Cryptocurrency – A Future Medium of Exchange

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The article discusses the essence, the history of the emergence of electronic money – cryptocurrency, the necessity, the causes and the current state of its use; there is analyzed future blockchain technology as system of information protection, storage and transaction acceleration which was created at the beginning of the current century. There are given the author's views about the supporting infrastructure (methods and means of mining and earning of cryptocurrency, cryptocurrency exchange centers, ATMs, exchanges, etc.) for recognition of cryptocurrency as a possible means of payment in prospect, about the state of legal regulation of cryptocurrency worldwide, the views of experts and well-known persons of this field and the well-known personalities and the proper conclusions are made.

Keywords: *Electronic money, cryptocurrency, cryptocurrency mining in Georgia, methods of cryptocurrency mining, methods of earning of cryptocurrency, exchanges, cryptocurrency – a medium of exchange.*

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The issue concerning the origin and circulation of the cryptocurrency, as an electronic money, is one of the most topical problems of the modern economic science. Despite the fact that in recent period more or less serious attention was attached to the study of the present problem, it is still a hidden mystery and requires proper attention and study.

The essence and significance of electronic money

Electronic money is the type of virtual money. It is currently used mainly in the Internet network, through which any kind of payment can be made, but its existence is possible without internet access [1].

Following from the properties of electronic money (high speed of transaction, less costs of storage and transaction, anonymity, protection, the possibility of transferring to another person, etc), its use accelerates and expands the process of commodity circulation and thus reduces the costs of trade with goods. [2]

Electronic money performs almost all the functions of ordinary money. It is recorded on the magnetic carriers of information as electronic impulses. The electronic money system

reduces the amount of time for money recounting and automatically gives notification of completed transactions and remaining balance.

In 2018, electronic money turned 100 years old after its introduction into circulation. From the beginning, everything started with the US Reserve Bank when in 1918 for the first time it sent money through the telegraph [3].

David Chaum, the Doctor of Informatics and Management at the University of California, was the first who issued electronic money called eCash in the company DigiCash founded by him in 1994 [4].

Blockchain technology

The modern variety of electronic money is a cryptocurrency that is derived from the basis of blockchain technology. Although it has been 10 years since its origin, it is still unknown for the most part of the world's population. Most of cryptocurrencies are built on blockchain technology. It's a technology of the future and will significantly change the lives of the world community. Blockchain technology was created to safeguard information, speed up transactions and to abolish intermediate links (banks, notaries, various payment systems, etc.). Today, it is not managed by one of the central organs or private structures of the world, and therefore operates decentralized. The information is stored in the form of blocks, one after another. Until the previous block is not closed, the next block will not be opened. It is characterized by high level of information protection. During transactions the data about the transaction gets on every computer involved in the cryptocurrency network, i.e. there is copying of blockchain on every computer connected to the network. Transaction will be deemed to be performed only when it is checked by all users involved in the network. Such a system enables to ignore mediators, which ultimately leads to accelerating the exchange of data between clients. Also, in this case it is impossible to steal or change the information from the block, since it would be necessary to break all the computers involved in the cryptocurrency network to change the information recorded in them, that is practically unachievable, because the system automatically identifies the attempts to fraud or steal data, as a result of the use of cryptographic encryption and hashing algorithms in blockchain technology.

Hashing is to convert any volume of information into a hash, i.e. the same hash-coded image, which is a short typical string of symbols that is obtained as a result of the specific transformation of the original information [5].

The unique signature for the block is automatically created on the basis of generation of random numbers in the process of cryptocurrency mining, i.e. in the mining and hashing process, which automatically spreads to all the computers involved in the blockchain network. After fulfilling all the conditions, provided by blockchain technology, this block will be added to the previous block.

The blockchain system is difficult. At the same time, it is open and anonymous. Customers are assigned a special personal code for carrying out transaction, which allows them to enter the system and perform transactions. Identification and authentication of individuals who are behind these codes are not possible at present.

The blockchain system is also open in a wider understanding, since any user can observe the system development and get acquainted with the archive of transactions. User's information is protected from unauthorized access. In case of transactions through a blockchain, the payment of commission fee to the third person is not made, the amount of which frequently is quite large, and in using the blockchain, such taxes are reduced accordingly, which makes transactions and deals effective.

The blockchain technology can be compared to an accounting book containing all transactions. Its separate pages are blocks of blockchain (book pages) [6]. In these blocks there are recorded financial transactions that are related to each other through the hash-codes.

The noted process is the following: in each subsequent block's title there is written the previous block's hash. It is impossible to remove any page from the accounting book because all the pages of the book are numbered and the book is certified by a stamp. It is also impossible to change any block, to remove or falsify the content, as this will result in the change of the content of all blocks of blockchain. All participants of the blockchain, in whose computers there is stored a copy of blockchain, will immediately find an attempt to make a change in the blockchain and will automatically refuse to change.

The title of the block contains the following information: the date and time of the block creation; hash-code of the block title; hash-code of all transactions and those random numbers which are produced in the process of bitcoin mining.

