



## **MODERN TRENDS IN THE DEVELOPMENT OF DIGITAL MONEY**

**Shirinova Shohsanam**

Teacher, Dept. of International finance and credit, Tashkent Institute of Finance, Uzbekistan

shokhsanam2828@gmail.com, ORCID: 0000-0001-7276-8965

### **Abstract**

*The article is devoted to the study of modern trends in the development of digital money. The purpose of the article is to identify and analyze the risks inherent in digital money, and to define scientific approaches and tools for managing these risks. The author use general scientific and special research methods, including comparative legal analysis and the method of systematization, as well as methods of economic theory: positive analysis and scientific abstraction. Highlighted the strategic challenges and benchmarks in the development of digital money in Uzbekistan. The difference and common features of digital and electronic money are shown. Based on a comparative analysis of the characteristics of private and national digital money, it was concluded that digital money of central banks is more flexible and more reliable for consumers than private cryptocurrencies. The risks of circulation of digital money at the micro, meso and macro levels, as well as the necessary tools for managing them, have been systematized.*

*Keywords: mining of digital currencies, digital currencies, digital economy, cryptocurrency*

### **INTRODUCTION**

The development of the electronic money market is one of the key factors in creating ample opportunities for improving the quality of life of citizens, forming investment attractiveness and improving the competitive advantages of various sectors of the economy at the national and international levels. The importance of technological innovations related to electronic money in the socio-economic development of our country is evidenced by the state policy. The purpose of the article is to identify and analyze the risks inherent in digital money, and to define scientific approaches and tools for managing these risks.



## LITERATURE REVIEW

Analysis of scientific works of foreign experts on the theory of money and monetary circulation (S.V. Mishchenko, G.I. Kravtsova, O.I. Lavrushin and others [1-3]), as well as problems of the development of electronic money (hereinafter - DC), bank payment cards (hereinafter - BPC) and settlement systems with their use (E. I. Dyudikova, M. E. Isaev, D. A. Kochergin, N. V. Korotaeva, K. A. Zabrodskaya, Yu. I. Lopukh, T. V. Novik, E. A. Velieva and others [4-12]), information, analytical and statistical publications of international and Belarusian organizations, consulting companies and analytical agencies (National Bank, international company Worldpay and others) in the development of the financial market and banking digital technologies showed that the problems associated with determining the role and development trends of DC in the digital economy, a comprehensive assessment of the state of development of the DCMS in modern conditions, are currently not sufficiently developed, which updated the topic of the present research. As a result, the development of theoretical aspects and the development of methodological provisions for assessing the state of development of the DCMS for making management decisions to substantiate the priority areas for improving the DC market in the Republic of Belarus are important tasks.

Recently, more and more often we hear about the concept of "cryptocurrency". Its course changes from day to day, every few hours new information related to this innovation appears in the news blocks. The prefix "crypto" in the name is determined by the use of some cryptographic technologies. The aim of the work is to try to assess the advantages and disadvantages of using cryptocurrency, blockchain technology. The relevance of the topic is dictated by the digitization of the economy, as well as other areas of business.

Cryptocurrency is a type of digital currency, the unit of measurement of which is a coin (English -coin). Coins cannot be counterfeited, as this is information that has been encrypted and cannot be copied (Mishchenko, 2016). Initially, cryptocurrencies were created by a group of enthusiasts, in connection with which there are several of the most serious shortcomings in their infrastructure:

- large consumption of computer time for the transaction. (Bitcoin power: 3 trades / sec., Ether: 20 trades / sec., And Visa 1500 trades / sec.);
- security holes;
- large-scale structural errors associated with the fact that neither the organizers of exchanges, nor intermediaries have the necessary experience in organizing financial companies.

The difference between cryptocurrency and electronic money is that in order to make transactions with electronic money, the money must first be deposited into the account using a

payment terminal or bank. Electronic currency is simply a form of representation of money that we use in our daily life.

Cryptocurrency, on the other hand, is created and issued directly on the network, while it is not associated with any of the conventional currencies and is not backed by anything, as, for example, under the Bretton Woods agreement, the dollar was backed by gold.

Mining is the process of mining cryptocurrency on the network. Any person who has suitable computer equipment and special software can be involved in mining. From a technical point of view, mining is the process of computing, during which the power of a computer is aimed at solving equations and functioning in accordance with algorithms, the complexity of which is constantly increasing with the increase in the number of "cryptocurrency miners" (miners) and computing power.

