DIGITALIZATION OF THE BANKING SECTOR AS A NEW REALITY: DEVELOPMENT PROSPECTS AND ECONOMIC RISKS

Nina Kuzovleva, MIREA – Russian Technological University
Natalia Tarasova, MIREA – Russian Technological University
Anna Zueva, Lomonosov Moscow State University
Lyudmila Prokofieva, Russian state geological prospecting University named after S. Ordzonikidze
Svetlana Anzorova, Synergy University
Natalia V. Bushueva, Moscow Witte University
Gulmira Nurgazina, Russian State Academy of Intellectual Property
Alma Bekbolsynova, L.N. Gumilyov Eurasian National University
Shahida Abdusattarova, Tashkent State University of Economics

ABSTRACT

The article is devoted to the actual problems of digitalization in the banking sector, including ensuring economic security in connection with the introduction of digital currencies by central banks. The special role of credit and financial organizations in the development of digital banking technologies is emphasized. The risks of economic security of the banking sector arising in the process of introducing digital financial services are noted. The assessment of the level of development of the processes of digital transformation of the domestic credit and banking sector is given.

Keywords: Digital Economy, Digital Currencies, Financial Technologies, Banking Sector, Cyber security, Economic Security.

INTRODUCTION

The rapid development of information technologies is currently observed in almost all areas of human activity. The level of digitalization is becoming one of the most important indicators of the economic and social development of society. The national project "Digital Economy of the Russian Federation" involves the active introduction of innovative digital technologies in order to improve the welfare and quality of life of the population. A special mission is assigned to the banking sector, which performs the role of a financial intermediary between the state, business, the population and other parts of society. The accelerated development of digitalization of the banking sector has brought it to the forefront of the introduction of new innovative solutions and made it a role model and a catalyst for the spread of modern information technologies in other sectors of the economy. The dynamic application of digital technologies in credit institutions is one of the main prerequisites for the sustainable development of the Russian economy. The purpose of this study is to analyze the processes of digitalization in the banking sector, identify the main trends in their development and impact on economic security in this area of the economy. Digital technologies are a fundamentally new component of the global economy, significantly increasing the mobility of financial resources, the convenience of their use, and significantly expanding the possibilities of the financial market. Currently, the banking sector is recognized as the driving force of innovation in the Russian economy and the social sphere as a whole.

The forms and methods of interaction between banks and customers are constantly improving with the development and improvement of information technologies in the global market. Mobile banking is rapidly developing, machine learning and artificial intelligence

technologies are being introduced, ecosystems of financial and non–financial products, "social lending", etc . The introduction of digital technologies allows banks to optimize and significantly reduce operational risks. In the new digital environment, many credit institutions are radically restructuring their professional business models and technologies. At the same time, digitalization implies a higher level of openness of the national economy to external influences. Digitalization processes generate new types of risks that are global in nature and create opportunities for a negative impact on global and national markets, which provokes the emergence of new problematic phenomena. Within the framework of this study, attention is focused not only on the topical issues of digital transformation of the banking sector, the search for ways to improve its efficiency, but also on the problems of ensuring economic security in the face of new risks, such as unauthorized impacts on elements of information infrastructure, hacking sites, fraud in the IT sector, unauthorized collection of various kinds of data, etc.

It should also be noted that the introduction of software products increases the possibility of disruption of payment systems, theft of non–cash money, "laundering" of illegally obtained funds, penetration into automated banking systems, etc. Changes in this area are often geo–economic and strategic in nature, affecting the economic security of the country and the economic state of society as a whole. Cybercrime and cyberterrorism, which have a transnational orientation, remain topical threats. The object of criminal encroachments in this case is any confidential information. Theft, destruction or unauthorized use of information in the context of rapidly developing telecommunications systems causes significant harm to the economy. It is extremely difficult to fight cybercrime, because, often, it is of an individual nature, very mobile, and does not require significant costs for the implementation of criminal plans.