The hash-code of the current block transactions is written in the title. The calculation of the transaction code is made through the so-called Merle tree or binary hash tree. The calculation is carried out in the following sequence: first hash-code of each transaction existing in the block is calculated, then the hash-code of the sums of double transactions. The calculation of paired transactions hash-codes continues under this rule as long as the sum of all hash codes is not received that is carried out in the block, which will be recorded in the block as the total hash code of the transactions. As long as the tree is binary, or calculation is made in pairs, it is necessary to complete a pair of transactions in each step. Therefore, if there is not an odd number of a hash in any step, in such case it is duplicating [7].

Historically, such cashless transaction forms were used for the settlement of exchange relations as: barter exchange, banknotes, payment liabilities, credit cards, etc. One of the truly revolutionary phenomena in the process is electronic money. The process of electronic circulation is undergoing permanent development. An example of this is the appearance of electronic money in the cash-credit system, such as cryptocurrency. There are over 2000 cryptocurrencies in the world today.

Terms and Conditions of Full Emission of 21 Million Bitcoins

The primary and basic type of the cryptocurrency is a bitcoin. According to one of the most spread versions, bitcoins' creator is Satoshi Nakamoto, who at the end of 2008 made a public statement about his own invention and published the document confirming this, and from 2009 he launched a relevant system in his computer network. The emission of 21 million bitcoins was provided for through the algorithm of this system. The emission of bitcoins described by algorithm will continue until the amount of received bitcoins becomes 21 million [8].

The question is posed: why 21 million?

In blockchain network the time to form new blocks for earning the bitcoins is limited. From the very beginning the system founders considered frequency of forming the new blocks and tied it to the time in such a form that one block earning needed 10 minutes, taking into consideration the progress of technologies. The more developed are capacities required for earning the bitcoins, the more difficult becomes the algorithm for its earning, i.e. increase of computational capacities in the network is compensated with increase of complexity in block receiving.

At first, an award designated for receiving each block was 50 bitcoins. Considering scientific-technical progress, after receiving 210 000 blocks, i.e. once every four years, the award for receiving one new block is reduced twice. As we have mentioned in the beginning, the award for one new block equaled 50 bitcoins. If we multiply this sum (50 bitcoins) by the number of blocks received in four years (210 000), we'll get 10, 5 million bitcoins. This amount of bitcoins was earned till autumn of 2012.

Within next four years (2012-2016), the award for each new block reduces and makes up 25 bitcoins; if we multiply this sum (25 bitcoins) by the number of blocks received in four years (210 000), we'll get 5, 25 mln bitcoins. In total, by 2016, 10, 5 + 5, 25 =15, 75 million bitcoins were emitted.

Next 210 000 blocks will be received in 2016-2020. The award for receiving the new blocks in these years double reduced and will be 12, 5 bitcoins. This award acts till summer 2020. If we multiply this sum (12, 5 bitcoins) by the amount of blocks received in four years (210 000), we'll receive 2, 625 mln bitcoins. In total, by 2020, will be emitted 10, 5 + 5, 25 + 2, 625 = 18, 375 mln bitcoins.

Next 210 000 blocks will be received in 2020-2024. The award will be cut twice and will equal 6.25 bitcoins, etc. By the described algorithm emission of bitcoins will continue till the amount of received bitcoins becomes 21 million [9].

By April 22, 2018, there were received 17 million bitcoins [10]. The above-described technology has the relevant economic justification. In 2009, when bitcoin was created, the total volume of all kinds of money circulating worldwide, by calculation in USD, was about $50 trillion [9]. If we divide this sum by 21 million, we'll receive estimated price, which equals 2 million 381 thousand dollars. But such a payment unit is quite large and useless for

all the processes of circulation. Therefore, bitcoin has the smallest payment unit – satosh[1] which is a hundred millionth part of bitcoin.

If we divide 2 million 381 thousand dollars by 100 million, we'll receive 2, 381 cents, which can already be considered to be a real payment unit, i.e. it is a real payment unit that can be used to buy the cheapest goods, e.g. in the Soviet Union the smallest units of money were kopeck, which was enough to buy one matchbox, to drink a glass of sparkling water from the machine.

In present-day Georgia, the smallest unit of national currency is one tetri, with which a consumer, in fact, cannot buy any goods and, therefore, in reality it cannot fulfill any function in the field of circulation.

Despite a great risk of investing in the cryptocurrency, by today the process of investment in this field is not suspended. With this aim in view, for the businessmen, of great importance is size of the cryptocurrency capitalization, its rate at the exchange and its popularity.

At the beginning of 2017 the cryptocurrency capitalization made up $17.7 billion, and by December 29, 2017 - $592 billion [11]. These data point to great volatility[2] of the cryptocurrency.

