**УДК 004.01**

**МРНТИ 49.38.49**

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**Mining cryptocurrency in Kazakhstan and in the world**

**Annotation.** Annotation. The article reveals the definition of mining, the types of mining, the history of the creation of cryptocurrency, the question is raised whether mining is an entrepreneurial activity and in what cases it becomes an object of legal regulation. The concept of mining is compared with similar phenomena - banking, issuing securities, issuing money by central banks, on the basis of which a conclusion is made about the peculiarities of this line of business.

**Keywords:** bitcoin, mining, cryptowallet, government regulation of mining, miner, entrepreneurial activity, banking, cryptocurrency, digital economy, balance of private and public interests.ё

Introduction.

What is a bitcoin? The word "Bitcoin" is formed in English from "bit" - the smallest unit of information and "coin" - coin.

Bitcoin is a digital currency that created in 2009. This is a new generation of decentralized digital currency, created and working only on the Internet. No one controls it, the issue of currency occurs through the work of millions of computers around the world, using a program to calculate mathematical algorithms. This is exactly the essence of Bitcoin.

Currently, cryptocurrencies are a desirable object for investment, in connection with which the creation and "extraction" of cryptocurrencies, which is called "mining", is becoming a new direction of entrepreneurial activity. Revealing the legal nature of mining, including on the basis of its comparison with similar phenomena - banking, issuing securities, issuing money by central banks, will make it possible to establish the features of this type of activity as an object of legal regulation.

Materials and methods.

What is the most significant feature of Bitcoin from an economic point of view? This is a digital product with a limited offer, its algorithm is designed in such a way that a maximum of 21 million units can exist in the system, each of which is also called a “bitcoin”. The emission schedule is software defined and known in advance. After the last coins are generated, their number will not change. About 13 million bitcoins were generated in 2019, the end of currency generation will occur in about 2140.

Bitcoin is a cryptocurrency, that means virtual money, which have no material equivalent and are simply records in a special database.

1 bitcoin is divided into 100,000,000 parts, which are named "Satoshi" after the Creator of the system. Sometimes it is used the concepts "Milli bitcoin" (mBTC, one thousandth) and "microbitcoin" (uBTC, one millionth).

Bitcoin began with the concept-a document, which published on October 31, 2008 by a mysterious person working under the pseudonym Satoshi Nakamoto (Satoshi Nakamoto). Who is the real developer, one person or a group - is still unknown, despite numerous journalistic investigations. Since January 3, 2009, the practical implementation of this concept in software code has begun. At 18: 45 GMT (22:45 GMT) 03.01.2009 the first block in the network, the so-called Genesis block, was generated. This day is considered the birthday of Bitcoin and it is celebrated by the community around the world.

Initially, bitcoins were in demand only among mathematicians, cryptographers, as well as people who are very passionate about computer and network technologies. Then bitcoin was a simple proof that it is possible to e-money that does not have guaranteed security. Rather, they can be called an electronic analogue of gold — like gold, bitcoin is difficult to produce, its quantity is limited, and the complexity of production only increases with time. In autumn of 2009, 1 BTC could already be bought for 0.8 cents. Now the cost of 1 bitcoin is about 52000 dollars.

We have considered the scheme of the blockchain system, and immediately the question arises- "Why should users connect to the new system?" Then the developers inserted a stimulating reward into the processing of transactions. The reward is used to get people on the network to try to help verify transactions, despite having to spend processing power on the process.

So in this case the second question appears - "If for such a simple work, which is carried out by a computer, pay a fee, why not do it by all Internet users and computers?" The second idea is paradoxical, but it keeps the whole system-to make the confirmation of transactions costly for network users in the form of computer calculations. That is, without having a certain capacity, it is impossible to unpack and create a new block. The benefit of the fact that transaction verification is expensive helps to avoid dependence on the number of identities (network users) controlled by someone. Thus, only the total processing power can put pressure on the check. By using some smart design, it is possible to make it so that the fraudster would require huge computational resources to cheat, making it virtually impractical.