MATERIALS AND METHODS

The methodology of economic security is based on the classification of national interests, threats, criteria, indicators (indicators) and their thresholds, and also includes the organizational structure and ensuring economic security. The methodological basis for the study of the problems of digitalization of the banking sector are the general principles and approaches to ensuring economic security in the financial sector, reflected in the National Security Strategy of the Russian Federation, approved by Presidential Decree No. 400 of 02.07.2021, the Economic Security Strategy of the Russian Federation for the period up to 2030, approved by Presidential Decree No. 208 of 13.05.2017, the Strategy for the Development of the Information Society in the Russian Federation for 2017–2030, approved by Presidential Decree No. 203 of 09.05.2017, Federal Law No. 259–FZ of July 31, 2020 "On Digital Financial Assets, digital currency and amendments to certain legislative acts of the Russian Federation".

The objectives of ensuring the economic security of the Russian Federation are "strengthening the economic sovereignty of the country, increasing the competitiveness of the Russian economy and its resilience to external and internal threats, creating conditions for the economic growth of the Russian Federation ..." (Andreeva, 2021). Achieving the goals of ensuring the economic security of the Russian Federation is carried out by solving such a complex task as "strengthening the financial system of the Russian Federation and its sovereignty, developing the national infrastructure of financial markets, including payment infrastructure, overcoming dependence in this area on third countries, expanding the practice of settlements with foreign partners in national currencies, reducing the withdrawal of financial assets abroad, countering illegal financial transactions ..." (Andreeva, 2021). In carrying out the research, the authors relied on empirical and theoretical scientific methods, including: analysis and synthesis of the information obtained, study, processing and generalization of sources of statistical information and scientific literature. The information base of the study was the data of The Central Bank of Russian Federation (n.d.), Moscow Exchange (n.d.), National Association of Securities Market Participants (n.d.), and PricewaterhouseCoopers (n.d.).

RESULTS

The rapid development and application of financial and payment technologies, the formation of basic assets based on crypto currencies capable of effectively and almost fully performing monetary functions, the rapid reduction in the use of cash resources in circulation has set central banks the task of developing digital money and their application in the financial sphere. The digital currency of the central bank (hereinafter referred to as the central bank) is an obligation of the central bank, denominated in the national currency, having a digital representation and capable of acting as a means of payment, measure and preservation of value (Boar, 2021).

There are two possible options for the use of CVCB: – retail TSVTSB is available to a large group of users, including individuals and non–financial organizations; – wholesale TSVTSB is available primarily to credit organizations and other professional participants in the financial and money markets. In economic essence, it differs slightly from the existing reserves of the central bank – the difference is only in technological implementation. Retail digital securities may have a special impact on the financial and economic spheres, but the degree of influence will depend on how popular this new tool will be among citizens and organizations (enterprises). The form of implementation of the CVCB is a digital code, its peculiarity is that it can be used both online and offline. Also, the central bank has the ability to design the system in terms of its anonymity, security, method of exchange for other types of money, interest accrual, and so on. Both the benefits of the Central Bank and the possible risks will depend on this. It should be noted that at the moment the retail CVCB is launched only in the Bahamas. This happened in October 2020. The largest countries where the CVCB is under development are China, Thailand, Turkey, Brazil. The rest are still either at the stage of a pilot project, conducting research, or have completely suspended work on the development of CVTSB. Russia is now completing the research stage (Andreeva, 2021).