When the equation is solved, the user receives a coin. The fact that the coin was issued is proved by the blockchain - a database whose storage devices are not connected to a single server. The blockchain consists of many blocks, each of which contains a timestamp, as well as a link to the previous block. The storage of cryptocurrencies is carried out in a decentralized manner, it is distributed across.

Cryptocurrencies have many unique properties and features, which lead to several of their advantages and disadvantages over traditional currencies. Benefits of cryptocurrencies:

- the algorithm is open source, which allows any user to mine;
- all transactions are anonymous, except for the wallet number there is no information about the person who performed the operation;
- cryptocurrency is stored in a decentralized manner, i.e. without using a single bank, which contributes to the lack of control over payments and transactions;
- the number of coins issued is limited, which means that cryptocurrencies are not subject to inflation;
- security - cryptocurrencies cannot be copied.

Some of these benefits can be questionable. For example, it is known that today cryptocurrencies are used to pay for illegal goods and services, and due to the anonymity and decentralization of cryptocurrencies, it is impossible to determine either the buyer or the seller of things prohibited on the territory of Uzbekistan. Such transactions are usually conducted on the Darknet. (The DarkNet is a private network whose connections are established only between trusted pairs, sometimes using non-standard protocols and ports. The Darknet differs from other distributed peer-to-peer networks, since file sharing is anonymous (since IP addresses are not publicly available), and therefore, users can communicate without much fear and government interference) (Lavrushin, 2016).

However, this is not the only drawback of cryptocurrencies. It is worth considering other disadvantages of this type of electronic currency, which may seem unobvious at first glance:

- no guarantee of the safety of crypto wallets, caused by the absence of any regulatory mechanisms;
- unstable price, characterized by a high value of the volatility indicator due to the specific use of cryptocurrencies;
- the possibility of a negative impact of national regulators - measures to restrict or prohibit operations with cryptocurrencies can be introduced at the state or Central Bank (Central Bank) level;
- the inoperability of the wallet or the loss of the password from it will lead to the loss of all coins listed in it;
- a decrease in the profitability of mining by individual users, caused by the fact that, due to the influx of new miners, the level of complexity of the equations is growing rapidly, and with it the system requirements for users' computers are growing (Dudikova, 2017).

In addition, a separate number of disadvantages can be identified due to the technological implementation of cryptocurrencies, leading to risks (Kochergin, 2016) :

- The likelihood of spoofing payment details or phishing. When working with a classic currency system, as a rule, it is possible to cancel a transfer, and the technologies used to implement cryptocurrencies will not allow this, since the record that was entered into the blockchain cannot be changed or deleted. The risks arising from this can be reduced to theft, when, when transferring money to an address known to you, the Trojan changes the transfer address to the address of the criminal. Or to phishing, namely, transferring the user to the criminal's website, where he himself will download the wallet and enter the password. For such a translation, pictures, promises, etc. can be used.
- Hacking the payment portal. In June 2017, there was already one such precedent. Using social engineering techniques, a group of hackers managed to convince the host that she was the real owner of the domain. After gaining access, hackers began to interfere with financial flows, as a result of which money began to disappear from the accounts of users of the Ethereum Classic crypto wallet. A similar situation could have happened with a classic online financial service. (Ethereum Classic is a blockchain-crypto platform for the development of decentralized applications based on open source smart contracts) (Lavrushin,2016).
- Error in the recipient's data. When using the above-mentioned Ethereum, if the slightest mistake is made in the recipient's address (for example, the last digit of the address is not copied or confused), then the money will fly away or the wrong amount will be transferred, which will differ from the required one at times.

- Theft or loss of the wallet file. Practice shows that most of the users store cryptocurrency wallet files on their personal computers. In these cases, if the hard disk fails or when using special programs, they can be stolen.
- Unreliable ICOs. When investing money in projects related to the use of cryptocurrency (ICO - Initial Coin Offering), in many cases it happens that the idea does not make a profit. The return on investment is not guaranteed by anyone or anything, except the word of honor of the author of the next project.
- Spoofing the recipient's address. As part of the ICO, a fake address is opened or the true address is changed to the address of the criminals. After dialing the required amount, the address is marked as fake.

Despite the high level of technological implementation and use of modern technologies, the question of what the final effect of the emergence of cryptocurrencies will be is still open. At the moment, it is impossible to predict their impact on the world economy, the ecological situation and other important factors and circumstances of modern life.

Cryptocurrency markets today are illiquid: most owners do not seek to fix their profits, as they are afraid to miss further growth. This has led to the fact that only a small share of issued cryptocurrencies is in circulation. A large-scale capital exit will entail the same rapid fall as was observed for a cryptocurrency called "bitcoin" in 2014.

