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The Challenge of Cryptocurrency in the Era of the Digital Revolution: A Review of Systematic Literature

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Abstract

Money is clearly a primary need of every human being that cannot be avoided, human needs can be realized by using money. Seeing from the lack of systematic literature review papers discussing cryptocurrency, this is a challenge as well as the main purpose of this paper. Along with the development of modernization and globalization which has now entered the industrial era 4.0 revolution there is a blockchain based technology, Cryptocurrency. Cryptocurrency is one of the developments of the blockchain that is often used as a decentralized digital currency. The word Cryptocurrency means a virtual currency that has no physical form, and Cryptocurrency also means that the transaction currency cannot be seen and is safe. This digital currency has many types such as Bitcoin, Ethereum, Litecoin, Monero, and many other types. Although it has no physical form, this currency functions the same as conventional currencies in general and has an exchange rate. Exchange rates on Cryptocurrency fluctuate which means unexpected, this is often exploited by traders. Cryptocurrency transactions in the form of forwarding from one individual to another individual online, therefore they deal directly without a third party. Every technology has advantages and disadvantages aside from efficiency and convenience, Cryptocurrency has the disadvantage of not having the authority responsible for dealing with all problems that occur in all transactions, and money laundering crimes also often occur, this is a challenge for how to utilize Cryptocurrency and blockchain technology in the current era of globalization.

Keywords: *Blockchain, Cryptocurrency, Digital money, Systematic review*

1. Introduction

In the early 1990s, the internet was a new thing, and many people still tried to understand and struggle to dominate the internet. Even though the internet is a new thing, there is still a group of smart people who already understand the internet well and finally realize that the internet can be a very powerful tool. This group of geniuses called themselves Cypherpunks. Cypherpunks is a group formed in the early 1990s formed by cryptographic activist groups. This group was founded by Timothy May, Eric Hughes, and John Gilmore [1].

They held face-to-face meetings aimed at discussing privacy issues on the internet, and they wished for internet and computer users to get privacy freedom about personal data and greater freedom over their money by using cryptography, therefore Cypherpunks who very does not trust the existence of a third party on the internet. By using cryptography, their desire to achieve this is increasingly achieved, this is because the Cypherpunks group succeeded in making open source software that they spread throughout the world and also Timothy May published his writings "The Crypto Anarchist Manifesto" which contains how to change people to interact online using technology [2]. Because Cypherpunks wanted to increase their power over money, Cypherpunks aimed at creating a digital currency system. It is not only the Cypherpunks group that wants to realize the implementation of digital currencies but there are two other groups, namely DigiCash and CyberCash. DigiCash was a group in the early 1990s that also tried to implement a digital or electronic currency system led by David Chaum [3], while CyberCash was an electronic shopping service center in 1994, headed by Daniel C. Lynch. These two groups almost filled all elements of cryptocurrency but not all of them caused chaos in the late nineties which caused these two groups to fail. The decentralized cash system was finally created for the first time in 2009, Satoshi Nakamoto is the mysterious name of their group that succeeded in creating a cash system and the creation of Satoshi Nakamoto is known as Bitcoin.

2. Research Method

The Systematic Literature Review method aims to collect, identify, and interpret all of the research that has been done to answer some questions from the research that has been done. In searching for relevant studies, guidelines from Barbara Kitchenham are a suitable step for this research method. These steps will be divided into the following sub sections:

2.1 Research question

The focus of this research question is centered on 3 challenges and obstacles that will be faced or are being faced in using Cryptocurrency:

SQ1: What challenges will Cryptocurrency users face in determining the value of bitcoin or the other? SQ2: Is it possible to secure all the stored data with blockchain technology? SQ3: Does Cryptocurrency affect the economy in Indonesia?

2.2 Search Strategy

Searching by using tags and keywords is a strategy carried out to search for scientific papers related to this research. In Google Scholar, the tags and keywords that we are looking for are "Cryptocurrency", "blockchain", "bitcoin", and "digital money" searches of all scientific works related to this research do not look at the quality and year of publication, all scientific works that are related to this research were downloaded and put together. Some articles and report results are also what we are looking for in this research.

