Digital Finance Technologies: Threats and Challenges to the Global and National Financial Security

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Abstract. Among the priority areas of domestic science development, the state singled out the creation and development of digital technologies, systems capable of processing large amounts of data, which will make it possible to make a significant contribution to accelerating economic growth and ensuring the country's security (including financial security). Such directions of development have led to the appearance in society of the problems of human interaction and digital technologies in the financial sphere, leading both to a change in the model of financing the economy, and to the emergence of «Cifrogenic»/ «digital-genous»¹ threats and challenges to society, the economy and man.

Purpose: The society is faced with the dual nature of digital financial technologies, which is manifested in the fact that they are not only the basis for the development of innovative processes in the financial sector, but also a source of risks for society, the economy and people.

Design/methodology/approach: The tools of systemic, structural functional and institutional approaches were used in the process of substantiation of theoretical provisions, data analysis, conclusions and recommendations that allowed analyzing and taking the complex areas of financial development of digital technology and human interaction and digital technology in the financial sector are analyzed as the studied material.

A review of the literature on the selected topic has shown that relations arising in the course of human-digital interaction in the financial sphere are discussed in many papers of such scholars as Alifanova et al. (2019), Alifanova et al. (2018), Chechenov et al. (2020), Kumykov et al. (2017), Magomedov et al. (2017), Nivorozhkina et al. (2016), Smagina et al. (2017), Popkova et al. (2018), Lokova et al. (2019), Reshetnikova et al. (2019), Zmiyak et al. (2019), Reshetnikova and Magomedov, (2020).

Findings: There are opportunities to form a «digital financial profile» of a person who becomes an object of advertising, marketing, sociological, political research, and ultimately can become a subject of social rating and a source of information for managing the financial behavior of a person and the country’s population as a whole. Whereas the answers to the questions of who and in whose interests controls the financial behavior of the country's population relate to the field of national security.

Originality/value: The functionality of digital technologies creates a new platform for human financial activity: supporting the adoption of credit and investment decisions, the availability of financial products and services and their personification through processing and analysis of big data.

¹ «Cifrogenic»/ «digital-genous», that is, derived from causes related to digital technology.
data, new types of investment assets resulting from blockchain technology and much more. At the same time, moving ever-increasing volumes of financial activity into virtual space, changing the format of interaction (from traditional Business-to-Customer to Peer-to-Peer and even Digital Profile-Digital profile), the emergence of Fintech companies, digitalization of the financial sector has wide range of consequences. So, financial organizations no longer interact with a person, but with his “digital profile”, with a psychological-digital portrait.

1. Introduction
In the modern world, social philosophy, sociology and other areas of humanitarian knowledge are constantly looking for a balance between the attractive prospects of transforming social reality under the influence of technology and the risks of manipulating a person’s consciousness and his behavior in a society of mass communications and big data. A separate area of this scientific problem is the interaction of man and digital technologies in the financial sector, leading to a change in the model of financing the economy.

This increases the relevance of solving the problem of human-digital interaction in the financial sector. On the one hand, the functionality of digital technologies creates a new platform for human financial activity (including new types of investment assets resulting from blockchain technology, the availability of financial products and services and their personification through the processing and analysis of big data, etc.) but, on the other hand, moving more and more financial activity into virtual space, changing the format of interaction (from traditional Business-to-Customer to Peer-to-Peer and even Digital Profile-Digital profile), the development of Fintech companies, digitalization of the financial sector has a wide range of consequences. For example, the formation of a “digital financial profile” of a person, which ultimately can become the subject of social rating and a source of information for managing the financial behavior of a person and the country's population as a whole. In turn, the answers to the questions of who and in whose interests controls the financial behavior of the country's population relate to the field of national security.

From a scientific point of view, an understanding of the duality of digital financial technologies is required: as the basis for the development of innovative processes in the financial sphere and as a source of risks for society, the economy and man. Scientifically based decisions are needed to identify «Cifrogenic»/ «digitalgenous» challenges and threats, identify the directions of their impact on global and national financial security, determine the qualitative parameters and quantitative characteristics of these calls and threats, assess the consequences of their implementation for financial security, analyze the effects of using digital financial technologies, and on this basis, forecasting future transformations and developing preventive solutions.