The Central Bank is able to have a beneficial effect on the economic security of the national payment system. Firstly, the result of its introduction will be the ability to control transfers and payments due to the transparency of the blockchain, which can lead to an increase and simplification of tax collection, become a tool to combat embezzlement, fraud, corruption, money laundering, and also improve the quality of macroeconomic statistics. Moreover, the creation of a highly liquid instrument that is reliable due to the central bank's provision, capable of competing with existing cryptocurrencies, will make it possible to counteract the "privatization of money circulation". Another important consequence will be the promotion of competition and innovation in payment systems. The development of digital payments will reduce the influence of large banks, will lead to a reduction in acquiring fees. Reducing the dependence of users on some providers will increase the stability of the country's financial system. It is also important that the Central Securities Exchange can become an instrument of monetary policy, if the mega–regulator decides to charge interest on accounts in the Central Securities Exchange. Dynamic variation of the rate of a digital resource would allow, if desired, to influence its value and stimulate the volume of supply and demand, limit excessive demand for digital money and vice versa, influence growth with an increase in the interest rate. Also, the accrual of interest on the Central Securities will allow economic agents to receive a signal and react faster to a change in the situation, which will accelerate the transmission, which, as a rule, is delayed in response to a change in the key rate (Borisova, 2021).

One of the decisive advantages may be that the development of digital currencies can make it possible to conduct international settlements without using the SWIFT system (Bunevich, 2017), and the dollar – the main means of payment in this system may lose its relevance, since the digital currencies of central banks are already other technological interactions. The new system for international settlements can be based on block chain technology, which allows transactions to be carried out without an intermediary (SWIFT), which will also reduce the cost of transactions.

After the introduction of digital currencies by central banks, many countries may no longer need to accumulate dollar reserves, and they will be able to diversify in favor of the currencies of other countries. The loss of the dollar's role as an intermediary currency will reduce its importance in pricing on the raw materials market and in international trade settlements. However, there is another opinion – SWIFT can become one of the platforms for digital currencies. We believe that "even if SWIFT does not keep up with the development of blockchain technologies, then the digital currencies of central banks will partially shift the central role of SWIFT, but not completely, since the fiat currency will not go away for good," says Brian O'Toole, a former adviser to the US Treasury Department responsible for economic and financial sanctions (Bunevich, 2017).

Having named the advantages, it is also necessary to note the risks and threats to economic security in the conditions of digitalization of the national currency. First of all, it is worth focusing on the risk of capital outflow from the banking sector. Digital currency, as the most highly liquid asset backed by the state bank, will become a priority and more competitive in comparison with deposits in systemically important banks. The financial well–being and stability of such banks makes them the most attractive for customers, even despite the low interest rates on deposits. At near–zero nominal interest rates, even if the Central Bank will not bring interest income, the Central Bank can become an alternative to fixed–income investments. In Russia, at the time of public discussions, Deputy Chairman of Sberbank Anatoly Popov noted that within three years after the appearance of a new form of money, 2–4 trillion could go into it. Non–cash rubles, which will lead to a shortage of liquidity and an increase in rates by 0.5 percentage points or more (Blazhevich, 2021). In the Central Securities Exchange, you can also see the steps of the central bank towards the organization of a single–tier banking system, because it can play the role of both an issuer, a platform operator, and a wallet holder. This may lead to a decrease in the market share of commercial banks. It should also be noted that a centralized digital currency system will undoubtedly generate technological risks that will manifest themselves in various disruptions or failures in the event of natural disasters or military operations. The SWOT analysis matrix (Table 1) will help to assess the weaknesses and strengths, to foresee possible threats and features of the introduction of digital securities (Table 1). The results of the SWOT analysis presented by us allow us to draw conclusions about the potential opportunities and risks of using digital money. Turning to the dynamics of the use of financial technologies, it should be noted that at present they represent the necessary elements of all types of operations and services carried out by banks: loan issuance, any types of transfers and payments, savings, investment, insurance, etc., transform business models and thereby increase the attention of their customers (Gavrilova, 2021; Goigova, 2021; Grekov, 2020; Haider, 2018; Ivanova, 2020; Igaliyeva, 2020; Khalin, 2018; Karpenko, 2018; Karpenko, 2018).

