

Mining Cryptocurrency di Blockchain

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Abstract. Mining cryptocurrencies on the blockchain is a method for collecting crypto by breaking secret codes compiled with mathematical algorithm equations. Miners will receive rewards in the form of digital coins according to the amount of crypto mined and the type of crypto, this is because each crypto has its own level of difficulty. Crypto includes electronic money (e-money), where the use of e-money as a medium of exchange in modern transactions is still being debated among contemporary scholars about its legitimacy. Two things that become the problem are (1) what is the mechanism for mining cryptocurrency on the blockchain, (2) how is the review of Islamic Economic Law on cryptocurrency mining on the blockchain. The purpose of this study is to describe and explain cryptocurrency mining practices on the blockchain and to find out the review of Islamic Economic Law on cryptocurrency mining. This research is a qualitative research by collecting data and information through interviews. The data sources include primary data sources, namely interviews with crypto miners, secondary data sources, namely books, journals, theses, scientific papers and other written works. While the tertiary data comes from dictionaries, encyclopedias, and related articles. This research data collection method obtained from interviews, observation, and documentation. While the method used to analyze the data is a qualitative analysis method using the theory of mining, al-mal, and ju'alah. From the research results it is known: (1) The cryptocurrency mining mechanism on the blockchain is carried out with a supercomputer facilitated by a GPU, FPGA or ASIC by using certain scripts on the BTC/ETH network to find new blocks containing crypto to get rewards (sell). (2) According to the Sharia Economic Law review of mining cryptocurrency on the blockchain, crypto reward (ju'al) results can be accepted as assets according to the definition of the Hanafiyyah scholars, Ibn Abidin, Imam az-Zaila'i, Imam al-Syatibi, Ibn Arabi and Syafii scholars. However, it is not accepted as a means of payment like conventional money (gharar, dharar, qimar), but both must comply with the conditions and limits set by the Shari'a, this is stated in the Fatwa of the National Sharia Council-Indonesian Ulema Council No: 116/DSN-MUI/ IX/2017 concerning Sharia Electronic Money.

Keywords : Al-Mal, Ju'alah, Mining Cryptocurrency

Abstrak. Mining *cryptocurrency* di blockchain merupakan salah satu metode untuk mengumpulkan crypto dengan memecahkan kode rahasia yang disusun dengan persamaan algoritma Matematika. Penambang akan mendapat reward berupa koin digital sesuai banyaknya crypto yang ditambang dan jenis cryptonya, hal ini karena setiap *crypto* memiliki tingkat kesulitannya sendiri. Crypto termasuk uang elektronik (*e-money*), dimana penggunaan e-money sebagai alat tukar pada transaksi modern masih menjadi perdebatan di kalangan para ulama kontemporer tentang keabsahannya. Dua hal yang menjadi permasalahan adalah (1) bagaimana mekanisme *mining cryptocurrency* di blockchain, (2) bagaimana tinjauan Hukum Ekonomi Syariah terhadap *mining cryptocurrency* di blockchain. Tujuan penelitian ini adalah mendeskripsikan dan menjelaskan praktik mining *cryptocurrency* di blockchain serta mengetahui tinjauan Hukum Ekonomi Syariah terhadap mining *cryptocurrency*. Penelitian ini adalah penelitian kualitatif dengan mengumpulkan data dan informasi melalui wawancara. Sumber datanya meliputi sumber data primer yaitu wawancara dengan para penambang crypto, sumber data sekundernya yaitu dari buku, jurnal, tesis, karya ilmiah dan karya tulis lainnya. Sedangkan data tersiernya dari kamus, ensiklopedia, dan artikel yang terkait. Metode pengumpulan data penelitian ini diperoleh dari wawancara, observasi, dan dokumentasi. Sedangkan metode yang digunakan untuk menganalisis data adalah metode analisa secara kualitatif dengan menggunakan teori mining, *al-mal*, dan *ju'alah*. Dari hasil penelitian diketahui: (1) Mekanisme *mining cryptocurrency* di blockchain dilakukan dengan supercomputer yang difasilitasi GPU, FPGA atau ASIC dengan menggunakan script tertentu pada jaringan BTC/ETH dalam menemukan blok-blok baru yang memuat crypto untuk mendapatkan reward (ju'al). (2) Menurut tinjauan Hukum Ekonomi Syariah terhadap mining *cryptocurrency* di blockchain, hasil reward (ju'al) crypto dapat diterima sebagai harta menurut definisi dari ulama Hanafiyah, Ibn Abidin, Imam az-Zaila'i, Imam al-Syatibi, Ibnu Arabi dan Ulama Syafiyah. Namun tidak diterima sebagai alat pembayaran layaknya uang konvensional (*gharar*, *dharar*, *qimar*), namun keduanya harus mematuhi ketentuan dan batasan yang telah ditetapkan oleh syariat, hal ini tertuang dalam Fatwa Dewan Syariah Nasional-Majelis Ulama Indonesia No: 116/DSN-MUI/IX/2017 tentang Uang Elektronik Syariah.