General capitalization in cryptocurrency equals the amount received by multiplication of the coins, emitted by that time, by the cost of one coin. This indicator is sometimes called "market capitalization". At the beginning of 2019, capitalization of the most popular first ten cryptocurrencies [Bitcoin (BTC), Ethereum (ETH), Ripple (XRP), Litecoin (LTC), EOS (EOS), Bitcoin Cash (BCH), Stellar (XLM), TRON (TRX), Cardano (ADA), Monero (XMR)] in the general capitalization made up $110, 48 billion [12].

For recognition of any currency as well as of cryptocurrency to be a means of payment, it is necessary the existence of proper means, methods required for its formation and emission, and trust of the community members to it.

Methods of Mining and Development of Cryptocurrency in Georgia

Methods of cryptocurrency obtaining, i. e. mining, are as follows: its mining by own computer, cloud technology, etc; and the methods of its earning are: crane[3], bidding with cryptocurrency at the exchange, etc. [13]

Initially, mining of cryptocurrency by the own computer was done by means of vid-

1 Satosh, as it seems, is the name given to the mentioned unit in honor of Satoshi Nakamoto (the same Craig Wright_.

2 Volatility is a statistical indicator of change of costs.

3 Crane is a specialized advertisement site, to enter which is free of charge, but requires mention of the user's e-mail and cryptocurrency wallet. To make any advertisement, a user receives bitcoin units, satoshes.

eocards. To get virtual money by the mentioned method, a computer and a videocard of special configuration are required. In addition to this, quite a considerable sum is necessary to pay for the consumed electricity, etc [14].

Another means of cryptocurrency mining is cloud technology. Cloud mining is used for preservation and reproduction of the cryptocurrency assets, which is a new model of digital money emission. To get large profits the groups (pool[1] minings) form it on the rent-holding devices without using their own accessories. In this case, all the problems, connected with hardware and software, are solved by a rent-holder. He presents a simplified mining of bitcoins and altcoins[2], exempts miners from the problems of expenses on electronic energy, arrangement of software on own devices and other problems as well.

To get the cryptocoins, services (companies) are used, which have the datacenters (farms). Cloud mining datacenters are located in Canada, Russia, Iceland and China.

Purchase of capacities is done according to giga or terra hash. Cost of one hash depends on change in currency rate.

Today, for cryptocurrency mining is formed a device named ASIC (Application Specific Intergrader Circuit – the integral scheme of special designation), far more developed device than the videocards. It was made in China in 2016. One of its types is Antminer S9i, which can be used in home conditions. It is energoefficient and for mining of virtual coins it uses SHA algorithm.[3] The coefficient of efficiency of Antminer S9i model equals 93%, which is considered to be a good index for the devices of such type.

There are also methods of cryptocurrency earning without investments.

Cryptocurrency is so popular that many people wish its earning without investments and one of such methods is crane.

Cranes were formed for currency earning. It is one of the simplest ways for currency mining.

Cryptocurrency earning is possible as a result of trade with any type of cryptocurrency at the exchange.

Factors Influencing Cryptocurrency Rate

Cryptocurrency capitalization is variable, which is affected by a number of factors. First of all, it is a ration of supply and demand on cryptocurrency, on which, in its turn, act different conditions. One among them is an information background in the mentioned sphere. Depending on what is a source of information and whether this information is positive or negative, the exchange rate of cryptocurrency strengthens or falls. Cryptocurrency exchange rate is influenced by its recognition or negation as a means of payment by the state. Germany and Japan recognized the cryptocurrency as a means of payment. As for Russia, Ukraine,

1 Pool is a union of miners for the purpose of getting the profit.

2 Altcoin is an alternative of cryptocurrency.

3 SHA (Secure Hash Algorithm) is a secure algorithm of hashing.

Georgia and other countries, they have not recognized cryptocurrency as a means of payment yet.

Appearance of cryptocurrency exchanges, exchange centers, ATMs [15], etc in different countries of the world, Georgia is also among them, positively influences cryptocurrency exchange rate.

Cryptocurrency exchange rate was negatively influenced by the statement, released by the People's Bank of China, on prohibition on the use of cryptocurrency within the country scale. Due to the mentioned statement bitcoin exchange rate fell, respectively, the exchange rates of other cryptocurrencies fell as well.

Regulation of Cryptocurrency Mining, Development and Circulation

In 2014, France, Iceland and Georgia started cryptocurrency mining, on the basis of their devices [16].

Georgia is on third place worldwide from the viewpoint of cryptocurrency mining after China and the USA. 5% of the population of Georgia is involved in cryptocurrency mining and investing.

Two strong cryptocurrency datacenters are functioning in Tbilisi and Gori. Gldani datacenter Bitfury, presumably, possesses 16, 7 billion GEL.

With the purpose of recognizing the cryptocurrency as a means of payment, it is necessary to regulate its mining, development and circulation according to separate states as well as within the world.

Today there is no uniform legislation in the world concerning the emission of electronic money. The EU legislation allows only the credit organizations. In Hong Kong a license from a deposit company is required for emission of the electronic money.

Circulation of the cryptocurrency is at present forbidden in many countries (Russia, China, England, South Korea, Singapore, Bolivia, Ecuador, Kyrgyzstan, etc) [17].