2.3 Literature review

In this section is an explanation of the concepts and theories about Cryptocurrency and blockchain which have several implementations that have been applied.

a. Cryptocurrency

Cryptocurrency is a technology that utilizes blockchain, one of which is digital money, electronic money, or virtual money that is in common with money in this world and this money has no physical form [4]. By using this blockchain technology can make all transactions that occur become very transparent and every existing data will relate to one another, and every existing data has one user within the scope of the cryptocurrency system [5].

b. Basic Concepts of Cryptocurrency

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Cryptocurrency of course also has seven basic provisions so that a Cryptocurrency occurs

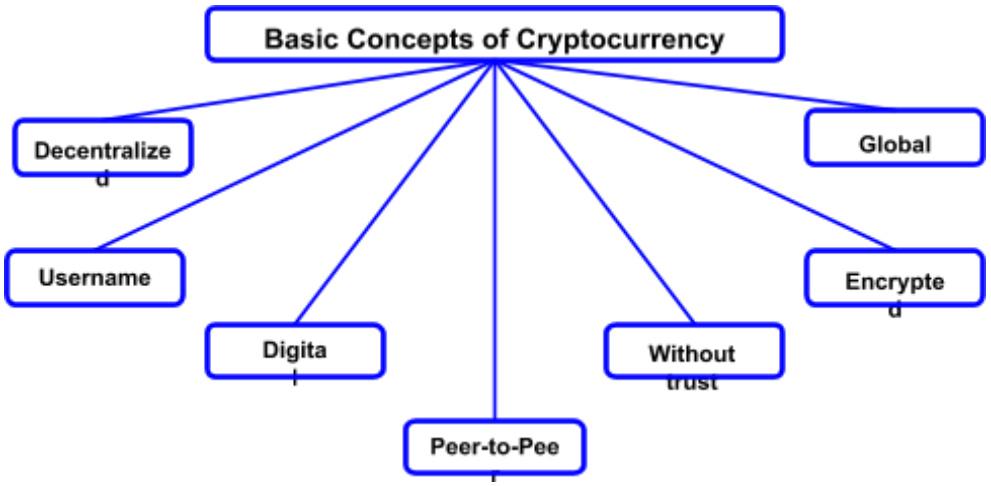

Figure 1. Basic concepts of cryptocurrency

Digital: Cryptocurrency is only in the computer. Not in the form of coins, notes or other tangible things.

Decentralized: Cryptocurrency does not have a central server or primary computer. Cryptocurrency is channeled through network media (usually) thousands of computers. A network that does not have a central server can also be called a decentralized network.

Peer-to-Peer: Cryptocurrency is connected through one individual which will be forwarded to other individuals online. In Cryptocurrency there are no third party terms so users interact directly without other parties such as banks, Facebook and PayPal.

Username: This means that we no longer need to include our personal information in order to become a condition of using cryptocurrency, so that anyone without providing personal data can still use cryptocurrency.

Without trust: Cryptocurrency users want freedom in controlling their personal data and money, so having a third party can hamper the Cryptocurrency process.

Encrypted: All users will be given a special code where the code can protect their personal data so it is almost impossible to be hacked by other users, this can also be referred to as cryptography. The definition of crypto has the meaning of being hidden, the process of hiding all the user's personal data using cryptography is what is called encryption

Global: Usually every country has their own currency known as fiat, sending currencies to other countries or the whole world is very difficult. This problem can be overcome with Cryptocurrency. Cryptocurrency access can be done easily so that Cryptocurrency can be sent to all countries or the world easily because Cryptocurrency is a digital currency that has no limits.

c. Blockchain

Satoshi Nakamoto was the first Blockchain designer to be implemented into Bitcoin. Blockchain is a digital-based data storage system that contains special notes through cryptography. These records are added to a database one by one so as to make a very long series of data so that the blockchain can be said to be a linear chain/data chain [6]. After the

record/data is entered into the database the data is then stored and cannot be changed or even deleted again. All data that has entered into the database will be stored into a computer network that amounts to thousands of these things known as nodes.

d. Bitcoin

Bitcoin is a new currency in the form of digital or electronic money. In 2009 Satoshi Nakamoto was the name for a pseudonym who introduced Bitcoin to the world for the first time. The Bitcoin transaction process does not recognize third parties and does not use intermediaries such as banks or other direct transactions [7]. The cryptographic method is also applied in this Bitcoin system. Bitcoin can only be used by users who have an encryption code, so it is certain that only the owner can use the Bitcoin.

3. Findings

3.1 Problem

In this section there are three subsections that will be an explanation and discussion of the problems that have been found in this study. The first subsection will discuss the common problems of Cryptocurrency users in making transactions. The second subsection will discuss data security by utilizing blockchain technology. The third subsection will discuss the role of legal institutions in dealing with the era of the industrial revolution 4.0 in the field of digital currency.

1. SQ1: What challenges will Cryptocurrency users face in determining the value of bitcoin or the other?

The price seems to be a very calculated thing in the process of using this bitcoin. The price of Bitcoin itself has a self-determined value of all supply and demand [8]. If the supply and demand for bitcoin increases the value of bitcoin will also increase in value, and vice versa if the supply and demand of bitcoin is declining then the value of bitcoin will also decrease in value. Therefore it can be concluded that the price of bitcoin is still very unstable and unpredictable due to their very young economy [9].