Digitalization of the economy involves the transition of economic processes into a digital environment, which is accompanied by significant changes and updates in many aspects.

The strategy for the development of the information society in the Russian Federation for 2017–2030, approved by Decree of the President of the Russian Federation dated May 9, 2017 No. 203, is aimed at creating conditions for the development of a knowledge society in the Russian Federation.

In Russia, ensuring the accelerated implementation of digital technologies in the economy and social sphere is one of the national development goals (Decree of the President of the Russian Federation of May 7, 2018 No. 204 “On National Goals and Strategic Tasks of the Development of the Russian Federation for the Period until 2024”, hereinafter - Decree No. 204)².

2. Materials and method
In the context of the problem posed it is necessary to pay attention on key aspects:

1. Global problems, threats and challenges, its influence on the modern condition of national safety;

² Decree of the President of the Russian Federation dated May 9, 2017 No. 204. URL: http://www.kremlin.ru/acts/bank/43027 (date of access: 15.05.2020)
2. Flourishing of digital Fintech, their essence and impact on the state, people, and society.
   An analysis of the current state of research on these aspects is given below.

1) The globalization of the world economy leads to the fact that international organizations are increasingly controlling the world economy. Gradually, a process occurs in which the management powers of a particular country are redistributed to the international level as written at work of Silvestrov (2014).

   Currently, the world economy is entering a new phase of geo-economic development, where competition is becoming a major factor between the leading areas of economic interaction. Economic competition will be carried out mainly between internationally developed territories, regions and enterprises, including such as transnational corporations, losing their nationally oriented significance, Silvestrov (2015). Accordingly, Russia and its regional entities are faced with a difficult choice: either to shut down from the influence of globalization and strive to do everything necessary on their own for their domestic market (autarky), or to take the path of creating an innovative, open world, competitive economy, attractive for investment and multilateral cooperation in the framework of strategic partnership, Shevchenko (2019).

   A comparison of modern domestic and foreign concepts of the world order, the regular change of steady states and unsteady states of the international system is presented in author research Nikitin (2018), which touches on the urgent question of whether the misfiring relationship after 2014 became a crisis of the world order, or whether the international processes of three decades after the end of the Cold War integratable perfectly into the evolutionary trajectory of the world order established after the Second World War from the middle of the 20th century to the present.

2) Authors Bratersky et al. (2019) formulate a number of signs of a new regional order of the Asia-Pacific countries, which may develop into a new international (global) order. This type of system, according to the authors, will be more competitive and less hierarchical, within its framework there will not be a single dominant force or ideology, it will be based on many centers of power. Such a world order is more attractive to Russia than a unipolar Atlantic order. It will give the country the opportunity to use its own comparative advantages, such as territory, resources, hard power, a fairly rigid political organization and the ability to mobilize resources for strategic purposes.

   In the work of the authors Bauer et al. (2019); Vail et al. (2019), an analysis of a new trend that replaces the computerization and informatization of society, - global society digitalization.

   Schueffel, P. (2016) explores the complexity of Fintech and defines it as a new financial industry that uses technology to improve financial performance by creating innovations in financial services. In his article on evolution, Fintech, Arner et al. (2015) describes the development of Fintech as a continuous process, «during which finance and technology evolved together» and which led to numerous gradual and destructive innovations, such as Internet banking, mobile payments, crowdfunding, peer-to-peer, Robo -Advisory, online identification, etc. Authors Chishti and Barberis (2016), Ferreira et al. (2015), Heap and Pollari (2015) provide a number of examples of how the interaction of finance and technology has led to innovation. In the financial services sector (eToro), in operating companies (Citi), at the government level (for example In Israel), SWIFT. In each of these cases, Fintech significantly stimulates innovation. Thanks to its innovativeness and potential destructive impact on the financial services industry, Fintech has a comprehensive and lasting impact on the entire sector.

   The authors Kuladzhi et al. (2019) see the use of digital technologies in solving national projects and programs.

   An analysis of the implementation of modern digital technologies in the financial sector is carried out by the authors Nikonov et al. (2018.), Savina (2018.).