Kata kunci : *Al-Mal, Ju'alah, Mining Cryptocurrency*

INTRODUCTION

Indonesia is one of the countries in the world where the majority of the population is Muslim. This can create promising opportunities for Indonesia to become a country with the highest sharia economic asset value in the world. Moreover, in the era of the industrial revolution 4.0 towards the era of society 5.0 which is centered on technology, in other words all modern transactions use a digital system. One of them that is currently booming is cryptocurrency. The use of cryptocurrency is still being debated among contemporary scholars. This debate gave birth to two camps, where one camp considers crypto halal and the other camp considers crypto haram. Contemporary scholars have their own reasons for judging this type of currency. Those who consider crypto halal argue that the crypto currency system as a medium of exchange is more efficient because it is free from usury compared to fiat money and conventional banks because the blockchain system carries out peer-to-peer transactions.

East Java's PWNU (Nadhlatul Ulama Regional Administration) has issued Bahthul Masail Decree No 1087/PW/A- 11/L/XI/2021 regarding cryptocurrencies. Based on the results of this decision, it is stated that the status of cryptocurrency as a commodity is reviewed from two sides, namely the first is cryptocurrency which has guarantor assets such as Tether and part of Ethereum acts as a *duyun mall* (debt asset). However, making this type of crypto as a medium of exchange is still prohibited, because *'ilat* goes beyond the duties and authority of the State as a currency printer, where its existence can interfere with the sovereignty of the State's currency. Second, cryptocurrencies that do not have collateral assets, such as Bitcoin, some Ethereum and Polkadot cannot act as commodities because they do not have the utility/benefits and collateral assets, so that it is the same as *bai' babalil habalah* (buying and selling of camel fetuses in the womb).

Meanwhile, those who consider crypto illegal argue that this type of currency contains elements of *gharar*, *dharar*, *qimar* and does not meet the requirements of *sil'ah* according to the Shari'a. In addition, crypto is considered contrary to Law Number 7 of 2011 and Bank Indonesia Regulation Number 17 of 2015. This argument is supported by a perspective which suggests that crypto currency is prohibited because it is not shariah compliance, with one of the reasons being that crypto does not have a legal basis for operation. (legal tender), crypto has no authority or government power to support it, and crypto price movements are unstable so that it can have an impact on high speculation.

Cryptocurrency can be obtained in several ways, one of which is mining. Mining cryptocurrency is a term that denotes crypto mining activity. The context of mining in this case is not the same as mining gold, sand or other things that are synonymous with heavy equipment. However, this term denotes a recording of transactions that occur on the blockchain. From the background above, researchers will examine cryptocurrency mining, this is because transactions through the digital world are currently mushrooming among Indonesian people who are Muslim. It is from this phenomenon that the authors are interested in taking the research title: Mining Cryptocurrency on Blockchain Perspective of Sharia Economic Law.

RESEARCH METHODS

The type of research conducted by this researcher is qualitative research using case studies. Qualitative research is research that intends to understand the phenomena experienced by research subjects, such as behavior, perceptions, motivations, actions and others as a whole. This study uses the interview method (field research), which is a research that seeks data directly to the field. Researchers conducted interviews in Bojonegoro Regency, East Java Province, Indonesia.

RESULTS AND DISCUSSION

a. Review of Sharia Economic Law Against Cryptocurrency Mining on Blockchain

1. *Mining*

In cryptocurrency mining there are no limitations regarding the amount of crypto that can be mined and the mining time. It all depends on the ability of miners, because the most important thing is miners are able to synergize with other miners. In Islamic law, any kind of work is legal if the work does not conflict with the Shari'a, for example killing, stealing, or other things that are not permitted. In this case, mining is a job that falls into the intellectual and technical category because it relies on the ability to operate a computer, the ability to solve challenges that have been given in the form of solving mathematical algorithms.

But even so, of course a Muslim who adheres to sharia principles must still pay attention to existing norms, whether they are the norms that apply to positive law or the norms that exist in normative law. This is because cryptocurrency mining activities can be instruments of illegal action, namely money laundering.

2. *Al-Mal*

In cryptocurrency mining transactions, the assets referred to here are crypto. Crypto is included in the category of electronic money (e-money). Researchers need to emphasize that the discussion above is related to buying and selling crypto.