Bitcoin gets a pretty good level of control over the difficulty of the task by using a minor variation of the proof-of-work puzzle.

The solution of the given task is received the name– mining.

The amount was equal to 25 bitcoins, now equal 6, 75 bitcoins. That is, it can be seen that the sum rewards decrease over time, and the complexity of the task increases. The complexity of the problem and the speed of its calculation requires increasing power.

*Bitcoin wallet*

In order to use bitcoins, you need to create a bitcoin wallet.

The so-called "light" wallets can be installed on -the PC and a mobile device. They are ready to work in a few minutes, but do not store a complete database and are forced to request information from other nodes that make up the global network.

If you need maximum reliability and independence – install the full client. For this you will have to pay several tens of gigabytes on your hard drive, and the primary synchronization will take at least three hours. The choice between speed and reliability is yours.

You can use one of the services of online wallets, to master the technology, which are ordinary sites where you can manage your balance and make transactions through a web interface. Very similar to the already familiar Internet Bank. But in this case, bitcoins can be lost not only by you, but also by the wallet operator. Therefore, it is better not to store large amounts there.

*Exchange services*

The easiest, but at the same time not always profitable way is to buy bitcoins through exchangers.

Exchange services allow you to convert ordinary money into BTC and back at the internal rate. It is quite another matter whether the proposed exchange rate will suit you. Keep in mind that the price at a particular time is determined by the owners of these services, plus add to this the commission for Bank or electronic transfers.

*Cryptocurrency exchanges*

The exchange is a platform for trading cryptocurrencies, where both professional traders and investors meet, as well as Amateurs who came to buy their first bitcoin and remained fascinated by the exchange game. The number of exchanges is estimated in several tens and constantly increasing. Any participant of the exchange can replenish his internal account and offer others to buy or sell the right amount of cryptocurrency at a certain price.

*Direct purchase*

If you want to exchange a large amount for cryptocurrency, you will certainly want to look into the honest eyes of the seller, ask tricky questions and get some additional information or guarantees. This option is quite possible. If the meeting tete-a-tete for some reason you are uncomfortable-there are mass events. In megacities around the world, bitcoin enthusiasts hold open-air that named " Satoshi squares".

*Bitcoin machines and terminals.*

A person inexperienced in online trading, it is easier to buy coins with the help of a familiar Bank or payment terminal.

Operations with such a device are quite simple. The buyer deposits cash and receives a check with a code to replenish the wallet, or enters his Bitcoin address into the device and can check the receipt of coins on the balance without leaving the terminal.

Bitcoin ATMs are installed in many countries and cities around the world. Some of them allow you to make a reverse exchange – that is, receive cash currency for your bitcoins. On the website Соindesk there is a map that shows all installed in the world Piccolomini. Unfortunately, on the territory of the former USSR there are only two bitcoin exchanges-in Kiev and Bishkek. But in Europe, North America, Southeast Asia and Australia, their number is in the hundreds.

You can buy cryptocurrency in the terminals of several international money transfer systems, the largest of which is ZipZap.

Mining bitcoins is the first and only way to mine cryptocurrency. It is unique.

But you should immediately disappoint fans of easy money, thinking about how to earn bitcoins on the computer: it is not so easy to get even 1 bitcoin. The vast majority of miners are forced to limit themselves to the so-called Satoshi-a kind of virtual cents and pennies. But even they can get up to 1 thousand per hour for the most simple tasks. In fact, this is not such a large amount: 1 thousand Satoshi is only 0.05 dollars.

Mining at home ceased to be considered an extremely profitable occupation immediately after specific devices began to appear on the cryptocurrency market. Bitcoin mining has turned into a real profession, in which there was nothing to do for desktop computers and their owners, and almost everyone learned what bitcoin mining is.

To carry out bitcoin mining on your computer, it is best to use the power from the manufacturer ASIC. It is the equipment from this company that is able to produce about 2.5 GB of cache per second, it can be used to mine bitcoins. And the consumption of electricity at the same time is quite insignificant-about 2.5 Watts. For example, mining on a home PC that has a Radeon HD 7990 card will produce a maximum of 1.2 GB of hash, while consuming as much as 200 Watts. In this case, home mining will not be able to compete with experienced players. And what speed of the Internet is needed for mining? Naturally, the highest to date.