   The works Karabarbounis et al. (2014), Savina (2018.) studied the stages of development of society under the influence of industrial revolutions, identified positive effects, identified risks and threats to economic development from the massive introduction of digital technologies.
3. Results
With the growing interest in this area of digitalization of financial technologies, the volume of investment in the Fintech industry is also increasing. Large financial companies sponsor research into the implementation of a distributed database registry in relation to their specializations and activities. So, in 2017, the total volume of investments in the global economy in the sphere of Fintech startups amounted to 14.6 billion USA dollars, which is almost twice as much as in the previous 2017, a further increase in market volumes continued in 2018.

Fintech often comes with a large price tag. Usually, this is an upfront cost and can cause quite a bit of sticker shock. However, the technology is aimed to optimize financial services and banking. Cutting-edge innovations like artificial intelligence and blockchain are ushering new ways of doing business.

There are many fields affected by Fintech, particularly:
- Banking
- Insurance
- Loans
- Personal finance
- Electronic payments
- Loans
- Venture capital
- Wealth Management

In the coming years, all of these are getting a digital facelift. The tides are turning and more than ever, companies need to get on board or risk sinking the ship. Brands who are pioneers in the Fintech sector include:
- Apple
- Goldman Sachs
- PWC
- JP Morgan
- Samsung
- Amazon
- Paypal

To drive the point home, we’ve compiled a list of some of the most recent stats to support the argument that Fintech is the future and won’t be going anywhere, anytime soon.

Government structures form a single digital environment for citizens in a “single window” format. These projects are aimed at solving life situations, registering contracts with various categories of users of public services. These digital platforms are also based on big data processing and form information products for both the public and business representatives. These digital platforms form the basis, the basis for digitalization of the innovative national economy.

The era of active digitalization, including in the field of global financial markets, has come as a result of the development of the blockchain as a way of organizing a network.

Blockchain is a type of distributed data ledger, a universal transaction book that registers and tracks every operation performed in it, which is distributed over the Internet in thousands of unedited copies through a peer-to-peer model and is protected by advanced cryptographic methods. The closest meaning is ledger - a publicly available global ledger that allows users to record and view all transactions on the network.

Distributed ledger technology, and in particular blockchain networks, is the main vector for the development of the 21st century for the entire financial market, due to the fact that it is a more convenient and universal way of storing information and conducting all types of transactions, which saves huge resources and increases reliability.

The digitalization process creates the need for the formation of new institutions for the protection of national security, carrying out the activities of organizations carrying out technical intelligence in relation to state, national commercial, scientific organizations and enterprises.
The world-famous and popular blockchain technology became thanks to Satoshi Nakamoto and his high-profile development called «Bitcoin» (BTC) - the first digital decentralized currency, after which a massive «crypto boom» burst out after a few years. “A fundamentally new technological solution, which was laid in the foundation of bitcoin, endowed this digital entity with a number of undoubted advantages over traditional (fiat) money, and provided absolute freedom of money transfers”.

The FATF Statement on Virtual Assets (posted on the official FATF website following the October 19, 2018 Plenary) noted that “Virtual assets and related financial services have the potential to contribute to financial innovation and performance, as well as financial inclusion, but also create new opportunities for criminals and terrorists to launder their income or finance their illegal activities. In this regard, the FATF is actively monitoring risks in this area and issued guidance on a risk-based approach to virtual currencies in 2015. There is an urgent need for all countries to take coordinated measures to prevent the use of virtual assets for criminal purposes and for terrorism purposes”.

On July 22, 2020, the State Duma adopted in the third reading the law «On digital financial assets». (On July 31, 2020, the Russian President signed the law on digital financial assets, digital currency and amendments to certain Russian legislation (the “Law”).

The document defines cryptocurrency, but prohibits its use in Russia to pay for goods and services. Advertising of digital money payment methods also falls under the ban. The new rules will come into force on January 1, 2021.

According to the law, digital currency is “a set of electronic data (digital code or designation) contained in the information system, which are offered and (or) can be accepted as a means of payment that is not a currency of the Russian Federation, a currency of a foreign state and (or) an international monetary or unit of account, and (or) as an investment and in respect of which there is no person obligated to each owner of such electronic data”.