Financial technologies (fintech) is an offer of financial services and services that use innovative technologies, for example, Big Data, artificial intelligence and machine learning, robotics, blockchain, cloud technologies, biometrics and others. The basic provisions of the digital bank are mobility, personalization of the offer, focus on customer requests. At the same time, in order to get a positive return from the influence of these factors, it is necessary to introduce innovative proposals focusing on customer experience and support, taking into account and maintaining loyalty in relationships. It should also be noted that in order to become and remain digital, the bank needs to develop at the speed of changes taking place around. Complex, structured, flexible digital products such as, for example, Agile culture, which manifests itself in the development of solutions and in the construction of information systems, will help to support such an innovative rhythm. The bank's new digital products are all.

Table 1
PREDICTIVE SWOT ANALYSIS OF THE DIGITAL RUBLE ISSUE

Positive factors	Negative factors
Security and simplicity of the payment system Minimizing shadow operations – Low costs – Cash channel management	Concentration of responsibilities in the Central Bank The absence of a legal framework for operations

Alternative to global payment systems Альтернатива Alternative to cryptocurrencies Possibilities of state control over expenditures	with CVTSB Hey Unresolved problems in ensuring AML/CFT/FRM procedures Lack of knowledge and skills in working with digital money among the population
Threat	**Capabilities**
Transparency and high speed of calculations with an increase in the share of online sales Expanding the range of new digital products and increasing the volume of innovation resources Removing obstacles for customers when switching from one credit institution to another	The risk of reducing the liquidity of credit institutions Technological risks and cybercrime risks Risk of destruction of the existing banking system Competition between the meregulator and credit institutions for customer funds

The vast majority of domestic credit institutions have been actively implementing fintech products for a long time, for example, Sberbank, Tinkoff Bank, VTB, Alfa–Bank, etc. Leading banks engaged in digital transformation will be able to expand the range of products and services provided within their own created ecosystem. Medium and small banks will be segmented by players outside of ecosystems by leading banks. Non–banking players (telecommunications and IT companies) will be able to offer their customers more and more high–quality and convenient financial services, which will make them full–fledged competitors of credit institutions (Ivanova, 2020; Igaliyeva, 2020; Khalin, 2018; Karpenko, 2018; Karpenko, 2018; Kravchenko, 2016). Bank customers will also be able to use new digital products and services in various industries, such as retail sales, insurance, education, healthcare, and information transmission over a distance. At the same time, there will be ample opportunities to make such a service mobile, personal and high–speed. The incentive for banks to introduce product innovations is an obvious desire to attract and retain their customers, which will lead to an increase in the degree of satisfaction of their growing needs. The obvious solution in such a situation is the introduction of new financial products and digital technologies. For example, it can be an online service of a mortgage broker from Tinkoff Bank or recognition of a user by a photo from Otkrytie Bank during transfers. More and more banks offer personalized cashback services with a choice of purchase categories, and some (Sberbank, VTB) use predictive analytics to create individual offers (Dzholdosheva, 2021; Ivanova, 2020; Ivanova, 2021; Gomber, 2017; Gavrilova, 2019; Gavrilova, 2021; Goigova, 2021; Grekov, 2020; Haider, 2018; Ivanova, 2020).

The key advantages of digital transformation for traditional players are cost reduction and fast banking services. If large players with sufficient resources and skills can carry out a full–scale digital transformation, then medium and small banks have yet to find their niche. In January 2021, the Bank for International Settlements revealed that more than half of the countries (about 60 %) are interested in launching a Central Bank. At the same time, 14 % of central banks have already started pilot testing. The number of countries studying digital currency has increased by 18% compared to last year. BIS Head Agustin Carstens stressed that the CBDC can stimulate competition and increase the efficiency of payments for the national economy. At the same time, the issuance of digital currencies should be the prerogative of central banks (Ivanova, 2020). Thus, we note that most central banks are studying digital currencies, and their work continues at a rapid pace even in the conditions of the Covid–19 pandemic. In general, central banks are moving to more advanced stages of interaction with CBDC, moving from conceptual studies to practical experiments (Ivanova, 2020; Igaliyeva, 2020; Khalin, 2018; Karpenko, 2018; Karpenko, 2018; Kravchenko, 2016).