*Cloud mining*: how to mine bitcoins with it?

The appeal of such mining is that the equipment does not need to be purchased. And how to mine in this case? The miner only invests in the purchase or lease of the necessary capacity. What is needed for bitcoin mining? The following scheme is relevant:

find a suitable site to understand how to mine bitcoins on your computer;

register there to Deposit the desired amount of cryptocurrency to your account;

buy power to the extent that you can afford it

start mining the bitcoin.

In this case, bitcoins will be mined by you along with other manners, and the trick is how to mine cryptocurrency on your computer, will no longer be a secret. And the winnings are divided among all taking into account the invested funds. Of course, given the way how to mine cryptocurrency, the profit will be much less than the algorithms allow mining classic, but the chance of winning will be higher by several hundred times.

*Disadvantages of bitcoin*

*•*• If the virus erases your bitcoin wallet file (this applies to accounts that are on local devices) or can track the password-your money will not be returned. And also here it is necessary to include a fairly large amount of space: the entire block of transactions ending of 2019) is already more than 100 GB. This is a consequence of how the cryptocurrency bitcoin is arranged. Secure synchronization (database update) will also take some time, which will affect the usability.

• If you understand why bitcoin is needed and decide to invest money, you may face a drop in the price due to lack of demand. The value of a cryptocurrency is determined by capitalization and demand (and only by them) - this is a consequence of how bitcoin works.

\* Bitcoin virtual money does not support refunds in case of password theft or fraud. No one has the capacity and authority to conduct a reverse transaction of bitcoin, if you do not return them to the one who appropriated them.

Today Bitcoin is a modern digital currency, which is perfect for payments on the Internet. More and more stores are accepting Bitcoin As one of the payment options. The ease and convenience of opening a bitcoin account is attracting more and more people from developing countries to this digital currency. In many countries of Asia and Africa, the Bitcoin network replaces hard-to-reach and expensive banking services for people. In developed countries, POS-terminals for bitcoin payments in stores, ATMs for cryptocurrencies, hardware wallets for Bitcoin have become widespread. There was a real boom of startups that use Bitcoin. It turned out that blockchain technology is suitable not only for financial calculations, but also for distributed storage of data on various assets. There are already several thousand other cryptocurrencies created on the basis of Bitcoin or from scratch.

The attitude of States to cryptocurrencies is very different. There is a clear encouragement - in Australia, Germany, the Netherlands, New Zealand, Singapore, some us States, various offshore, and serious restrictions that can outgrow and prohibitive measures-Indonesia, China, Russia, Ukraine. Only hot Latinos in Bolivia and Ecuador decided on direct bans.

Many governments have chosen the line of observation with cautious optimism - most EU countries, the UK and Switzerland, the USA Federal government, Canada, Japan and Southeast Asian countries. In most developed countries, financial legislation is being adapted to regulate cryptocurrencies, and this issue will soon be resolved.

Globally, electricity in our country is considered relatively inexpensive. Therefore, in particular, the cryptocurrency mining business is gaining momentum in our country. This requires a lot of electricity. It is in Karaganda, Most of these farms are located in Pavlodar and Almaty regions.

Last June, the Government of the country legalized the mining of cryptocurrency and made very good money at the same time on the sale of electricity. In 2020 alone, almost 60 billion tenge was attracted to the crypto business. But there is one nuance here: despite all the achievements of Kazakhstan in the extraction of cryptocurrency, it is still impossible to conduct financial transactions with it in Kazakhstan. It turns out that you can mine, but you can't spend.

In order to receive a crypto-coin, it is necessary to select a cipher from the so-called safe. The success of mining is influenced by the efficiency of the equipment, the complexity of the network and the amount of electricity consumed, and it takes a lot. To get one bitcoin, on average 78 thousand kWh of electricity are used. And this is almost 1.5 million tenge. Now pay attention: there are thirteen such crypto farms in our country, and four more are under construction.