Cryptocurrency means “a mathematical-based decentralized convertible currency that is secured using cryptographic methods, i.e. uses cryptography to create a distributed, decentralized and secure information economy”.

Financial regulators in many countries note the need for a more detailed study of the nature of cryptocurrencies. Some, such as the Swiss central bank, are developing their own cryptocurrencies.

Russia is actively working on the legal definition of digital assets, while the opinions of many leading figures in politics and economics have changed from negative to the position of accepting cryptocurrency and organizing a system for its regulation, development and control. As evidenced by the adopted law.

«The digital currency law is a key for the development of the national blockchain industry». The term of entry into force of the law «On digital currency» is due to the beginning of next year, January 1, 2021. The Law was substantially revised after its adoption in the first reading by the Russian State Duma on May 22, 2018. Now the government is actively working to coordinate positions on the document «On digital currency».

According to data from the analytical agency IBM, the majority of large banks included in the survey group of 200 companies plan to implement blockchain technology in their business processes from 2018 to 2020. Blockchain will demonstrate the peak of its development in the field of applicability with respect to financial markets by 2025. (Figure 1).
The use of blockchain technology is driving changes in many elements of supervision and accounting. Trading processes and the exchange of information become transparent, faster and significantly cheaper, due to the absence of various kinds of costs (for example, the costs of specifying and concluding a contract, the costs of legal defense, bank commissions). For banking institutions, stock exchanges and other financial institutions, this technology opens up global prospects for the development of the entire system of operations. But despite its potential, blockchain is also a serious threat to the financial intermediary industry.

Digitalization of the economy, on the one hand, is the basis for the innovative development of modern economic systems, on the other hand, it creates new threats and risks. In a digital environment, opportunities are created for attackers to use innovations for criminal purposes, to use them to access sensitive and strategically important information.

Proponents of the approach of seeing the future of the financial system without classical means of payment expressed in national currency see in cryptocurrency the possibility of completely replacing fiat money with bitcoin or other altcoins. Digital currency is perceived as a way to get rid of the state and banking monopoly on money and money circulation in general.

Understanding cryptocurrency solely as a new financial asset for speculation and investment strategies is the second side of digital currency perception.

Obviously, a certain trend has emerged: on the one hand, large financial researchers and market participants demonstrate a serious interest in digital financial technologies, cryptocurrencies, on the other hand, disputes about the legal identification of these operations continue at the official level. Nevertheless, the latter in no way can be a reason for the formation of a negative forecast regarding the future of digital financial technologies. The trend is obvious - the digital economy and operations with cryptocurrencies have huge potential, which, under certain conditions, can lead to the fact that these technologies will be applicable all over the world, that is, they will become the basis of the global digital economy.

4. Conclusion

The process of globalization and the digital transformation of society form in the global economic space previously difficult to predict phenomena, and also contribute to a change in the ratio of financial capabilities of all players on the world stage. The creation of the Internet of things (industrial Internet), artificial intelligence and blockchain technology, the accelerating capitalization of

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3 Based on data: «IBM» «Power of blockchain in financial services». URL: https://www.ibm.com/blogs/systems/power-blockchain-financial-services. (date of access: 12.03.2020) and completed by the authors.
cryptocurrencies served as the basis for the emergence of an innovative financial ecosystem that is fundamentally different from the traditional one, which is forced to confront new challenges and threats.

The current situation caused by the pandemic of COVID-19 infection has made serious adjustments to the economy of most countries of the world. Anti-epidemic measures led to the shutdown of enterprises in various industries.

The main risks associated with money laundering and terrorist financing in connection with COVID-19:

- The increase in COVID-19-related crimes, such as fraud, cybercrime, misdirection or exploitation of government funds or international financial assistance, is creating new sources of proceeds for illicit actors.
- Measures to contain COVID-19 are impacting on the criminal economy and changing criminal behavior so that profit-driven criminals may move to other forms of illegal conduct.
- The COVID-19 pandemic is also impacting government and private sectors’ abilities to implement anti-money laundering and counter terrorist financing (AML/CFT) obligations from supervision, regulation and policy reform to suspicious transaction reporting and international cooperation.