There are countries, however, in which the law permits the cryptocurrency emission and circulation (the USA, Canada, Australia, partially EU, Japan, Germany, the Philippines, Czech Republic, Norway, Venezuela, Belorussia, Thailand, etc) [18].

In February 2018, Germany recognized bitcoin as a means of payment.

Despite resistance of the Parliament, Venezuela emitted the cryptocurrency –Petro. The mentioned cryptocurrency was strengthened with oil. One Petro cost USD 60 [19].

There are countries, where on the contrary, the circulation of the cryptocurrency is not recognized, but is not forbidden either (Denmark, Finland, Great Britain, Georgia, etc).

In a number of world countries use of cryptocurrency is neither prohibited, nor permitted and it is not regulated by the state either [20].

In total, positive dynamic of cryptocurrency recognition as a means of payment is also witnessed by the fact that by today, hundreds of decentralized cryptocurrency exchanges are formed and successfully functioning in the world.

Cryptocurrency exchange is an Internet-resource, which gives a possibility of electronic money buy/sell in the online regime.

Cryptocurrency exchanges all over the world keep developing annually and their amount permanently increases.

The exchange BINANCE opened in 2017; it is the first in the world by the volume of biddings. KUCOYN.com trades with more than 300 couples of cryptocurrencies. Anonymous bidding is also possible. Verification is not obligatory. The commission fees are low. Monetary assets of the clients are reliably protected. By the volume of cryptocurrency biddings HUOBI is the third exchange in the world. It has five-year long experience. EXMO.com is Russian-speaking cryptoexchange. It possesses a high level of protection. It is possible to withdraw the cryptocurrency in rubles (RR) and dollars (USD). It trades with the most popular cryptocurrency couples: BTC/RUB, BTC/USD, MASH/RUB, ETH/USD, etc. Commission fee is 0,2%on each deal. YOBIT.NET trades in rare cryptocurrencies, which are not at other exchanges. It is Russian-speaking and conducts biddings with a great amount of cryptocurrency couples. The trade volume is about 15 million dollars per day. The commission fee is low – 0,2%. It differs with a high level of security. HTTBTC.com exchange functions in Great Britain. It was founded in 2015. The commission fee is low – 0, 1%. Fast registration is possible. Navigation on the site is easy. It has a high degree of the accounts[1] security. LIVECON exchange has established its place in the CIS. It is a leader by the trade volume in BTC/RUB. It has Russian interface, a high level of protection. Among ten cryptocurrencies also are: BITFYNEX, POLONEX and BITTREX [21].

Experts' Opinions on Condition Existing in Cryptocurrency Circulation and Its Perspectives

Accurate prediction of changes at cryptocurrency market is not possible, which is witnessed by volatility of the rate of bitcoin and its alternative coin - altcoin at the cryptocurrency market in 2018.

Fluctuations in the bitcoins rate could not be imagined by 2018. Respectively, it was quite difficult to determine its rate by the following year.

Proceeding from the mentioned above, opinions of the experts on existing condition in use of the cryptocurrency and perspectives are divided into two. A part of experts are optimistic about the cryptocurrency, others are pessimistic.

Scott Galit, Director-General of Payoneer, one of the largest financial companies, is skeptical to the cryptocurrency. He considers that the central banks of the developed countries won't allow spreading of the assets of a new type. Bitcoin won't become the main currency of payment [22].

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[1] At registration on site, a consumer forms his account that is an accounting record, which involves all the data about a personality; a consumer enters the account by lodging and parol.

Warren Buffett, one of the most successful investors in the world, called bitcoin „probably rat poison squared“ [23], a real „bubble“. If we speak about the cryptocurrency, I can say for sure that this case will end badly. When this will happen and how, I don’t know, said Buffet [24].

Authoritative portals Coinopsy and DeadCoins determined that 1 000 projects of the cryptocurrency “died” in 2018 [25].

Traditional financial world denies the new digital reality. Three famous influential economists – Josepf Eugen Stiglitz, Nouriel Rubin and Kenneth Rogoff argue that the rate of bitcoins and other cryptocurrencies will quickly and painfully fall because the governments all over the world will toughen their position towards money laundering and efforts to avoid payment of taxes [26].

Here should be mentioned interesting analysis on the future of cryptocurrency made by Georgian scientist-economist, academician Vladimer Papava concerning considerations of the world-famous researchers [27].

John McAfee, the founder of cyber-security and antivirus software, considers that no one can stop the cryptocurrency – bitcoin. It will spread everywhere and therefore it should be supported by the entire world. He says that 100 years ago gold was used for payment. Only from the mid-XX century started tying of currency to dollar. Later a concept was introduced, such as “floating” rate. Gold replaced commodity barter, paper money replaced gold. In the process of quick regulation of interstate trade, bitcoin can replace paper money and can be in the form of “cryptocurrency standard”. It is not necessary to be recognized it by the entire world, it’s enough several leader states should do this, to which will join other states depending on them. After that, dollar will start equally with the use of bitcoin and, probably, other currencies with fixed rate.