Worldwide, interest in CBDC is still largely determined by local conditions. In emerging market and developing countries, the goals of financial accessibility and payment efficiency determine the work of a general–purpose CBDC. This is evidenced by the launch of the first "live" CBDC in the Bahamas. Other central banks, collectively representing a fifth of the world's population, are likely to join this leader in the next three years. Other financial regulators are more cautious about the timing of the release and implementation of advanced CBDC projects and prefer to evaluate their capabilities more carefully. At the same time, it is necessary to search for common positions on the implementation policy of the CBDC implementation project.

CONCLUSION

The introduction of digital technologies in banking requires serious state support within the framework of the current legislation, which allows combining the interests of digital technology users with the interests of the state and society. Digitalization, protection of businesses and individuals in the financial market is a priority area of monitoring by the Bank of Russia. The central Bank named the main directions for the development of digitalization of the financial sector. Currently, there are six main, most promising areas of transition to digital technologies of economic systems in the world: biometric, large–scale computer technologies, cybersecurity technologies, artificial intelligence technologies, cloud technologies, mobile technologies (Grekov, 2020; Haider, 2018; Ivanova, 2020; Igaliyeva, 2020; Khalin, 2018; Karpenko, 2018; Karpenko, 2018; Kravchenko, 2016; Karpenko, 2018; Kravchenko, 2016; Kicha, 2021; Lewis, 2015; Lauer, 2015; Manyika, 2016; Maisigova, 2021; Mandych, 2019). The daily functioning of the banking system is closely connected with the use of modern information technologies, which greatly contributes to the reliability and ease of operation of the electronic system. It is necessary to note the risks of cyber security – the emergence of new ways of stealing digital currencies, the increase in risks associated with offline payments. Cyber security is a set of strategic actions aimed at protecting against economic, technical or informational damage due to threats made with the help of software and hardware, as well as a result of daily work with information network technologies (Blazhevich, 2021; Chernyshova, 2021; Dzholdosheva, 2021; Grekov, 2020; Haider, 2018; Ivanova, 2020; Igaliyeva, 2020; Khalin, 2018; Karpenko, 2018; Karpenko, 2018; Kravchenko, 2016; Karpenko, 2018).

REFERENCES

Andreeva N.V., Ermosh, E.V., Nabatchikova, S.B., & Ogorodnikova, E.P. (2021). Application of digital technologies in the banking sector of the economy. Retrieved from https://cyberleninka.ru/article/n/primenenie–tsifrovyh–tehnologiy–v–bankovskom–sektore–ekonomike.

Boar and Andreas Wehrli (2021). Ready, steady, go? – Results of the third BIS survey on central bank digital currency. *BIS Paper, 114*(2021).

Borisova E.V., Nurpeisova A.A., Smailova L.K., Akimova B.Z., & Niyazbekova S.U. (2021). Condition and prospects of innovative development of the economy in Kazakhstan. In: Popkova E.G., Ostrovskaya V.N., Bogoviz A.V. (eds) Socio–economic Systems: Paradigms for the Future. Studies in Systems, Decision and Control, vol 314. Springer, Cham.

Bunevich K.G., & Niyazbekova Sh.U. (2017). Analysis of the socio–economic development of the city of Astana. *Economics and Management, 3*(22), 24–31

Blazhevich, O., Reutov, V., Jallal, A., Sviridov, O., Korobeynikova, O., Bondar, A., Niyazbekova, Sh., & Kamyshova, A. (2021). Analysis of the agro-industrial complex of Crimea: food security of the region. Bulletin of national academy of sciences of the Republic of Kazakhstan.

