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**BLOCKCHAIN TECHNOLOGIES IN THE PROCESS OF**  
**DEVELOPING ECONOMIC SYSTEMS**

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**Abstract**

At the moment, the share of digital technologies in the economy is significantly lower compared to traditional models, but it is steadily growing, competing with previously adopted financial schemes, since it eliminates the need to attract intermediaries and contractors, thereby reducing the transaction cost. In this paper, the author's position is justified, according to which the use of modern digital technologies can reduce the participation of the state in business processes, which entails an increase in economic liberalization. The main goal of the study was to form an information base for developing a strategy to attract the interest of citizens in creating cryptoparks, through determining the prospects for using blockchain technology from the point of view of the population. The authors believe that the blockchain technology allows reducing the state's participation in business processes, which entails the liberalization of the economy. The results of the study can be used to develop a strategy for behavior in the cryptocurrency market.

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## 1. Introduction

With the advent of modern digital technologies, the financial structure of the economy has changed dramatically. The basis of the digital economy is the blockchain technology (block chain), a chain of blocks built in a certain sequence of blocks of information that are not connected to a common server and so transactions occur without intermediaries and control of regulatory agencies. The introduction of blockchain technologies reduces production costs, increases economic efficiency, and modernizes document management, storage, and information exchange. Blockchain technology also reduces the cost of new companies entering the market and encourages the emergence of new financial services.

All of the above has defined the object area of research as modern technologies and innovative approaches caused by the digitalization of the economy and associated with the development of the Institute of service integration of financial services. The subject of the study is the economic and managerial processes that determine the development of the Institute of service integration of financial services. The purpose of the research is to develop the theoretical foundations and methodological provisions, as well as scientific and practical recommendations in the field of modern digital technologies.

## 2. Method of research

The theoretical and methodological basis of the study was made up of scientific works of Russian and foreign researchers in the field of economic theory, digital economy, and other scientific areas. The blockchain technology (eng. blockchain) was first described in 1991 (Haber & Stornetta, 1991), but has not found its wide application due to the lack of access to high-speed Internet. This idea was put into practice in 2008, when Satoshi Nakamoto created the first version of the software and published a technical description of his Protocol (Nakamoto, 2008). In 2009, a new network called Bitcoin (eng. Bitcoin), the first blocks were generated, which made it possible to transfer bitcoins to each other without the participation of a third-party intermediary.

One of the foundations of the digital economy is cryptocurrency, which is digital money, and related economic processes. Using cryptocurrencies, money transactions take place without the participation of intermediaries directly from one party to the other. The international community has long questioned the optimality of national currencies as the main international currencies. The shortcomings in the use of the national currency as an international currency have been repeatedly noted in the works of domestic and foreign authors, such as Triffin (1960), Salvatore (1999) and Frankel (1999). Today, it is cryptocurrencies are the most well-known example of using blockchain technology (Borisov, 2016; Drescher, 2018; Egorov, 2017; Osipova, 2017; Sidorov & Kamaeva, 2020; Vigna & Casey, 2017).

Methodological basis of research is formed of General scientific principles, methods of economic analysis and financial management involving the use of methods of system analysis; quantitative and qualitative research modern trends in the development of technology and innovation Institute service integration financial services. On the basis of the Stupino branch of MAI-Moscow Aviation Institute (national Research University), located at the address: Russia, Moscow region, Stupino, ul. Section 4, an empirical study was conducted to determine the interest of citizens in the emergence of new digital technologies, as well as to assess, from their point of view, the prospects of cryptocurrency.

### **3. Results**

In a broad sense, the term blockchain (block chain) is understood as follows: it is a fully distributed peer-to-peer system of accounting logs that uses a software module that implements an algorithm that processes the information content of ordered interconnected data blocks as a whole using cryptographic technologies and data protection technologies to ensure and maintain the integrity of this system (Lelu, 2018).

The share of technological entrepreneurship using blockchain is steadily growing and is penetrating an increasingly wide range of economic structures. Blockchain is not only becoming the basis of a new business ecosystem, but also plays a significant role far beyond financial instruments. The main advantages of blockchain technology are: reliability of the algorithm; independence of the system; transparency of data; absence of intermediaries.

By order of the governments, management, education and legislation are being modernized to create a favorable climate and introduce the latest technologies in all areas of economic and business activity, as well as information storage. In Russia, the program "Digital economy of the Russian Federation" was developed, which States the priority of creating the necessary conditions for the development of the digital economy. Also, as part of this program, a law was adopted on the legalization of blockchain technology and cryptocurrencies in the Russian Federation.