These threats and vulnerabilities represent emerging money laundering (ML) and terrorist financing (TF) risks.

At the international level, the FATF is working with the Committee on Payment and Market Infrastructures and the World Bank to help ensure coordinated policy responses for the continued provision of critical payment services against the backdrop of the COVID-19 crisis. The FATF, International Monetary Fund, World Bank, and United Nations are working with their membership to mitigate the impacts of the COVID-19 crisis, including through the use of AML/CFT measures, where relevant. In addition, the FATF is working with its members and the FATF-Style Regional Bodies to identify and share good practices in response to common issues faced in many affected countries.  

5. References
[1] Alifanova E N, Nivorozhkina L I, Evlakhova Yu S 2019 Inter-Vulnerability of Financial Institutions and Households in the System of National Financial Security Assessment International Journal of Economics and Business Administration vol VII special issue 2 pp 3-15
[2] Alifanova E N, Evlakhova Yu S, Nivorozhkina L I, Tregubova A A 2018 Indicators of Financial Security on the Micro-Level: Approach to Empirical Estimation European Research Studies Journal Vol XXI Special issue 1
[3] Arner D W, Barberis J & Buckley R P 2015 The evolution of Fintech: A new post-crisis paradigm Geo. J. Int’l L. 47 1271
[4] Babkin A V, Burkaltseva D D, Pshenichnikov V V, Tyulin A S 2017 Cryptocurrency and blockchain technology in digital economy: development genesis St. Petersburg State Polytechnical University Journal Economics 10(5) 9-22 DOI: 10.18721/JE.10501
[5] Nikonov A A, Stelmashonok E V 2018 Analysis of modern digital technologies’ implementation in the financial sphere St. Petersburg State Polytechnical University Journal Economics 11(4) 111-119 DOI: 10.18721/JE.11408
[6] Bauer V P, Eremin V V, Silvestrov S N & Smirnov V V 2019 Economic Modeling of Digital Transformation Processes Russian Journal of Economic Theory 16(3) 428-443
[7] Borisova O V 2018 The Financial Technology Market and Its Development Trends Finance and Credit vol 24 8 pp 1844–1858 https://doi.org/10.24891/fc. 24. 8.1844

4 COVID-19-related Money Laundering and Terrorist Financing Risks and Policy Responses. URL: http://www.fatf-gafi.org/publications/fatfgeneral/documents/covid-19-ml-tf.html (15.05.2020)
6 COVID-19-related Money Laundering and Terrorist Financing Risks and Policy Responses. URL: http://www.fatf-gafi.org/publications/fatfgeneral/documents/covid-19-ml-tf.html (15.05.2020)
[8] Bratersky M V, Kutyrev G I 2019 Russia between Two Systems: Transit from The Atlantic World into the Eurasian-Pacific One Outlines of Global Transformations: Politics, Economics, Law vol 12 1 pp 220–240 DOI: 10.23932/2542-0240-2019-12-1-220-240

[9] Chechenov A M, Shogenov M Z, Azamatova G K, Atabieva Z A, Reshetnikova N N 2020 Self-administration and Development of Local Communities of North Caucasus: By the Example of Kabardino-Balkar Republic and Karachay-Cherkess Republic In: Kolmykova T, Kharchenko E (eds) Digital Future Economic Growth, Social Adaptation, and Technological Perspectives Lecture Notes in Networks and Systems vol 111 Springer, Cham

[10] Chishi S & Barberis J 2016 The Fintech Book: The Financial Technology Handbook for Investors, Entrepreneurs and Visionaries (Chichester, UK: John Wiley & Sons Ltd)

[11] Ferreira J J P, Mention A L & Torkkeli M 2015 Illumination in times of uncertainty: Fifty shades of innovation for societal impact Journal of Innovation Management 3(1) 1-4

[12] Heap T & Pollari I 2015 FINTECH 100-Leading Global Fintech Innovators Report

[13] Shevchenko I, Puchkina E, Tolstov N 2019 Shareholders’ and Managers’ Interests: Collisions in Russian Corporations HSE Economic Journal Issue 23 Vol 1 pp 118-142