Mining ensures the decentralization of the process of issuing cryptocurrency as a means of payment, in contrast to the national currency that is issued by the central banks of states. Mining is done through chains of individual miners and nodes that store copies of the mining "public ledger". Each node in the chain independently verifies any new transaction data to maintain network stability. All transactions are public are stored in a distributed database (blockchain), which is used to confirm transactions and prevent a problem from occurring double costs. That is, theoretically, any person can become a miner and issue a cryptocurrency, while the issue of money is strictly centralized and delegated by the state to a single institution responsible for monetary policy - the central bank.

Thus, cryptocurrency mining has created another source of capital formation in the financial market. A. V. Turbanov notes that the formation and development of financial markets has different characteristics in different states: in some, banks play a dominant role (for example, in Russia), in others a large share of the financial market belongs to non-bank financial institutions. At present, in our country, it is hardly possible to speak of a formed single financial market. In particular, currently in Kazakhstan there is no common document that would regulate the financial market as a whole, the financial market is largely transforming in the digital economy, including in the direction of its decentralization.

As rightly pointed out in the scientific literature, the decentralization of mining in the form that currently exists makes the emission of cryptocurrencies beyond the control of administrative regulation and creates an attractiveness for potential miners and investors. The attractiveness is also created by the fact that cryptocurrencies are not tied to any country, in connection with which the system assumes the movement of money in international economic relations with minimal costs 9. The cross-border nature of mining is noted by many scientists 10. As indicated in the scientific literature, the essence of mining, as a result of which cryptocurrencies arise, lies in the fact that computers located in different parts of the Earth solve mathematical problems, as a result of which cryptocurrencies are created.

Cryptocurrencies are generated within the framework of mining as a payment for verifying any transaction, which ensures a stable and secure movement of means of payment from the payer to the recipient. Since there are many miners, trying to find the next valid block every 10 minutes, the block reward essentially becomes a payment to the miner in exchange for the service of creating a block on the agreed chain. Security is provided due to the security contained in the very essence of the mathematical algorithm embedded in it, since mining is a process that includes the solution of complex mathematical and cryptographic algorithms, which involves the use of high-tech equipment and certain computer capacities.

To create a freely marketable digital currency (not pegged to the dollar, gold or some other measure of value), it is necessary to provide a shortage of such a currency, which in the digital environment means the need to design a system for its accumulation in such a way that the mining of cryptocurrencies becomes difficult

"Puzzle" requiring laborious and a long process of finding a solution. Each miner who successfully solves the "puzzle" is allowed to record a set of transactions and receive a reward in the form of cryptocurrency, and the more resources and efforts a miner spends to receive this reward, the more chances he has to solve the "puzzle" faster than competitors, which encourages miners to carry out investment in the mining process and is essential for the decentralized nature of cryptocurrency issuance. Thus, mining is carried out in a competitive environment. Miners compete in the process of producing and broadcasting blocks, striving to get their blocks in the main chain with the extraction of subsequent profit for each such block. At the same time, the anonymity of persons carrying out the transfer of cryptocurrency contributes to high risks as unfair competition,

In this regard, it was proposed to change the cryptocurrency protocol, in particular bitcoin, to protect it from the concentration of computing power in "mining pools" so that an attacker with more computing power than all honest miners in the aggregate could not create and confirm fictitious transactions, despite the fact that his version of the blockchain will grow faster ... In the situation described above, there are risks for miners who must be creative in protecting their "product". It is worth noting that if mining were available for an unlimited circle

persons without special knowledge and experience, would not contain entrepreneurial risks, would not require innovative solutions, cryptocurrencies would not be appreciated by the market so highly.

The high cost of cryptocurrency is also provided by the need to invest in equipment and use a large amount of electricity. It is interesting to note that investments in cryptocurrency mining can be made not only by the miner himself, but also by a third party who buys and sells future profits - in this case, from the sale of cryptocurrencies on the exchange. In other cases, the possession of a unit of cryptocurrency does not give rise to any relative (obligatory) legal relationship, since there are no creditor and debtor in them.