One of the most important advantages of the blockchain is its so-called traceability property by ensuring the responsibility of each participant in the business process, since it becomes completely impossible to change the conditions retroactively. This property will steadily progress, as with the development of this technology, more and more legal norms will be adopted, along with various judicial precedents.

After the financial crisis of 2008, the digital economy began to gradually penetrate an increasing number of business processes, it is a complex system and includes the following segments:

1. E- money- crypto currency;
2. Electronic commerce;
3. Electronic insurance services;
4. E-marketing;
5. Electronic banking.

Currently, the cryptocurrency market does not exceed\$ 30 billion, but its share in the economy is steadily growing and has a huge prospect. Cryptocurrencies are mined using mining, a process that is also based on blockchain technology.

Russian and world experts have different attitudes to cryptocurrencies, some consider them another pyramid scheme, and believe that they should be banned at the legislative level, others say that it is the future. However, scientists have identified a number of disadvantages of using the national currency as an international currency, and most of them are in favour of creating supranational international currencies, those currencies. Still John. Keynes (The Collected Writings of John Maynard Keynes..., 1980) advocated the creation of a single international collectively managed currency, which is now embodied in bitcoin.

Today, ICO is becoming an increasingly popular method of investing. Investors invest in exchange for cryptocurrency or so-called tokens, a modern analogue of shares that provide certain rights to a share in the capital, profits, and so on. Global digital technology giants such as Apple, Google, and Amazon are making efforts to take a leading position in the digital financial services market. New economic processes are being developed and standardized. Platforms for financial products using digital technologies are being created, and cost reduction is becoming the dominant factor. In the future, the transformation of the traditional financial market and all its participants is predicted, as followers of the traditional model risk becoming uncompetitive in the new economic conditions.

In the Russian Federation, banks are currently the main players in the digital services market. Blockchain data is also widely used in retail corporations, communications, and marketing research. The information is used for analyzing contractors (egrip, usrl, FSPP, etc.). Companies that invest in blockchain achieve significant cost reduction by reducing the cost of operations. The cost reduction varies from 20 to 40 percent, depending on the business area and other factors. You can calculate the effectiveness of this technology using a method known as "Proof of concept" (proof of concept). If the company assumes that with the introduction of this technology, it can get significant advantages due to the cost and speed of operations, it is recommended to choose a business direction or process that is currently unprofitable. This project is monitored for 4-6 months, and then a management decision is made. The proof-of-concept method does not require significant resources, and proof-of-performance allows for meaningful implementation of new strategies.

However, along with the advantages that blockchain technology offers, it carries certain risks, and there are a number of barriers that prevent the spread of digital technologies. The lack of legal framework and state support, poor infrastructure, lack of awareness of the management team, as well as insufficient qualification of the company's staff can serve as an obstacle to the introduction of this business model in economic activities. As for the activities of individual organizations, the introduction of blockchain technology is often limited by human factors and financial constraints. It also restricts the availability of export activities, which is explained by the lack of an international legal framework in this area at the moment. There is also a shortage of digital solutions and weak protection from illegal actions and cyber attacks. Currently, international financial organizations and regulatory agencies are working on a regulatory framework for regulating the use of cross-border financial digital services, and a framework for regulatory arbitration is being created.

As for the risks, the most significant in this segment of the economy at the moment are:

1. Inability to ensure cybersecurity;
2. Problems related to regulatory agencies due to extraterritoriality of services provided;
3. Security of user's digital data;
4. Uneven development of technological support in different countries;
5. Insufficient knowledge of economic consequences;
6. Lack of confidence of many market participants in digital technologies;
7. Security of the user's digital data.

Discussing the so-called Fourth industrial revolution at the world economic forum in Davos in 2017, experts called robotics and artificial intelligence phenomena that carry both great opportunities and

potentially dangerous for society, including due to the loss of a large number of people's jobs. These threats are mostly unstable and, if there is political will, can be resolved in a fairly short period of time.

Russian Association of cryptocurrency and blockchain is planning a new CryptoPro. on the territory of the special economic zone in Stupino, near Moscow. The project involves creating a community using the Universa blockchain platform. It should become a platform for creating an ICO aggregator and helping projects attract funding. This Park will also unite the crypto community of Russia, creating a zone free of Fiat currencies, and completely based on the digital economy and blockchain. Stupino is one of the special economic zones of Russia, where different taxation conditions apply than throughout the country. These zones were created specifically to attract foreign capital and create jobs. In this regard, on the basis of the Stupino branch of the MAI, the Department of Economics and Management, it was determined how the population of Stupino and the surrounding areas assesses the prospects of cryptocurrency. In the course of this study, respondents from the number of families with average per capita income who make decisions about the direction of investment of available funds were interviewed. The study was carried out under the guidance of the authors, and the venue was the local Bank branches.