John McAfee has long been optimistic to the cryptocurrency. Earlier he made a fantastic prognosis about the rate of cryptocurrency. He proved that by 2020 cost of one bitcoin will be 1 million USD. But proceeding from the situation formed later, by December 2019 he supposed one bitcoin would cost 170 000 USD [28].

From this viewpoint special interest is caused by the following information. On May 17, 2010, young programmer Laszlo Hanesh bought two pizzas at 10 000 bitcoins [29]. If he kept these bitcoins till the end of 2017, he would have become an owner of 200 million dollars.

Sonny Singh, head of BitPay startup, considers that by the end of 2019 one bitcoin will cost 20 000 dollars. This will happen when large investors Fideit and Intercontinental will launch large investment projects in the mentioned case [28].

Famous billionaire Mike Novogratz called the digital assets “people’s revolution” [30].

Analyst Ronnie Maos considers that by 2019 bitcoin will become more expensive up to $28 000. He says - it’s a pity that 1% of pessimists in the world managed to frighten you and did not let you buy the bitcoins. This damages noble undertaking, which can eliminate the gap between the rich and the poor. I still remain with my prognosis according to which price of bitcoin by the end of 2019 will reach $28 000. People with bright mind are gathered around me and share my opinion [28].

Academician Robert Merton mentions about perspective of the blockchain technology, which gives a possibility to get rid of bureaucratic mediators that will finally cause acceleration of transactions and their cost reduction [31].

For Valeri Vavilov, the founder of the company Bitfury, whose property according to the Forbes is 500-700 million dollars, blockchain technology is a compensation of the Internet revolution. In his words, technology is some "index of trust". Today, entrepreneurs plan to use blockchain technology in such systems, as is healthcare, copyright, property registration, education, elections, etc. Valeri Vavilov considers that blockchain is the industry of trillion dollars [32].

In the opinion of Christine Lagarde, managing-director of the International Monetary Fund (IMF), For now, virtual currencies such as Bitcoin pose little or no challenge to the existing order of fiat currencies and central banks ... So I think it may not be wise to dismiss virtual currencies [33].

James Altusher, the manager and investor of the American Hedge Fund, considers that cryptocurrency can deprive the state of its monopoly right on money emission as the Internet deprived the telephone industry of its monopoly right on communication [34].

In his appearance on TV channel CNBC James Altusher stated that by 2020 the cost of one bitcoin would easily reach $ one million [35].

As the above-mentioned considerations show, opinions in regard to the system of cryptocurrency circulation are divided into two, i.e. "cryptofans" and "cryptocritics" [36].

In the perspective, the fate of cryptocurrency and blockchain will depend not only on the technological progress worldwide, but on the socio-economic situation in separate countries and also on the level of international relations, political and legal barriers in the mentioned sphere, etc.

As it is known, any person can make a cryptocurrency. That's why the states have some fear in regard to its use, as they expect they will lose their monopoly on money emission and the right to exercise control over its circulation.

Conclusion

Thus, all the prerequisites have been already formed in the modern civilized world for the cryptocurrency as the product of development of the exchange process, and for its introduction: cryptocurrency exchanges, cryptocurrency exchange points, cryptocurrency ATMs, etc. As the facts show in the perspective the cryptocurrency may be recognized as a free payment means in a number of highly developed countries or in the entire world, which will cause grand changes in the process of socio-economic development of the mankind.

At the initial stage, the process will, surely, face many problems, but over time it will gradually become more refined and will improve to a certain extent generally, by division and exchange, the process of relation regulation both in separate countries and worldwide and thereby will facilitate further advancement and development of the world economy.

References:

1. Sichinava D., Magradze M. Prerequisites and Problems of Transition to Electronic Money. Jrnl. “Globalization and Business”,#6, 2018, pp 177-183.
2. Bukia G., Sichinava D. Sh, et al. State automated systems of cashless settlement. Information of the AS of GSSR, vol. 83, #3, 1976. Pp 749-752.
3. https://otvet.mail.ru/question/21776190.
4. https://www.peoples.ru/technics/programmer/david_chaum/.
5. https://golos.io/ru--kriptografiya/@uanix/kheshirovanie-prosto-i-naglyadno.
6. https://golos.io/ru--blokcheijn/@uanix/bitkoin-za-5-minut-blok.
7. http://xn--80aabkyebmliebc3kpc.com/derevo-merkla-merkle-chto-eto-i-gde-primenyaetsya/.
8. https://golos.io/ru--bitkoin/@uanix/prosto-i-naglyadno-pochemu-kolichestvo-bitkoinov-konechno.
9. https://hype.ru/@ns3230/pochemu-bitcoin-ogranichen-21-mln-j1ooaz4k.
10. https://bit.ly/2GQrh5X.
11. https://forklog.com/gorizont-sobytij-kak-ros-rynok-kriptovalyut-v-2017-godu/.
12. https://zarabotat-na-sajte.ru/bitcoin/kapitalizaciya-kriptovalyut.html.
13. Sichinava D., Magradze M. Cryptocurrency mining: current ciondition and perspectives. III International Scientific Conference – “Challenges of globalization in economics amd business”. Collection of works. Tb., 2018, pp 347-351.
14. https://www.kefline.ru/sposoby-zarabotka-bitkoinov/.
15. https://ruscoins.info/news/v-gruzii-ustanovlen-bitkoin-bankomat/ .
16. https://bitcoins-mining.ru/skolko-bitkoinov-vsego.html.
17. https://happycoin.club/v-kakih-kriptovalyutyi/.
18. https://bitexpert.io/wiki/cryptocurrencies/top-10-stran-gde-razreshena-kriptovalyuta/.
19. https://ria.ru/20180921/1529040897.html.
20. https://investor100.ru/gosudarstvennye-kriptovalyuty/.
21. https://cryptonisation.ru/obzor-birzh-kriptovaljut-2018/.
22. https://investfunds.ru/news/54585/.
23. http://www.urank.ru/news/n1baffet-snova-raskritikoval-kriptovalyuty/.
24. https://thatsmart.ru/2018/05/buffet-crypto/.
25. https://ttrcoin.com/issledovanie-bolee-1-000-kriptovalyut-mertvye-proekty.4015/.
26. https://prometheus.ru/izvestnye-ekonomisty-stiglits-rogoff-i-rubini-ne-veryat-v-bitkoin/.
27. Papava V. On crisis in economic science and search for new paradigms. Jrnl. “Globalization and Business”, #6, 2018, pp 15-26.
28. https://ruscoins.info/news/samye-optimistichnye-prognozy-kursa-kriptovalyut-na-2019-god-18224/.
29. https://i-fakt.ru/kto-sel-samuyu-doroguyu-piccu-v-mire/.

30. http://www.urank.ru/news/n1mayk-novograc-kriptovalyuty-eto-narodnaya-revolyuciya/.
31. https://www.pbs.org/newshour/economy/making-sense/why-a-nobel-laureate-in-economics-thinks-bitcoin-is-toast.
32. https://www.bpn.ge/article/42366-vin-arian-kriptovalutebis-qvelaze-mdidari-mplobelebi/.
33. http://www.imf.org/en/News/Articles/2017/09/28/sp092917-central-banking-and-fintech-a-brave-new-world?cid=em-COM-123-35955.
34. https://howtobuycoin.com/articles/cryptocurrency-future/.
35. https://hashtelegraph.com/dzhejms-altusher-k-2020-godu-bitkoin-budet-stoit-1-mln/.
36. https://www.gazeta.ru/comments/2018/01/11_e_11609570.shtml.

კრიპტოვალუტა – მომავლის საგადამხდელო საშუალება

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ივ. ჯავახიშვილის სახელობის თბილისის სახელმწიფო უნივერსიტეტის პროფესორი

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სტატიაში განხილულია ელექტრონული ფულის ნაირსახეობის – კრიპტოვალუტის არსი, აღმოცენების ისტორია, აუცილებლობა, მიზეზები და გამოყენების არსებული მდგომარეობა, გაანალიზებულია მიმდინარე საუკუნის დასაწყისში შექმნილი ინფორმაციის დაცვის, შენახვის და ტრანზაქციის დაჩქარების პერსპექტიული ბლოკჩეინტექნოლოგია, მოცემულია ავტორის მოსაზრებები პერსპექტივაში კრიპტოვალუტის შესაძლო საგადამხდელო საშუალებად აღიარების ხელშემწყობი ინფრასტრუქტურის (ბიტკოინის მოპოვებისა და გამომუშავების მეთოდებისა და საშუალებების, კრიპტოვალუტის გადამცვლელი ცენტრების, ბანკომატების, ბირჟებისა და სხვ.), მსოფლიოში კრიპტოვალუტის სამართლებრივი რეგულირების მდგომარეობის, აღნიშნული სფეროს ექსპერტებისა და ცნობილი პიროვნებების შეხედულებების შესახებ და გაკეთებულია სათანადო დასკვნები.

საკვანძო სიტყვები: *ელექტრონული ფული; კრიპტოვალუტა; საქართველოში კრიპტოვალუტის მოპოვება; კრიპტოვალუტის მოპოვების მეთოდები; კრიპტოვალუტის გამომუშავების მეთოდები; ბირჟები; კრიპტოვალუტა – საგადამხდელო საშუალება.*

კრიპტოვალუტის, როგორც ელექტრონული ფულის წარმოშობისა და მიმოქცევის საკითხები თანამედროვე ეკონომიკური მეცნიერების ერთ-ერთი აქტუალური

პრობლემაა. მიუხედავად იმისა, რომ აღნიშნული პრობლემის შესწავლას ბოლო პერიოდში მეცნიერებაში მეტ-ნაკლებად სერიოზული ყურადღება მიექცა, იგი ჯერაც მთელი რიგი საიდუმლოებებითა მოცული და სათანადო ყურადღებასა და შესწავლას მოითხოვს.