At the same time, as indicated in the scientific literature, mining on devices owned by another person, without his consent, can be recognized as illegal use of someone else's property, which leads to unjust enrichment of the person who has carried out mining on such a device, which means that the cryptocurrency received in as a result of its implementation, must be returned to the owner of the device on which the mining was carried out. In any case, the owner of the equipment will be reimbursed for real damage, since the mining process will be associated with the consumption of additional electricity, i.e. causing property damage to the owner in the form of additional payment for electricity spent directly on the mining process.

An important question is whether it is possible to mine on someone else's equipment. If you turn to the labor legislation, it should be borne in mind that the labor activity within which cryptocurrency mining is carried out is not prohibited today and, we hope, will not be prohibited in the future, but it is quite possible that this kind of activity (mining) will be recognized as a type of entrepreneurial activity and with its proper design (and maintenance) will also refer to permitted forms of human activity. That is, a miner-employer is a perfectly legitimate behavior. Accordingly, it is quite possible to hire workers for mining cryptocurrencies, including on the basis of telecommuting, freelancing, etc., according to the general rules of labor law.

The price of a cryptocurrency, as noted above, is formed by the market, i.e. she has

there is no nominal value, since it itself acts as a special kind of product, which confirms its investment attractiveness. Since cryptocurrency can be recognized as a commodity, its production - mining can be recognized as a type of entrepreneurial activity, although there is a point of view in the scientific literature that the approach itself, aimed at recognizing mining as an entrepreneurial activity, contradicts its economic nature and displaces this type of activity from the territory Russia 28.

An entrepreneurial is an independent activity carried out at its own risk, aimed at the systematic receipt of profits from the use of property, the sale of goods, the performance of work or the provision of services. In the case of mining, all the signs are present - it is carried out by the miner as an individual or legal entity on his own, with the risk of not solving the "puzzle" and not adding a block to the chain, while spending electricity and power, as well as investing money in the necessary equipment. A miner strives to create a cryptocurrency specifically for making a profit, and if he trades it on exchanges, we can say that his activity is aimed precisely at systematic profit. As for the source of profit, here we are talking about the sale of a special kind of product - cryptocurrency.

In some foreign countries, in particular in the UK and Australia, owners of cryptocurrencies are taxed on their income up to 25%; in the USA, investors pay tax not only when exchanging cryptocurrencies, but even for owning them. It seems that mining should be recognized as a type of entrepreneurial activity in the Republic of Kazakhstan for tax purposes, which requires amendments to the current legislation, for example, to tax legislation regarding VAT. It is interesting to note that during the preparation of the draft of this Law, it was noted that mining is considered a business if a miner and (or) validator for three consecutive months exceeds the energy consumption limits set by the Government, despite the fact that initially the lawmaker classified any mining as an entrepreneurial activity.

Defining mining as a type of entrepreneurial activity, it is worth emphasizing whip that cryptocurrency mining activities cannot be considered banking activity, which is an exclusive type of activity, consisting in the implementation of banking operations and banking transactions by credit institutions. It seems that, unlike banking, which is subject to strict regulation by the National Bank due to the need to maintain a balance between private and public interests, mining should not become regulated.

Mining, from the point of view of some scientists, is close to the concept of emission of valuablepapers. In the scientific literature, the position is expressed that cryptocurrencies are proposed to be recognized as a type of uncertified securities, which by their legal nature are most similar to a bill of exchange, since they reflect an unconditional monetary obligation. The similarity to securities also allows us to recognize an indication of the potential of cryptocurrencies as investment objects. It seems that, unlike professional securities market participants who are subject to licensing requirements and membership in self-regulatory organizations, miners should not fall into the orbit of such regulation.

Conclusion.

In this way, the concept of cryptocurrency mining is currently an unregulated type of entrepreneurial activity that contains investment elements. Mining should be subject to legal regulation for tax purposes, but it is not advisable to establish licensing requirements for it or requirements in accordance with the standards of self-regulatory organizations.