In Russia, the status of cryptocurrency does not allow accepting it as payment for goods or services of organizations belonging to the Russian jurisdiction. However, the majority of respondents said that their interest in working with cryptocurrency is related to how they assess the prospects of cryptocurrency:

- 30% of respondents believe that bitcoin is a promising business direction with a relatively free business niche;
- 15% indicated that the basis of motivation for using cryptocurrency is an interest in working with an innovative product;
- 7 % noted the influence of online communities that encourage interest in the field of digital money;
- 3% believe that bitcoin was created to circumvent the law;
- 45% are not familiar with the concept of electronic money, but will show their interest if there is a legal framework for cryptocurrency.

The materials obtained in the course of the study can be used in the development of a strategy for behavior in the cryptocurrency market for individuals. The Main purpose of the study of the prospects for the use of blockchain technology by individuals was to form an information base and recommendations for developing a strategy for attracting the interest of citizens in creating crypto parks.

This goal was achieved by determining the interest of individuals and selecting the most intensive segments from the study.

Assessing the specifics of demand for various areas of investment, 90% of respondents are focused on traditional banking products, and the number of potential depositors who are focused on the purchase of cryptocurrency does not exceed 10% of the total number of respondents who are in the same age group from 27-37 years. About 20% of the population thinks about purchasing a crypt, but they intend to use these services only in the case of the development of regulated financial markets.

Based on the results of the study, work was started on developing a strategy for behavior in the cryptocurrency market for individuals. Subsequent monitoring of the situation should show the correctness of recommendations for the development of this direction.

## 4. Discussion of results

At the moment, the main task in the field of digital technologies implementation is to develop an international legal framework, inform the civil and business community about the possibilities of modern technologies. The issue of free exchange of digital information for the development of financial markets is also relevant, which is a priority. The issue of personal data protection should be resolved at the state level, taking into account the needs of all participants in the process.

In the Russian Federation, the sphere of blockchain technologies is not regulated by legislation, and this poses a great threat to the development of digital technologies in the country. Russia will have to regulate the legal system and create an effective infrastructure for development in this area.

## 5. Conclusion

It is already safe to say that blockchain technologies are radically changing traditional economic schemes and will continue to have a significant impact on the further development of the economy and the whole of humanity. The introduction of digital technologies will steadily increase from year to year, but it is very difficult to predict what impact this will have on the economy and society as a whole at the moment, since the elements of this technology, mainly cryptocurrencies, are not properly studied and can carry serious risks. At the moment, we can say with confidence only one thing - the blockchain technology allows reducing the state's participation in business processes, which entails the liberalization of the economy.

## References

- Borisov, K. (2016). Digital Finance-present or future. *Course*, 17. <http://kursn.ru/rubrics/finansyi/tsifrovyye-finansyi-nastoyashhee-ilibudushhee.html> (accessed: 09.03.2020).
- Drescher, D. (2018). *The Basics of blockchain: an introductory course for beginners in 25 small chapters*. DMK Press.
- Egorov, D. V. (2017). Financial aspects of the digital economy. *Banking*, 12, 38-40.
- Frankel, J. (1999). On the Euro: Impacts on Members and Non-Members. In R. Mundeil, A. Clesse (Eds.). *The Euro as a Stabilizer in the International Economic System*. Norwell MA: Kluwer Academic Publishers.
- Haber, S., & Stornetta, W. S. (1991). How to time-stamp a digital document. *Journal of Cryptology*, 3(2), 99-111.
- Lelu, L. (2018). *Blockchain from A to Z. All about the technology of the decade*. Eksmo.
- Nakamoto, S. (2008). Bitcoin: A Peer-to-Peer Electronic Cash System. <https://bitcoin.org/bitcoin.pdf> (accessed: 09.02.2020).
- Osipova, T. A. (2017). Blockchain- a new organizational paradigm. *Socio-economic development of countries, regions and optimization of economic sectors: analysis and forecasts*. NOU Professional science, 139-142.
- Salvatore, D. (1999). *The Euro versus the Dollar*. EURO.
- Sidorov, D. P., & Kamaeva, A. A. (2020). Blockchain Technology and its application in the educational process. <https://kstu.ru/servlet/contentblob?id=293807> (accessed: 08.03.2020).
- The Collected Writings of John Maynard Keynes, XXV, 1940-1944, Shaping the Post-war World. (1980). *The Clearing Union*. MacMillan.
- Triffin, R. (1960). *Gold and the Dollar Crisis. The Future of Convertibility*. Yale University Press.
- Vigna, P., & Casey, M. (2017). *The age of cryptocurrencies. How bitcoin and blockchain are changing the global economic order*. Publishing house Mann, Ivanov and Ferber.