It's too early to talk about cryptocurrencies as an alternative to full-fledged money. The quality of a currency is determined by its ability to perform 3 main functions of money:

1. Money as a measure of value. This function of the cryptocurrency is performed exclusively in the ICO. But it should be noted that experts are faced with a situation where prices, even when buying and selling illegal goods on the Darknet, expressed in cryptocurrencies, fluctuate even with stable dollar prices.
2. Money as a means of payment. Cryptocurrencies have low acceptance in the real sector. If cryptocurrencies are still not recognized at the state level, then it will still be difficult to achieve recognition. Moreover, even ordinary workers will not be ready to accept such currency as payment.
3. Money as a store of value. For long-term savings, a currency that changes its value at times during the week is obviously not suitable. The aforementioned bitcoin in the first two weeks of September 2017 lost 40% of its value, despite the fact that it has tripled since the beginning of the year.

Thus, cryptocurrencies are an innovation that raises a lot of questions from both ordinary citizens and experts in various fields. In some countries, cryptocurrencies are becoming not only a means of payment, but also an investment asset. They open up many opportunities for

various types of criminal schemes: from tax evasion to terrorist financing and money laundering. Do not forget that if this new currency format turns out to be one of the so-called "financial bubbles", then if the system fails, there will be no legally responsible entity for it due to the lack of any collateral.

Alexey Malanov, an expert in the anti-virus technologies development department of Kaspersky Lab, also comes to the conclusion that cryptocurrencies have all the drawbacks of any other electronic money, but at the same time, due to the specifics of the principles of cryptocurrency operation, the likelihood of these same problems increases and some risks are identified. characteristic only for this type of currency (Dudikova, 2016).

The Central Bank even proposed an initiative to restrict the operation of external sites that can be used to buy and sell cryptocurrencies: "We believe that for our citizens, businesses, the use of such cryptocurrencies as an object for investment carries unreasonably high risks," said the first deputy chairman of the Central Bank Sergey Shvetsov (Lopukh, 2017).

It is obvious that this type of electronic money has already had a huge impact on the modern world, causing by its appearance and development a wave similar in scale to the "gold rush". Nevertheless, it is now difficult to assess their further impact, including with certainty whether they will bring more harm or benefit.

Moreover, the cryptocurrency market has all the features of the late stage of the financial bubble. A critical mass of bad ICOs has accumulated (Korotaeva,2011). At the same time, the collapse of a large project or tightening of regulation can trigger a panic among users, and the flight of currency holders will begin. It is not yet possible to predict the moment of the "explosion" of this bubble.

The fact that the regulation of cryptocurrencies and interaction with them is already being discussed even at the state level only confirms the theory that this innovation can be epochal and requires special attention, including to the existing risks.

Talking about cryptocurrencies, it is impossible to ignore such a concept as blockchain technology. Technology in this case means that, in the context of this application, the blockchain is a tool necessary for the implementation of any activity related to electronic money.

As the history of the development of the Internet shows, they tried to use real money in the space of the World Wide Web for a long time, from the beginning of its creation. Two main reasons did not allow this. The first is the creation of an exact digital copy of the coin, and the second is the reusability of money. The use of new technology after the discovery of cryptocurrencies to solve these problems.

It is believed that after the publication of the article by Satoshi Nakamoto in 2008, they first talked about cryptocurrency. The author talked about a kind of decentralized financial system, which is not subject to regulation by bankers. He named it bitcoin.

Each bitcoin contains information that is encoded according to the proposed rules. These bitcoins look like a set of blocks (chain), which in turn is built according to certain laws. The name blockchain was born as a chain of blocks, in English - blockchain.

A separate block is called a hash. And the chain of blocks itself, in which each next block is linked to the previous one, was called a blockchain. Changing the information in the chain in any block involves hashing it from the very beginning. A personal key exists to access the values of the records in the chain. It is owned by one person who can, at his discretion, provide access to the key to other people. This led to the birth of the first cryptocurrency. It is noted that the cryptocurrency system is a huge database with interconnected cells. The number of cells is practically unlimited.

As mentioned earlier, blockchain is a technology for organizing a distributed database containing records of transactions performed. It is on this technology that the work of the database is based, which stores information about cryptocurrency transactions.

Like any other technology, blockchain can be used for good or bad. There are several ways of using the same tool, each of which leads to certain consequences.