2. SQ2: Is it possible to secure all the stored data with blockchain technology?

Since 2018, the rapid increase in the blockchain industry has increased to 30%, quoted from the Executive Director of the Indonesian Blockchain Association (ABI), Muhammad Deivito Dunggio. According to him, in this era, many companies entered the world of blockchain industry, but Deivito or often called Oham said that companies that entered the world of blockchain industry were due to data, because with the bloc According to Oham, companies now are starting to compete as much as possible to collect data, but this data can be insecure or can even be stolen with inadequate security. The Oham blockchain has an excellent data security system approved example from the Bitcoin Block Explorer site [10]. Real-time transactions all over the world contained on the site are recorded and everyone can check, the data is also public and cannot be manipulated [11]. Separate data security issues can be simulated like someone wants to see our account, everyone can see it because of the nature of transparency. But they can't find out who the account is owned by unless the account owner provides the encryption code. To be able to fully access the account, you need a PIN or private key, then you can access or transfer the available balance [12]. So it can be concluded that blockchain technology is a safe place to store a piece of data but behind it all remains someone who has successfully hacked the blockchain system even though the possibility is small so that the blockchain always updates their systems [13].

3. SQ3: Does Cryptocurrency affect the economy in Indonesia?

In Indonesia bitcoin users were briefly given a warning from Bank Indonesia to no longer invest in the digital currency [14]. Volatility and circulation of the bitcoin exchange rate can endanger monetary, payment and financial stability in Indonesia according to the head of the Bank Indonesia Payment System Policy Department. The impact of cryptocurrency in Indonesia on the economy also cannot be underestimated, this is due to the existence of several large countries such as Korea and Japan that have legalized transactions using cryptocurrency, this is what makes the Indonesian economy have a major impact from the use of this cryptocurrency. If cryptocurrency makes these big countries experiencing a food crisis, Indonesia will be affected as well [15].

3.2 Research Implementation

a. Application of Cryptocurrency

Cryptocurrency transactions basically have the concept of recording all history that takes place throughout the network, including the amount of balance that is currently being held [16]. For example, user A has made a transaction that has been confirmed by the recipient, then at that time there was a spread into the blockchain network where all users can see the transaction and the transaction has also been signed by sending a private key to the system digitally [17]. After the transaction is successful, the data will be stored in a container commonly known as blocks. Data stored in these blocks is permanent which means the data cannot be falsified, altered, or hijacked and later the series of blocks will create a unity [18].

b. Cryptocurrency threat

As a substitute for conventional currency, of course in this case cryptocurrency has many pros and cons. The quote said by Mrs. Sri Mulyani "Permanent Establishment will be threatened by digitization (Crypto-red)", therefore parties from Bank Indonesia and the Financial Services Authority (OJK) do not accept and acknowledge that crypto is a legal payment instrument such as conventional money in general, although crypto has a value [19]. The security of cryptocurrency that utilizes blockchain technology also often results in a downside where when data is stolen the data will never be returned because of the blockchain, unless the crypto owner invites other crypto users so that their searches can be approved. Meanwhile, Bank Indonesia explicitly stated the prohibition on using cryptocurrency in terms of transactions so that cryptocurrency payment instruments were considered legal and not recognized [20]. Based on the law the statement relates to the receipt of payment instruments which are valid in or accepted in Indonesia only by Rupiah.

4. Conclusion

In lieu of a banking system where every transaction that occurs is always supervised under the supervision of a bank, cryptocurrency is present as an eraser of all the existence of third parties of each transaction and of course provides freedom of ownership of personal data without having to think about the existence of a third party. Therefore the conclusions obtained from this study are: Cryptocurrency is a digital currency that has no physical value but has value. Utilizing blockchain technology can increase the level of security of user data. The value of Cryptocurrency cannot be determined. This cryptocurrency is a decentralized digital currency. That is, there are no third parties who become intermediaries in a transaction process. This cryptocurrency uses the Blockchain platform to ensure its security. By using Cryptocurrency, it can be easier for people to make transactions quickly because there is no intermediary. Data data on Cryptocurrency is stored permanently in the blockchain network, so that no other party can manipulate data.

