component of the banking system progress. Thus, the development of banking technologies is becoming a systemic factor in the complex development of banking activities. It should be borne in mind that the largest Russian banks, which are now expanding digital products, are thereby strengthening their leading positions. However, together and alongside with them, the banks are expanding into these currently most profitable digital technology companies, the so-called fintech and IT companies.

Banking activities must be improved in the context of the general global principle, according to which not every loan becomes an advantage. Therefore, the authors suggest focusing on the prevailing excess of short-term and acute shortage of long-term loans. With this imbalance, loans will be considered the sources of real losses for society. Thus, in general, one should be more attentive to understanding the advantage itself, which in a global, and therefore social, value cannot have unidirectional certainty. Therefore, the advantage should extend to the interests of borrowers and the interests of the banking sector, which is quite difficult to implement in Russian conditions. In any case, the noted advantage requires both an effective balance of various national interests and an effective competitive confrontation between them.

With the increasing concentration of free cash resources in the financial markets, competition has led to an increase in the interest of non-financial organizations in providing lending services. This resulted in a pronounced tendency for direct financing – disintermediation,

associated both with an increase in the number of new financial intermediaries and with the elimination of banking intermediation in general. According to several experts, the specificity of disintermediation also lies in reducing banking intermediation in the market for borrowed resources, expanding the practice of direct issuance of securities, giving preference to investments in investment instruments rather than bank deposits, and in the outflow of an increasing amount of credit resources from the banking sector.

At the same time, traditional banking products and services remain no less demanded among individuals and legal entities. In this case, the authors note, on the one hand, a slowdown in the growth rate of traditional services, on the other hand, a stable positive development. Currently, it is mainly not about developing new loan products, but about the development of new technologies for lending and customer service (Behunova, Soltysova & Behun, 2018; Dajani, 2015).

This preserves the basis for the further development of banks and banking activities, despite all types of technological progress. However, the banking community itself has formed an opinion on the completion of banking activities. For example, the management of Sberbank has repeatedly stated that in the near future, as generations change, the demand in the physical network will finally fall, and banks as such will cease to exist even earlier (Sberbank, 2018). It was stated even more categorically that popular demand for traditional banking services would not last more than ten years. Therefore, it is advisable to proceed with establishing a high-tech company such as Google, Apple, Amazon, and Facebook. However, the representatives of

these companies began moving towards banking activities, although initially, they spoke negatively about the prospects of entering the banking sphere due to its excessive regulation. However, just in the last years, this attitude has changed, and Facebook has registered its first bank in the two international jurisdictions. Furthermore, Amazon Finance and Google Finance will be created shortly.

In overcoming such challenges, Sberbank defined the early technological transformation of its financial business as a priority goal, along with the creation of a new platform. This platform will make it possible to fully convert and consolidate all the existing business with a parallel creation of its own network of ecosystems in the non-financial sectors (Sberbank, 2018). This refers to the digital services systematically related to financial products and services – in such segments of the economy as procurement, healthcare, leisure, and home. All this will form the basis of a long-term competitive strategy.

Tinkoff Bank management fully shares this approach by choosing a strategy for the consistent formation of a financial supermarket. It is believed that within five to ten years, banks in their traditional content will simply cease to exist. Therefore, it is necessary to diversify the business as much as possible and form a full range of financial services for the client in one cloud.

At the same time, the authors suggest considering the steady and consistent growth in demand for bank deposits from individuals, which against other indicators is clearly seen from the data in Table 3.

Table 3. Selected performance indicators of credit organizations in the Russian Federation (end of year; million rubles).

	2014	2015	2016	2017
Total assets	77,652,994	82,999,708	80,063,255	85,191,839
Loans, deposits and other deposited funds	51,799,476	57,154,529	55,478,823	58,006,110
Investments in debt instruments of the Russian Federation and the Bank of Russia	1,268,375	2,546,474	3,360,677	3,894,613
Funds in the accounts of enterprises	7,434,684	8,905,229	8,763,655	9,103,565
Budget funds, funds of state and other extra-budgetary funds in accounts	72,272	66,539	8,252	11,005
Household deposits (savings)	18,552,682	23,219,077	24,200,322	25,987,406

Bonds and bills issued by credit organizations, bankers' acceptances	2,225,628	1,962,640	1,533,447	1,639,492
Capital (own funds) of credit institutions	7,928,438	9,008,553	9,387,078	9,397,306

Compiled based on Russian Finances, 2018 (Rosstat, 2018, p. 400).

With the development of the system for providing services under consideration based on the blockchain digital cryptographic technology, which is characterized by additional guarantees for depositors due to the possibility of open access to the transaction history excluding possible modifications. That is, effective protection is achieved due to the exceptional publicity of transactions.