In 2021 Bahtsul Masail discusses the halal and illegal nature of crypto considering that there are still many contemporary scholars who dispute this matter. In the discussion, Yenny Wahid as the founder of the Islamic Law Firm (ILF) and

director of the Wahid Foundation said that some parties consider crypto money to be halal because those who think so argue that the crypto currency system as a medium of exchange is actually more efficient because it is free from usury compared to with fiat money and conventional banks. This is because the system on the blockchain carries out transactions peer-to-peer (without intermediaries). According to him, cryptocurrencies are legal as long as the government doesn't ban them. The results of the DIY PWNU Bahtsul Masail Formulation also state that crypto as a medium of exchange is permissible in Islam.

Meanwhile, those who consider crypto illegal think that this type of currency contains a high element of uncertainty and its price can change quickly for no apparent reason. They also argue that high levels of crypto volatility are similar to gambling and cannot be traded because there are no underlying assets (the basic object of sukuk transactions).

Cryptocurrency as an asset that fulfills the requirements as a *sil'ah* and has an underlying and has clear legal benefits to be traded. However, because the object of the contract in this study is the same, according to the researcher, this can also be used as a reference in cryptocurrency mining. Based on this explanation, it can be concluded that crypto is included in *al-mal* because it has an asset value. Second, because it is an asset that has the same function as money, it is valid to be exchanged as long as it does not contain *gharar*. But *gharar* in this case is debatable (depending on each person's point of view). Third, it is suggested that people who do not have knowledge about cryptocurrencies do not immediately get involved in this transaction. Fourth, the government as the authority in the country makes strict regulations to prevent misuse and irregularities in crypto transactions.

Of the several reasons that have explained the legitimacy of crypto as a commodity / asset, the author personally agrees with the argument stating that crypto is halal to use in a transaction because it has the same intrinsic value to assets as assets in general. But keep in mind, the use of crypto must comply with the principles set by sharia. Apart from that, there are also government regulations governing crypto, so indirectly using crypto in a transaction is a legal act. This regulation is the Regulation of the Minister of Finance of the Republic of Indonesia Number 68/PMK.03/2022 concerning Value Added Tax and Income Tax on Crypto Asset Trading Transactions.

3. *Ju'alah*

a. Terms of the contract

In this case the ja'il is the party from the blockchain that will provide the reward and the maj'ullah is the crypto miner. In this transaction, both parties do not have an element of coercion, as long as the maj'ullah is able to solve or solve the given algorithm equation, then he will get a reward or reward according to the number of codes that have been solved and the type of crypto that has been mined.

The second condition is the condition for the validity of the contract (shurut al-sihhah) related to work (maj'ul 'alaih). In this agreement the work is mining cryptocurrency (mining crypto). The third condition is the condition for the implementation of the contract (shurut al-nafad) related to the ownership of the object of the contract. In this case, because the object of the contract is in the form of work, a maj'ullah must be an expert in carrying out his duties to mine crypto, namely virtual currency that can be obtained in one way, namely cryptocurrency mining.

The fourth condition is the condition that binds the contract (shurut al-luzum) related to things that can cancel the ju'alah contract. The ju'alah contract will be fulfilled if the two parties to the contract have fulfilled their respective obligations. Where ja'il will give wages to maj'ullah when maj'ullah's work has been completed and meets the results. After the work assigned to the maj'ullah has been completed, the ja'il will give him a reward in the form of virtual money sent peer to peer, there are no third parties.

b. Pillars and Conditions Ju'alah

1. *Al-aqidin*

- a. *Jail* : according to the Shafi'iyyah and Hanabillah scholars that a ja'il must have the validity of the contract (baligh, reasonable, and wise). So it is not valid if ja'il is carried out by young children, crazy people, and safih (unwise in spending wealth). In this case the jail is a party to the blockchain.

b. *Maj'ullah* : Maj'ullah in this case is a crypto miner. Because cryptocurrency mining is a job that requires special skills, maj'ullah in this case must be proficient in doing his job.

2. *Maj'ul'alaih*

Maj'ul 'alaih in this case is cryptocurrency mining. Cryptocurrency mining is a job that requires special skills, namely breaking secret codes that are arranged in such a complicated way based on mathematical algorithms with a cryptographic system. In carrying out their work, crypto miners must use supercomputers to be able to open blocks on the blockchain. Supercomputers are needed because ordinary computers do not allow to do military work without being equipped with certain components. Cryptocurrency mining is a form of ju'alah contract in the technical and intellectual fields.

In cryptocurrency mining, all transaction activities are recorded in a large ledger file that can be accessed by anyone. This data ledger is to prevent acts that violate the law or provisions in the blockchain because all activities have been recorded or recorded.