Chernyshova, E., Feinberg, A., & Tkachev, I. (2021). The Central Bank saw a potential competitor of SWIFT in digital currencies. Retrieved from https://www.rbc.ru/finances/23/12/2020/5fe31a799a79476e537cdf8a.

Decree of the President of the Russian Federation dated 02.07.2021 No. 400 "On the National Security Strategy of the Russian Federation". Retrieved from http://www.consultant.ru/document/cons_doc_LAW_389271/11/21.

Dzholdosheva, T.Y., Maisigova L.A., Niyazbekova, Sh., & Isayeva, B.K., (2021). Features of relations between government authorities, business, and civil society in the digital economy.

Ivanova, O.S., & Niyazbekova, Sh. (2020). Development of fintech and big data in the financial sphere: features, problems, opportunities. *Economics and Management, 1*(32), 30-36.

Ivanova, O.S., Niyazbekova, S.U., Suleimenova, B., Yerzhanova, S.K., & Berstembayeva, R.K. (2021). Oil and gas investment opportunities for companies in modern conditions.

Gomber P., Koch, J.A., & Siering M. (2017). Digital finance and FinTech: Current research and future research directions. *Journal of Business Economics, 87*(5), 537-580

Gavrilova, E.N. (2019). Investment banking as a direction of banking activity: the essence, features and problems of development // Bulletin of the Moscow State University named after S. Yu. Witte. Series 1: Economics and Management. – 2019. – № 4 (31). – Pp. 81–86. doi: 10.21777/2587–554X–2019–4–81–86

Gavrilova, E.N., & Danaeva, K.L. (2021). The banking sector of Russia: the current state and development trends. *Economics and Management, 1*(36), 7-14.

Goigova, M.G., Kurmankulova, R.Z., Anzorova, S.P., Yessymkhanova, Z.K., & Niyazbekova, S.U. (2021). Digital transformation of government procurement on the level of state governance. In: Popkova E.G., Ostrovskaya V.N., Bogoviz A.V. (eds) Socio–economic Systems: Paradigms for the Future. Studies in Systems, Decision and Control, vol 314. Springer, Cham.

Grekov, I.E., Niyazbekova, Sh., Blokhina, T.K., Mussirov, G., Aetdinova, R., Suleimenova, B.B., & Burkaltseva, D.D. (2020). Macroeconomic analysis of the securities market of the Republic of Armenia. *Bulletin of national academy of sciences of the Republic OF Kazakhstan*.

Haider, H. (2018). Innovative financial technologies to support livelihoods and economic outcomes. K4D Helpdesk Report. Brighton, UK: Institute of Development Studies.

Ivanova, O.S. (2020). Development of fintech and big data in the financial sphere: features, problems, opportunities. *Economics and Management, 1*(32), 30-36.

Igaliyeva, L., Niyazbekova, S., Serikova, M., Kenzhegaliyeva, Z., Mussirov, G., & Zueva, A. (2020). Towards environmental security via energy efficiency: a case study. *Entrepreneurship and Sustainability Issues, 7*(4), 3488-3499.

Information of the Bank of Russia (2020). Main directions of development of information security of the credit and financial sphere for the period 2019–2021. Retrieved from https://www.garant.ru/products/ipo/prime/doc/74615166/.

Khalin, V.G., & Chernova, G.V. (2018). Digitalization and its impact on the Russian economy and society: advantages, challenges, threats and risks. *Management consulting, 10*(118), 46-62.

Karpenko, O., Blokhina, T., Savenkova, E., & Rybakova, O. (2018). Case study of financing of innovative projects and exogenous shocks. 2018 in Management and Production Engineering Review.

Karpenko, O.A., Blokhina, T.K., Savenkova, E.V., & Rybakova, O.V. (2018). Case study of financing of innovative projects and exogenous shocks. 2018 in Management and Production Engineering Review.