[14] Karabarbounis L & Neiman B 2014 The global decline of the labor share The Quarterly journal of economics 129(1) 61-103

[15] Kumykov A M, Shogenov M Z, Chemaev N A, Shogenova F Z, Reshetnikova N N 2017 Informal patterns of civil society and social stability at a local level Espacios T 38 57 p 28

[16] Law on digital financial assets, digital currency and amendments to certain Russian legislation 31.07.2020 N 259-Federal Law

[17] Lokova M Y, Khanova M N, Azamatova G K, Vindizheva A O, Reshetnikova N N 2019 Social Consequences of the Impact of Information Technologies on the Values of Modern Youth in the Conditions of the Global Future of the Global Financial System: Downfall or Harmony (Lecture Notes in Networks and Systems - LNNS) Springer Nature Switzerland Vol 57 pp 176-182

[18] Magomedov M G, Khubiev B B, Atabieva Z A, Kushkova A F, Ugnich E A 2017 The concept of social human rights in the conditions of the destruction of the social sphere Espacios T 38 54 p 31

[19] Nikitin A I 2018 The modern world order: its crisis and prospects The policy. Policy research 6 p https://doi.org/10.17976/jpps/2018.06.03

[20] Nivorozhkina L I, Alifanova E N, Evlakhova Yu S, Toporova T V 2016 Statistical Analysis of the Financial Activity of Households in the Context of Macroeconomic Fluctuations Indian Journal of Science and Technology Vol 9(12)

[21] Popkova E G, Vovchenko N G, Epifanova T V, Pogorelenko N S 2018 Did competition help to achieve positive effects of privatization? Espacios 39(1) 18

[22] Savina T N 2018 Digital Economy as a New Paradigm of Development: Challenges, Opportunities, and Prospects Finance and Credit vol 24 3 pp 579-590 https://doi.org/10.24891/fc.24.3.579

[23] Sil’vestrov S, Smirnov P 2015 To a Question of the Principles of Sanctions War of the West Against Russia Economic strategies 3 TARGET’S pp 36-45 http://www.inesnet.ru/summary/to-a-question-of-the-principles-of-sanctions-war-of-the-west-against-russia

[24] Silvestrov S N 2014 The financial stability board as the four pier of the global financial system Finance: Theory and Practice 6 84-91

[25] Reshetnikova N, Magomedov M, Buklanov D, Zakharchenko E 2019 The international business cooperation and its influence on enterprise financial security under globalization In: Popkova E (eds) The Future of the Global Financial System: Downfall or Harmony ISC 2018 Lecture Notes in Networks and Systems vol 57 (Springer, Cham) pp 294-308

[26] Reshetnikova N N, Magomedov M G 2020 Influence Strategic Competitive Advantage International Business Cooperation in the Frame of Financial Crisis In: Solovev D (eds) Smart Technologies and Innovations in Design for Control of Technological Processes and Objects:
Economy and Production FarEastCon 2018 Smart Innovation, Systems and Technologies vol 138 (Springer, Cham) pp 399-408

[27] Schueffel P 2016 Taming the beast: a scientific definition of Fintech Journal of Innovation Management 4(4) 32-54

[28] Smagina N N, Magomedov M G, Buklanov D A 2017 Sustainable Competitive Advantage of the International Business Tourism on the Regional Level Overcoming Uncertainty of Institutional Environment as a Tool of Global Crisis Management Editors: Popkova, Elena G. pp 541-548

[29] Vile P, Warner S 2019 Digital Transformation of Business Changing the business model for organizing a new generation: transl. from English (M.: Alpina Publisher) 257 p

[30] Kuladzhi T V, Murtazayev Said-Alvy Y, Babkin Aleksandr V 2019 Implementation of the federal project «Digital technologies»: purposes, tasks, management monograph: Digital economy and through technologies: theory and practice (St. Petersburg) pp 191-213

[31] Zmiyak S S, Ugnich E A, Krasnokutskiy P A 2019 Generation and commercialization of knowledge in the innovational ecosystem of regional university in the conditions of information economy establishment in Russia In: Advances in Intelligent Systems and Computing vol 726 pp 23–31 (Springer)