**СПИСОК ИСПОЛЬЗОВАННЫХ ИСТОЧНИКОВ**

1 Правовое регулирование экономических отношений в современных условиях развития цифровой экономики : монография / А. В. Белицкая, В. С. Белых, О. А. Беляева [и др.] ; отв. ред. В. А. Вайпан, М. А. Егорова. — М. : Юстицин- форм, 2019. — 376 с.

2 Рожкова М. А. Право в сфере Интернета : сборник статей / М. З. Али, Д. В. Афанасьев, В. А. Белов [и др.] ; рук. авт. кол. и отв. ред. М. А. Рожко- ва. — М. : Статут, 2018. — 528 с.

3 Савельев А. И. Криптовалюты в системе объектов гражданских прав // За- кон. — 2017. — № 8. — С. 136—153.

4 Саурин А. А. Право собственности на деньги (конституционно-правовой аспект) //

5 Конституционное и муниципальное право. — 2018. — № 5. — С. 51—56.

6 Хаменушко И. В. Операции с криптовалютами: возможные модели налого- обложения // Предпринимательское право. — Приложение «Право и Биз- нес». — 2018. — № 1. — С. 42—44.

**REFERENCE**

1 Legal regulation of economic relations in modern conditions development of the digital economy: monograph / A. V. Belitskaya, V. S. Belykh, O. A. Belyaeva [and others]; otv. ed. V. A. Vaipan, M. A. Egorova. - M.: Yustitsinform, 2019 .-- 376 p. [in Russian].

2 Rozhkova M. A. Law in the field of the Internet: a collection of articles / M. Z. Ali, D. V. Afanasyev, V. A. Belov [and others]; hands. ed. count and otv. ed. M. A. Rozhkova. - M.: Statut, 2018 .-- 528 p. [in Russian].

3 Savelyev AI Cryptocurrencies in the system of objects of civil rights // Law. - 2017. - No. 8. - P. 136-153. [in Russian].

4 Saurin A.A. Ownership of money (constitutional and legal aspect) [in Russian]

5. Constitutional and municipal law. - 2018. - No. 5. - P. 51-56. [in Russian].

6 Khamenushko I. V. Operations with cryptocurrencies: possible models of taxation // Entrepreneurial law. - Application "Law and Business". - 2018. - No. 1. - P. 42-44. [in Russian].

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**Майнинг криптовалюты в Казахстане и в мире**

**Аннотация.** В статье выявляются определение майнинга, виды майнинга, история создания криптовалюты, ставится вопрос о том, является ли майнинг предпринимательской деятельностью и в каких случаях он становится объектом правового регулирования. Понятие майнинга сравнивается со сходными явлениями — банковской деятельностью, эмиссией ценных бумаг, выпуском денег центральными банками, на базе чего делается вывод об особенностях данного направления бизнеса.

**Ключевые слова:** биткоин, криптовалюта, майнинг**,** государственное регулирование майнинга, майнер, предпринимательская деятельность, банковская деятельность, криптовалюта, цифровая экономика, баланс частных и публичных интересов.

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**Қазақстанда және әлемде криптовалюта өндірісі**

**Аннотация**. Мақалада тау-кен өндірісінің анықтамасы, тау-кен өндірісінің түрлері, криптовалютаның құрылу тарихы, тау-кен ісі кәсіпкерлік қызмет болып табыла ма және ол қандай жағдайда ол құқықтық реттеу объектісіне айналады деген сұрақ туындайды. Тау-кен өндірісі ұғымы ұқсас құбылыстармен - банктік қызметпен, құнды қағаздар шығарумен, орталық банктердің ақша эмиссиясымен салыстырылады, олардың негізінде осы қызмет бағытының ерекшеліктері туралы қорытынды жасалады.

**Түйінді сөздер**: биткоин, криптовалюта, тау-кен өндірісі, тау-кен өндірісін мемлекеттік реттеу, майнер, кәсіпкерлік қызмет, банк қызметі, криптовалюта, цифрлық экономика, жеке және қоғамдық мүдделердің тепе-теңдігі.

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