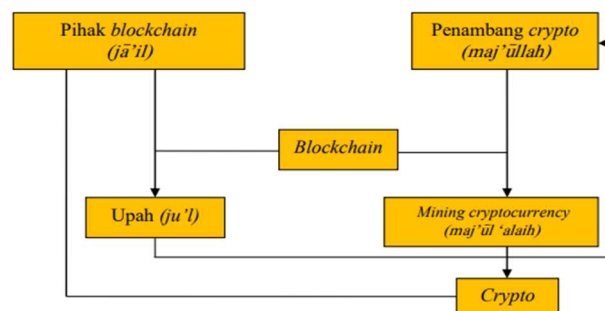
3. *Sighat*

In cryptocurrency mining there is no affirmation from the maj'ullah because the two parties did not meet face to face, the agreement just happened via digital. Even though there is no affirmation from the crypto miner, as long as the maj'ullah is able to solve existing mathematical algorithm problems then that is be proof that he is able to do the work given and is entitled to get the wages as promised.

4. *I'wad* atau *ju'l*

In cryptocurrency mining, the reward that the second party provides to crypto miners is digital or crypto currency. In cryptocurrency mining on the blockchain, there is no formal reward agreement between the rewarder and the crypto miner. Because the system on the blockchain has automatically regulated whoever can crack the secret code, the wages they will get are adjusted to the level of difficulty of the crypto that has been successfully

mined. However, in cryptocurrency mining with a *ju'alah* contract, the amount of wages received by crypto miners is adjusted to the amount of crypto that has been successfully solved by the mathematical algorithm formula. Each type of crypto has its own value weight, which means that the more crypto that is mined and the type of crypto that has a large asset value, the more *maj'ullah* (crypto miners) will receive. The cryptocurrency mining mechanism on the blockchain with a reward system can be illustrated through the following chart:



- a. *Ja'il* that is, parties from the blockchain hold a kind of competition, who can solve the equation of the algorithm will get a reward according to the provisions, where this provision is based on how many codes can be solved and the type of crypto that is mined. The two parties did not meet in person, because there is no physical meeting place like a market or supermarket. They are only connected via electronic media. The identities of each person are not known to each other because sometimes some use pseudonyms.
- b. *Maj'ullah* doing his job to mine crypto. In this mining, one miner with another miner races to be able to solve the algorithm equation.
- c. *Maj'ullah* has done his job and he is entitled to get wages (*ju'l*) from *ja'il*
- d. *Ju'l* or wages in the form of crypto stored in a wallet that can be exchanged in rupiah and can be used.

CONCLUSION

1. Mechanism of cryptocurrency mining on the blockchain

a. Mechanism of cryptocurrency mining on the blockchain

The cryptocurrency mining mechanism on the blockchain is carried out with a supercomputer facilitated by a GPU (Graphics Processing Unit), FPGA (Field Programmable Gate Array), or ASIC (Application Specific Integrated Circuit). First you have to install certain scripts on the BTC/ETH network to find new blocks containing crypto.

b. Cryptocurrency mining mechanism with a reward system

Mining cryptocurrency with a ju'alah contract occurs between the second party of crypto and crypto miners. the second party from the blockchain holds a kind of competition by giving challenges to solving Mathematical algorithms, where someone who can solve the algorithm will get a reward in the form of virtual coins as well

2. Mining Cryptocurrency in Blockchain Perspective of Sharia Economic Law

a. In the theory of al-mal weighing that crypto can be accepted as a commodity or asset that has intrinsic value to the same assets as property in general, not as a means of payment like conventional money, but must comply with the conditions and limitations set by the Shari'a, namely free from gharar, dharar, and qi> mar, this is stated in the Fatwa of the National Sharia Council-Indonesian Ulema Council No: 116/DSN-MUI/IX/2017 concerning Sharia Electronic Money. As for some parties, there are those who say that cryptocurrencies are haram because of the uncertainty factor.

b. because the important point in this case is that every crypto miner is able to compete and synergize in solving algorithms that are carried out using supercomputers in finding new blocks that contain crypto and getting crypto rewards (selling) as a reward to crypto miners when their work is completed. has achieved the specified result. The wages are then accommodated in the wallet and then exchanged in rupiah.

c. The wages have fulfilled the criteria as assets, as defined by the scholars, including the Hanafiyyah scholars, Ibn Abidin, Imam az-Zaila'i, Imam al-Syatibi, Ibn Arabi and the Syafiyyah scholars. They define property as anything that is of interest to humans and can be presented when needed, or anything that can be owned, stored and utilized.

d. Mining cryptocurrency with a ju'alah contract according to the author's opinion is nothing more than a dexterity contest or the ability of crypto miners.

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