Application of blockchain technology in real life. This technology is in the stage of active search for its application, for example, in the fall of 2016, Microsoft and Bank of America announced their intentions to develop a financial blockchain platform. In the fall of the same year, the first real money transaction was made: Wave (an Israeli startup), Barclays (a British bank) and Ornuu (an Irish dairy producer) carried out a cashless settlement in the amount of \$ 100,000. In December 2016, a non-cash transaction using this technology was also carried out by S7 and Alfa-Bank.

These facts indicate that with such a scale of use and the level of players who have begun to apply the technology in practice, one cannot speak of the blockchain as an insignificant innovation that will be supplanted and forgotten in the near future (Zabrodszkaya,2017).

Masterchain is one of the tools for interaction between financial market participants, based on the use of distributed ledger technology. This is a new technology of the Central Bank of the Russian Federation from the blockchain field, developed by participants in the financial market. Such a tool allows you to make online payments, quickly confirm the relevance of information about a client or transaction, and quickly create financial services. Moreover, the

master chain allows you to speed up the exchange of information between users and provide the necessary level of trust between them.

The technology was developed with the participation of Qiwi, Sberbank, Alfa-Bank, Otkrytie Bank and Tinkoff Bank. In the future, it is planned to consider the issue of using the master chain as one of the parts of a new generation of financial infrastructure. At the moment, test transactions are being carried out. Any bank that is ready to allocate resources for the implementation and piloting of the project can apply to participate in the development of this tool.

The further use of blockchain and masterchain technologies is aimed at making transactions as fast and transparent as possible, optimizing business processes, and eliminating the possibility of falsifying a transaction between a client and a bank. It is assumed that due to their use, the costs of maintaining the infrastructure will also be reduced (Zabrodszkaya, 2017).

Analysis of publications on the research topic allowed us to systematize CRED classification criteria: method of storage and translation of DC; the device on which the DC is stored; targeted use of DC in a system based on microprocessor cards; purchasing power of DC; the possibility of circulation of the monetary value of the SRED; the scope of the issuer; functional interaction between the issuer of the DC and the system administrator of the system; scale of operation.

The results obtained showed that DC and settlement systems with their use are an important component of market relations in the context of financial globalization and the digital economy, as a result of this, the determination of trends in the development of DC is of practical importance.

Analysis of international reports on the research topic showed that the most widespread in world practice, received such instruments and means of settlement as cash, bank transfer in real time / offline mode, debit / credit / payment cards, e-wallets / DC.

Based on the international report "GLobaL payments report preview 2020", the following development trends of the global electronic money market have been identified (Milosh, 2017):

1. Increase in the volume of transactions using DC as a non-cash payment method. As a result, electronic money will become the most popular and widely used electronic means of payment by 2019.
2. The most popular DC issuers are international payment systems (hereinafter - PS) VISA, MasterCard, Diners'CLub, etc.
3. The most common area of using DC is to pay for the services of a mobile operator, provider services, purchases in online stores.



At present, the Republic Uzbekistan lags significantly behind the advanced states in the development of innovative means of payment, in connection with which measures for the introduction of electronic payment instruments in all spheres of life and the economy are of particular importance. Much attention is paid to the development of BOD, electronic wallets and DC.

According to the data of the National Bank of the Republic Uzbekistan, as of 01.01.2020 in Uzbekistan, the total number of emitted BODs amounted to over 1,398 thousand units, which is 1.5 times more compared to the same period in 2019. Currently, Uzbekistan commercial banks issue in circulation payment cards of international PS Visa, MasterCard and national Uzcard.

## CONCLUSION

We can distinguish three basic tools for reducing the risks of the financial system when circulating digital money of the central bank.

1. Negative interest on balances. During periods of instability, economic agents may prefer the reliable digital money of the central bank, refusing deposits in commercial banks. In order to prevent a sharp outflow of funds from commercial banks to accounts in the central bank, the issuer of the digital currency, can lower the interest rate to zero, or, if necessary, move the interest rates into the negative zone. Thus, individuals and legal entities will incur certain costs and prefer to keep their funds in accounts with commercial banks.
2. Limits on the maximum amount of digital money on the user's balance. If negative rates do not help, then the central bank can set a maximum amount for funds on the balance of one user. The lower the maximum limit of allowed digital money, the lower the potential impact on the financial system. After all, the owner of the funds will be able to place in the central bank only a small part of his savings.
3. Limiting the circle of users. In view of the significant risks of issuing digital money for a wide range of users, it makes sense for central banks to consider the possibility of issuing digital money for a narrow circle of users - commercial banks and other financial intermediaries. An example of a digital (crypto) currency is the CAD-coin of the Bank of Canada, which is planned to be issued only for use by financial institutions for interbank payments<sup>13</sup>. It is based on modified distributed ledger technology. A similar project of a tokenized international payment system for banks and fintech companies, but based on private digital money - Utility Settlement Coin, was proposed by the largest Swiss bank UBS<sup>14</sup>. This new form of digital money of the Central Bank for financial organizations is devoid of numerous risks inherent in digital money for

a wide range of people, since access to digital money will be limited exclusively to financial intermediaries and does not violate the traditional principles of their work.