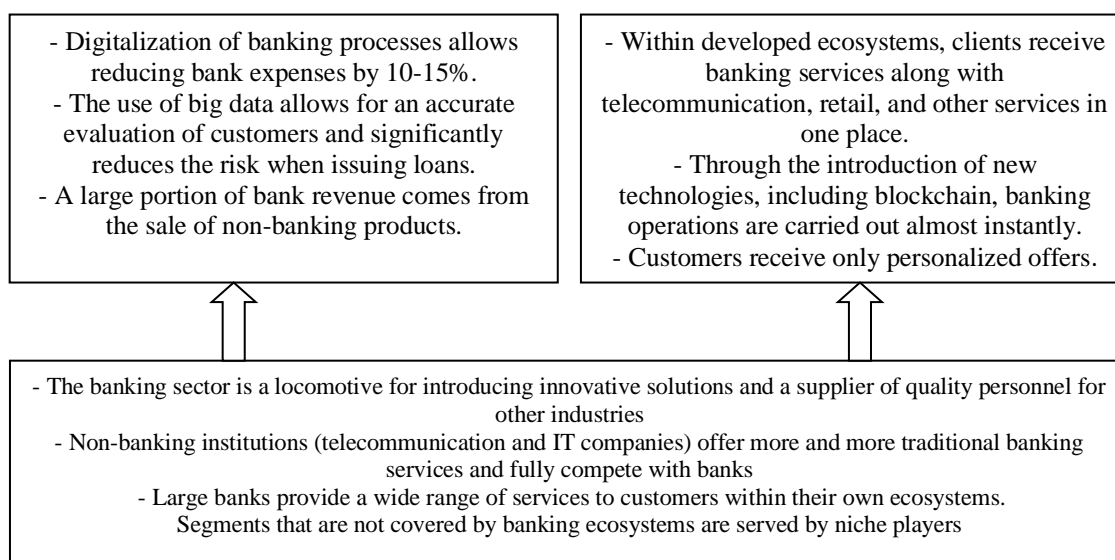
As already noted, fintech and IT companies are the main competitors of banks in the field of banking diffusion. At the same time, according to studies, fintech directly increases the efficiency of banking services by reducing costs, making services truly global and widely available, etc. New digital technologies make financial intermediation more effective in general. However, this is only on the one hand. On the other hand, fintech creates many additional risks, such as information confidentiality risks, operational stability risks due to possible technological shocks, financial stability risks.

Due to the globalization of services, fintech significantly increases the sensitivity of national financial systems to global shocks.

In this context, the domestic banking system has real chances to become one of the most progressive in the world. For this, it is necessary to maintain positions adequate to world requirements in terms of the main development indicators of the banking system and use the technological potential of banks for implementation in other industries.

With the development of this process, the major banks, after a full-scale digital transformation, will be able to provide customers with a wide range of services within their own ecosystems. Other market participants will mainly focus on segments that are not covered by the ecosystems of large banks. In turn, customers will receive several additional services related to telecommunications, retail, education, and healthcare, as shown in Figure 2.

Figure 2. Development priorities for the banking sector of the Russian Federation for the period until 2030.



Compiled based on: The 2008-2017 Decade in the Russian Banking Sector: Trends and Factors. Economic Research Report Series (Bank of Russia, 2018a, p. 33)

At present, special attention is paid to the prospects of using artificial intelligence technology, which offer the possibility of operating the colossal memory arrays. This is relevant not only for the financial sector but also for the national economy as a whole in terms of management decisions. In the banking sector, artificial intelligence technology provides opportunities for increased optimization of the customer service, operational cost-effectiveness calculation for the use of credit resources excluding the influence of the human factor. A new management decision-making system is being formed, which is based solely on information flows without a personal approach, which is sometimes associated with negative or erroneous actions (Butenko, 2019). This fact results in a mass reduction of bank employees today and in the future.

According to the authors, despite the effectiveness of digital technologies, banking does not become outdated but undergoes diffusion. Therefore, further development of substantive banking activities will be of increasing systemic importance. In this space of financial relations, banks must maintain their competitive advantage, which will ensure the basis of their future progress, including in the technological component. This is especially relevant in the perspective of universal coverage of the entire population with financial relations and the formation of priorities in personalized offers of banking services while maintaining a certain demand for their traditional types.

Today, there is a risk of a technocratic approach when the power of technology can damage the main content of credit relations, the development of which is primarily associated with the functioning and development of human capital. With excessive enthusiasm by banks for new technologies in the diffusion of banking activities, they might lose their main competitive advantage to fintech and IT companies. The main thing for banks is no longer the possibility of their transformation into fintech companies, but rather the benefits from possible deepening and expansion of their substantial activities – the formation of ecosystems, the use of blockchain with an increase in the speed and efficiency of transactions.

Conclusions

The results suggest that despite the effectiveness of digital technologies, banking does not become outdated but undergoes diffusion. Therefore, further development of substantive banking

activities will be of increasing systemic importance. In a new space of financial relations, banks must maintain their competitive advantage. The main thing for banks is no longer the possibility of their transformation into fintech companies, but rather the benefits from possible deepening and expansion of their substantial activities – the formation of ecosystems, the use of blockchain with an increase in the speed and efficiency of transactions.

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