ელექტრონული ფული ვირტუალური ფულის სახეობაა. იგი ასრულებს ჩვეულებრივი ფულის თითქმის ყველა ფუნქციას. 2018 წელს ელექტრონულ ფულს შეუსრულდა მიმოქცევაში გამოჩენიდან 100 წელი. აშშ-ს სარეზერვო ბანკმა 1918 წელს პირველად გადააგზავნა ფული ტელეგრაფის საშუალებით.

ელექტრონული ფულის თანამედროვე ნაირსახეობაა კრიპტოვალუტა, რომელიც აღმოცენებულია ბლოკჩეინტექნოლოგიის საფუძველზე. კრიპტოვალუტის უმეტესობა აგებულია აღნიშნულ ტექნოლოგიაზე. იგი შეიქმნა ინფორმაციის უსაფრთხოდ შენახვის, ტრანზაქციების დაჩქარების და შუამავალი რგოლების (ბანკები, ნოტარიუსები, სხვადასხვა საგადამხდელო სისტემა და ა. შ.) გასაუქმებლად. დღეისათვის მისი მართვა არ ხდება მსოფლიოს რომელიმე ერთი ცენტრალური ორგანოს ან კერძო სტრუქტურის მიერ და, ამდენად, ფუნქციონირებს დეცენტრალიზებულად.

კრიპტოვალუტის უპირველესი და ძირითადი სახეობაა ბიტკოინი. ერთ-ერთი ყველაზე გავრცელებული ვერსიის მიხედვით, ბიტკოინის შემქმნელია სატოში ნაკამოტო, რომელმაც 2008 წლის მიწურულს საჯაროდ განაცხადა საკუთარი გამოგონების შესახებ და გამოაქვეყნა ამის დამადასტურებელი დოკუმენტი, ხოლო 2009 წლის 3 იანვრიდან კომპიუტერულ ქსელში ჩაუშვა შესაბამისი სისტემა, რომლის ალგორითმით გათვალისწინებული იყო 21 მლნ ბიტკოინის ემისია. აღწერილი ალგორითმით ბიტკოინების ემისია გაგრძელდება მანამ, სანამ მოპოვებული ბიტკოინების რაოდენობა არ გახდება 21 მლნ.

ბიტკოინს გააჩნია უმცირესი საგადამხდელო ერთეული – სატოში, რომელიც ბიტკოინის ასმემილიონედი ნაწილია. სახელწოდება სატოში, როგორც ჩანს, აღნიშნულ ერთეულს დაერქვა სატოში ნაკამოტოს (იგივე კრეიგ რაიტის) სახელის პატივსაცემად.

მიუხედავად კრიპტოვალუტაში ინვესტირების დიდი რისკისა, დღეისათვის მსოფლიოში ინვესტირება აღნიშნულ სფეროში მაინც არ წყდება. 2017 წლის დასაწყისში კრიპტოვალუტის კაპიტალიზაციამ შეადგინა $17.7 მლრდ, ხოლო 2017 წლის 29 დეკემბრისთვის – $592 მლრდ. ეს მონაცემები მიუთითებს კრიპტოვალუტის დიდ ვალატილობაზე.

კრიპტოვალუტაში საერთო კაპიტალიზაცია უდრის მოცემული მომენტისთვის გამოშვებული მონეტების რაოდენობის ნამრავლს ერთი მონეტის ღირებულებაზე. ამ მაჩვენებელს ზოგჯერ „საბაზრო კაპიტალიზაციასაც“ უწოდებენ. 2019 წლის დასაწყისში კრიპტოვალუტების ყველაზე პოპულარული პირველი ათეულის კაპიტალიზაციამ კრიპტოვალუტების საერთო კაპიტალიზაციაში შეადგინა – $111,75 მლრდ, რაც 85,4%-ის ტოლია.

როგორც ნებისმიერი ვალუტის, ასევე კრიპტოვალუტის საგადამხდელო საშუალებად აღიარებისთვის აუცილებელია მისი შექმნისა და ემისიისათვის საჭირო მეთოდების დამუშავება და, რაც მთავარია, მის მიმართ საზოგადოების წევრთა სათანადო ნდობის ჩამოყალიბება.

კრიპტოვალუტის მოპოვების, ანუ მაინინგის მეთოდებია: მისი მოპოვება საკუთარ კომპიუტერზე, ღრუბლოვანი ტექნოლოგია და სხვ., ხოლო მისი გამო¬მუშავების მეთოდებია: კრანი, ბირჟაზე კრიპტოვალუტით ვაჭრობა და სხვ.