## REFERENCES

1. Mishchenko S.V. The essence and functions of modern money. Bulletin of the St. Petersburg University of Economics and Finance. 2010; (6): 32-40.
2. Lavrushin O.I. Money, credit, banks. Textbook. M. : KNORUS; 2016.448 p.
3. Kravtsova GI and others. Money, credit, banks. Textbook. Ed. G.I. Kravtsova. Minsk: BSEU; 2012.296 p.
4. Dudikova E.I. Prospects for the development of electronic money as an element of the national payment system of the Russian Federation. Dis. ... Cand. econom. Sciences: 08.00.10. Stavropol; 2017.225 p.
5. Kochergin D.A. Modern interpretation and classification of payment systems. Problems of the modern economy. 2016; (1): 93-96.
6. Korotaeva N.V. Electronic money: essence, functions and role in the economy. Socio-economic phenomena and processes. 2011; (12): 137-141.
7. Zabrodsкая K.A. Models and methodological support for assessing the level of development of infocommunication services in the Republic of Belarus. Dis. ... Cand. econom. Sciences: 08.00.13. Mn. ; 2015.180 p.
8. Zabrodsкая K.A. Methodological approaches to assessing the level of development of infocommunication technologies and services. Veshk Suvyazk 2012; 111 (1): 25-29.
9. Kochergin D.A. Modern electronic money systems. Abstract of thesis. dis. ... Cand. econom. Sciences: 08.00.10. SPb. ; 2006.38 p.
10. Lopukh Yu.I., Novik T.V. Problems of the development of the electronic money market in the Republic of Belarus. Banking system: sustainability and development prospects. Collection of articles based on materials of the V international scientific-practical. conf. on the issues of banking economy. Pinsk; 2014: 83-86. URL: <https://rep.polessu.by/bitstream/123456789/8322/1/26.pdf>.
11. Isaev M.E. Assessment of the development of electronic money in the implementation of retail payments. Abstract of thesis. dis. ... Cand. econom. Sciences: 08.00.10. Ivanovo; 2013.19 p.
12. Velieva E.A. The impact of electronic money on the economy and the conditions for its functioning. Economy and society. 2016; 21 (2): 184-187.
13. Milos D.V. The role of electronic money in the national economy. NIRS BSEU: Sat. scientific. Art. Minsk: BSEU. 2017; 7: 189-194.
14. Milos DV Settlement systems using electronic money: participants and the organization of their interaction. Politics of modern socio-economic systems. Sat. scientific. Art. based on the results of the International Scientific and Practical Conference. Volgograd: Volgograd branch of the PRUE G.V. Plekhanov; 2017: 205-208.
15. Milosh D. V, Kaminskaya V. I. Current state and development trends of the world electronic money market. EC0N-2017: world economy and international business: abstracts of the 4th interuniversity research student conference, Minsk, April 11, 2017; Ministry of Education of Belarus, Belarus State Economic University. 2017; 2: 28-30.
16. Milos D. V., Kaminskaya V. I. Modern trends in the development of electronic payment instruments and means of non-cash payments in the Republic of Belarus. National and Regional Economy: Problems and Prospects. Sat. scientific. Art. young scientists of the international correspondence conf. Minsk: BSEU; 2017: 161-167.
17. Kaminskaya VI Comparative analysis of systems using electronic money in the Republic of Belarus. Problems of modern society through the eyes of young researchers. Mat. IX International scientific-practical. conf. (April 2017). Volgograd: Volgograd branch of the PRUE G.V. Plekhanov; 2017: 58-60.
18. Kaminskaya V.I., Milos D.V., Zabrodsкая K.A. Assessment of the state of development of settlement systems and the direction of improving the electronic money market in the Republic of Belarus. Politics of modern socio-economic systems. Sat. scientific. Art. according to the results of the International scientific-practical. conf. Volgograd: Volgograd branch of the PRUE G.V. Plekhanov; 2017: 157-159.
19. Ryabykh V.N. Influence of inflationary processes on the rate of economic growth. Scientific electronic library "CyberLeninka". URL: <https://cyberleninka.ru/article/v/vliyanie-inflyatsionnyh-protsessov-na-tempy-ekonomicheskogo-rosta>.