Kravchenko, A.A., Zharikov, E.P., Sergeeva, O.O., & Stetsyuk, V.V. (2016). Econometric estimation of bilateral transboundary trade between Russia and China. *International Journal of Economics and Financial Issues, 6*(3), 1068-1071.

Kicha, D., Baigireyeva, Z., & Niyazbekova, Sh. (2021). Analysis of the Influence of Ecology on Human Resources Management in the Healthcare System. *Journal of Environmental Management and Tourism, 7*(55), 1980-1996.

Lewis, R.J., Villasenor J.D., & West, D.M., (2015). The 2015 Brookings Financial and Digital Inclusion Project Report: Measuring Progress on Financial Access and Usage. Washington DC: The Center for Technology Innovation at Brookings.

Lauer, K. (2015). Digital Financial Inclusion.

Manyika, J., Lund, S., Singer, M., White, O., & Berry, Ch. (2016). Digital finance for all: Powering inclusive growth in emerging economies. USA: McKinsey & Company.

Maisigova, L.A., Isayeva, B.K., & Dzholdosheva, T.Y. (2021). Features of Relations between Government Authorities, Business, and Civil Society in the Digital Economy

Mandych, I.A., & Bykova, A.V. (2019). Trends in innovation and investment development of high–tech enterprises. *Russian Technological Journal, 7*(5), 79-92.

Moldashbayeva, L., Niyazbekova, Sh., Kerimkhulle, S., Dzholdoshev, N., & Serikova, M. (2021). "Green" bonds – a tool for financing "green" projects in countries. *E3S Web Conferences, 244*(2021), 10060.

Myrkanova, A., Baidalinova, A.S., Niyazbekova, S.U., & Baigireyeva, Z., (2021). Household food security in Kazakhstan. In: Popkova E.G., Sergi B.S. (eds) "Smart Technologies" for Society, State and Economy. ISC 2020. Lecture Notes in Networks and Systems. Springer, Cham.

Nazarenko, O.V., & Niyazbekova Sh.U. (2018). Current state and prospects for the development of the oil and gas sector of the Republic of Kazakhstan. *Economics and Management, 4*(27), 7-14.

Nyantakyi, E.B. (2015). The banking system in Africa: Main facts and challenges. *Africa Economic Brief, 6*(5), pp.1–16

Patashkova, Y., Niyazbekova Sh., Kerimkhulle, S., Serikova, M., & Troyanskaya, M. (2021). Dynamics of Bitcoin trading on the Binance cryptocurrency exchange. 2021. *Economic Annals–XXI, 187*(1-2), 177-188

Parana, E. (2018). Digitalized finance: Financial capitalism and informational revolution. Boston: Brill. Retrieved from https://doi. org/10.1163/9789004383920.

Pravikov, O., Stetsyuk, V., & Denisov, V. (2018). Strategic change in investment policy rationale of enterprises modernization as a key condition for getting over economic crisis. *Investment Management and Financial Innovations, 15*(3), 212-222.

Semernina, Yu.V., & Ponomarev, A.N. (2018). Digital transformation of financial services. Moscow, Russia: Plekhanov Russian University of Economics

The main directions of financial technology development for the period 2019–2021 | Bank of Russia. Retrieved from https://www.cbr.ru/content/document/tile/71220/main_directions.pdf.

Thakor, A.V. (1999). Information technology and financial services consolidation. *Journal of Banking & Finance, 23*(2-4), 697-700.

Website of the Bank of Russia (2021). Is there a future for digital currencies of central banks? Retrieved from https://cbr.ru/content/document/file/71328/analytic_note_190418_dip.pdf.

Sitnik, A.A. (2020). Digital currencies of Central banks.

Troyanskaya, M., Niyazbekova, Sh., Serik Toygambayev, V., & Rozhkov, (2021). Instruments for financing and investing the "green" economy in the country's environmental projects. *E3S Web Conferences, 244*(2021), 10054.