კრიპტოვალუტის კაპიტალიზაცია ცვალებადობას განიცდის, რაზეც მოქმედებს რიგი ფაქტორი. პირველ რიგში, ესაა კრიპტოვალუტაზე მოთხოვნა – მიწოდების თანაფარდობა, რაზეც, თავის მხრივ, მოქმედებს მრავალი გარემოება. მათ შორის, ერთ-ერთია ღნიშნულ სფეროში ინფორმაციული ფონი. იმის მიხედვით, თუ რომელია ინფორმაციული წყარო და რამდენადაა ინფორმაცია პოზიტიური ან ნეგატიური, კრიპტოვალუტის კურსი მყარდება ან ეცემა. კრიპტოვალუტის კურსზე მოქმედებს ასევე სახელმწიფოს მიერ მისი აღიარება ან უარყოფა საგადამხდელო საშუალებად.

კრიპტოვალუტის მაინინგი დაიწყო საფრანგეთში, ისლანდიასა და საქართველოში 2014 წელს საკუთარი მოწყობილობების ბაზაზე.

საქართველო მესამე ადგილზეა მსოფლიოში კრიპტოვალუტის მოპოვების მხრივ ჩინეთისა და აშშ-ის შემდეგ. საქართველოში ფუნქციონირებს კრიპტოვალუტის მონაცემთა ორი მძლავრი ცენტრი თბილისსა და გორში. 2017 წლის მონაცემებით, გლდანის მონაცემთა ცენტრი – Bitfury, სავარაუდოდ, 16,7 მლრდ ლარს ფლობს.

მსოფლიოში კრიპტოვალუტის საგადამხდელო საშუალებად აღიარების მიზნით აუცილებელია მოხდეს მისი მოპოვების, გამომუშავების და მიმოქცევის რეგულირება როგორც ცალკეული სახელმწიფოების მიხედვით, ასევე მსოფლიო მასშტაბით.

დღეისათვის ელექტრონული ფულის ემისიის შესახებ მსოფლიოში არ არსებობს ერთიანი კანონმდებლობა. კრიპტოვალუტის მიმოქცევა ამჟამად აკრძალულია მრავალ ქვეყანაში, თუმცა არსებობს ქვეყნები, სადაც, პირიქით, იგი კანონით დაშვებულია. არის ქვეყნები, სადაც იგი არაა აღიარებული, მაგრამ აკრძალულიც არაა, ან კიდევ არც აკრძალულია, არც დაშვებულია და არც რეგულირდება სახელმწიფოს მიერ.

მთლიანობაში, კრიპტოვალუტის საგადამხდელო საშუალებად აღიარების დადებით დინამიკაზე მეტყველებს ის ფაქტიც, რომ დღეისათვის მსოფლიოში შექმნილია და წარმატებით ფუნქციონირებს ასეულობით დეცენტრალიზებული კრიპტობირჟა.

კრიპტოვალუტის გამოყენების არსებული მდგომარეობისა და პერსპექტივების შესახებ ექსპერტთა აზრი ორად იყოფა. ნაწილი ექსპერტებისა (ე.წ. „კრიპტო-მოყვა-რულები“) ოპტიმისტურადაა განწყობილი კრიპტოვალუტის მიმართ, ნაწილი კი (ე.წ. „კრიპტოკრიტიკოსები“) – პესიმისტურად.

პერსპექტივაში, კრიპტოვალუტისა და ბლოკჩეინის ბედი დამოკიდებული იქნება არამარტო ტექნოლოგიურ პროგრესზე მსოფლიო მასშტაბით, არამედ ცალკეულ ქვეყანაში სოციალურ-ეკონომიკური მდგომარეობისა და ასევე საერთაშორისო ურთიე-

რთობათა განვითარების დონეზე, პოლიტიკურ და სამართლებლივ ბარიერებზე აღნიშნულ სფეროში და სხვ.

ამრიგად, კრიპტოვალუტის, როგორც გაცვლის პროცესის განვითარების პროდუქტის დანერგვისათვის თანამედროვე ცივილიზებულ მსოფლიოში უკვე შექმნილია თითქმის ყველა წანამძღვარი: კრიპტოვალუტის ბირჟები, კრიპტოვალუტის გადამცვლელი პუქტები, კრიპტოვალუტის ბანკომატები და სხვ. როგორც ფაქტები მოწმობს, პერსპექტივაში, სავარაუდოდ, კრიპტოვალუტა, შესაძლოა, აღიარებულ იქნეს თავისუფალ საგადამხდელო საშუალებად რიგ მაღალგანვითარებულ ქვეყანაში ან კიდევ მთელი მსოფლიოს მასშტაბით, რაც გრანდიოზულ ცვლილებებს გამოიწვევს კაცობრიობის სოციალურ-ეკონომიკური განვითარების პროცესში.

საწყის ეტაპზე ეს პროცესი უდავოდ წააწყდება არაერთ სიძნელეს, მაგრამ დროთა განმავლობაში, სავარაუდოდ, ის თანდათანობით დაიხვეწება და მნიშვნელოვანწილად გააუმჯობესებს საერთოდ განაწილებით და გაცვლით ურთიერთობათა რთულ პროცესებს როგორც ცალკეულ ქვეყანაში, ასევე მთლიანად მსოფლიო მასშტაბით, რითაც ხელს შეუწყობს მსოფლიო ეკონომიკის შემდგომ წინსვლასა და განვითარებას.