References

[1] A. Vadim and C. Justin, “SEC’s Division of Investment Management voices concerns over registered funds investing in cryptocurrencies and cryptocurrency-related products,” Journal of Investment Compliance, vol. 19, no. 2, pp. 8–12, Jan. 2018, doi: 10.1108/JOIC-04-2018-0034.
[2] A. C. Inci and R. Lagasse, “Cryptocurrencies: applications and investment opportunities,” Journal of Capital Markets Studies, vol. 3, no. 2, pp. 98–112, 2019, doi: 10.1108/jcms-05-2019-0032.
[3] T. Huber and D. Sornette, “Boom, Bust, and Bitcoin: Bitcoin-Bubbles As Innovation Accelerators,” Swiss Finance Institute Research Paper, no. 20–41, 2020.
[4] T. F. M. Johannes and F. Marie-Christin, “Money laundering via cryptocurrencies – potential solutions from Liechtenstein,” Journal of Money Laundering Control, vol. ahead-of-p, no. ahead-of-print. Jan. 01, 2020, doi: 10.1108/JMLC-04-2020-0041.
[5] M. Amit, R. Megnath, and S. Dipayan, “A Conceptual Study on the Emergence of Cryptocurrency Economy and Its Nexus with Terrorism Financing,” in The Impact of Global Terrorism on Economic and Political Development, R. C. Das, Ed. Emerald Publishing Limited, 2019, pp. 125–138.
[6] H. P. Wouda and R. Opdenakker, “Blockchain technology in commercial real estate transactions,” Journal of Property Investment and Finance, vol. 37, no. 6, pp. 570–579, 2019, doi: 10.1108/JPIF-06-2019-0085.
[7] T. Adam and I. A. S. Maitland, “Bitcoin transactions: a digital discovery of illicit activity on the blockchain,” Journal of Financial Crime, vol. 25, no. 1, pp. 109–130, Jan. 2018, doi: 10.1108/JFC-12-2016-0078.
[8] A. Swito, A. Michalczuk, and H. Josi, “Quaternion Watershed Transform,” vol. 1, no. 1, pp. 567–578, 2019, doi: 10.1007/978-3-030-14802-7.
[9] S. Tobey, “Is Bitcoin Trustworthy?,” in Disruptive Innovation in Business and Finance in the Digital World, vol. 20, J. J. Choi and B. Ozkan, Eds. Emerald Publishing Limited, 2019, pp. 151–165.
[10] A. Denni, van E. Patrick, B. Marat, and L. Andrea, “Do consumers really trust cryptocurrencies?,” Marketing Intelligence & Planning, vol. ahead-of-p, no. ahead-of-print. Jan. 01, 2020, doi: 10.1108/MIP-01-2020-0036.
[11] T. Hariguna, M. Yusup, and A. Priyadi, “The Transaction Optimization Of Color Print Sales Through E-Commerce Website Based On Yii Framework On Higher Education,” Aptisi Transactions On Technopreneurship (ATT), vol. 1, no. 1, pp. 1–10, 2019.
[12] G.-T. R. M., “Legal challenges and opportunities of blockchain technology in the real estate sector,” Journal of Property, Planning and Environmental Law, vol. ahead-of-p, no. ahead-of-print. Jan. 01, 2020, doi: 10.1108/JPPEL-07-2019-0039.
[13] A. Chad, D. K. McKay, H. Steven, and M. R. V. Manuel, “The use of cryptocurrencies in the money laundering process,” Journal of Money Laundering Control, vol. 22, no. 2, pp. 210–216, Jan. 2019, doi: 10.1108/JMLC-12-2017-0074.
[14] C. G. Maria and P. Alex, “Price overreactions in the cryptocurrency market,” Journal of Economic Studies, vol. 46, no. 5, pp. 1137–1155, Jan. 2019, doi: 10.1108/JES-09-2018-0310.
[15] D. D. B., L. David, and S. Paul, “Evaluating cryptocurrency laundering as a complex socio-technical system: A systematic literature review,” Journal of Money Laundering Control, vol. 22, no. 3, pp. 480–497, Jan. 2019, doi: 10.1108/JMLC-10-2018-0063.
[16] S. Santoso, J. Kauf, and N. C. Aristo, “The Information System of Name Card Sales Based on Digital Marketing to Improve Creativepreneur on College E-Commerce Website,” Aptisi Transactions On Technopreneurship (ATT), vol. 1, no. 1, pp. 64–72, 2019.
[17] P. A. Sunarya, D. D. Bernard, and D. M. Damanik, “Viewboard Implementation Based on Javascript Charts as a Media for Submitting Sales Information on a Green E-Commerce Website Light Cafe,” Aptisi Transactions On Technopreneurship (ATT), vol. 1, no. 1, pp. 11–19, 2019.

[18] M. Zarlis, E. P. Harahap, and L. N. Husna, "Test Appraisal System Application Based on YII Framework as Media Input Student Value Final Project and Thesis Session at Higher Education," Aptisi Transactions On Technopreneurship (ATT), vol. 1, no. 1, pp. 73–81, 2019.
[19] A. Mustapha, H. M. Kabir, and H. M. Auwalu, "Cryptocurrency Tide and Islamic Finance Development: Any Issue?," in Disruptive Innovation in Business and Finance in the Digital World, vol. 20, J. J. Choi and B. Ozkan, Eds. Emerald Publishing Limited, 2019, pp. 189–200.
[20] C. J. Lee, "Crypto Liquidity: the blockchain and monetary stability," Journal of Entrepreneurship and Public Policy, vol. 9, no. 2, pp. 227–252, Jan. 2019, doi: 10.1108/JEPP-03-2019-0011.