

Cryptocurrencies as Digital Payment Media: Opportunities and Challenges

Denny

Faculty of Law, Universitas Internasional Batam
1951102.denny@uib.edu

Hari Sutra Disemadi

Faculty of Law, Universitas Internasional Batam
hari@uib.ac.id

DOI: 10.23917/laj.v7i2.743

Submission Track:

Received:

June 2022

Final Revision:

September 2022

Available Online:

February 2023

Corresponding

Author:

Denny

1951102.denny@uib.edu

ABSTRACT

Cryptocurrency is a centralised network currency system that can connect users without intermediaries or third parties such as banks or governments. Countries globally have different attitudes in drafting regulations regarding cryptocurrencies; some accept, reject, or are neutral. The application of cryptocurrency as a payment medium has not yet been regulated in Indonesian legal jurisdiction. However, cryptocurrencies have various opportunities that can positively impact the country's economy. Indonesia must face various challenges in implementing cryptocurrency as payment. This study examines the opportunities and challenges of implementing cryptocurrency as a payment medium by using a responsive legal theory review. The study was carried out using doctrinal research methods. Indonesia's cryptocurrencies currently do not have a lex specialist (particular regulation). However, the application of cryptocurrency as a payment medium can increase e-commerce transactions, have a payment system with high confidentiality and security, and fast, precise, and low-cost transactions. The challenges that must be implemented are developing institutions and legal constitutions that regulate cryptocurrencies as a payment medium, developing blockchain systems and their application in cellular technology.

Keywords: *Cryptocurrencies, Opportunities and Challenges, Payment Media*

INTRODUCTION

Innovation and technological advances increasingly affect the life of modern society (Sajidin, 2021). Technological developments in the era of the digital revolution have made technology one of the primary needs in society (Bhiantara, 2018). These developments have brought reforms to various aspects of people's lives, from fashion, automotive, communications and payment systems. The payment system itself is a mechanism that includes the arrangements used to deliver payments through the exchange of values between individuals and financial institutions both domestically and globally. The factor that triggers the development of the payment system is because cash payments in the form of paper money as a means of payment transactions have many limitations so that they are no longer able to meet the needs of the community (Ferry Mulyanto, 2015). One of the transaction tools still controversial in Indonesia is a digital currency. Digital currency is defined as a digital representation of value, which is not issued by a central bank, credit institution or electronic money institution, which in some circumstances, can be used as an alternative to money (Baharudin Vanani et al., 2021). The value of a digital currency is highly dependent on supply and demand. The digital currency has no intrinsic value, unlike commodities; its value depends on the belief that the money can be exchanged for goods, services, or the currency of a particular country, at one point in time. Therefore, the value of a digital currency depends on self-fulfilling expectations (Lo & Wang, n.d.). The distribution of digital currency is determined by a computer system so that no single legal entity has the authority or freedom to regulate the inventory of units from time to time (Barrdear & Kumhof, 2017).

Cryptocurrency is a digital currency system where the users use digital payments for business activities that function as a standard currency (Syamsiah, 2017). Cryptocurrency or digital currency uses transactions over the network (online). Cryptocurrency is a vocabulary derived from the word cryptography (coding language), referring to an agreement from users and a storage process secured by strong passwords. At the same time, the currency is a medium of exchange that applies in society (Ade Onny Siagian, Cisilia Maiyori, Andrew Shandy Utama, Rini Nuraini, 2021). Cryptocurrency is a centralized currency system in a network that can connect users without intermediaries or third parties such as banks or governments (Nuraliati & Azwari, 2019). Cryptocurrency is also a digital currency that uses cryptographic technology as security. It is difficult to counterfeit because transactions must be on the internet (online) for each data transaction, and it will be encrypted using specific cryptographic algorithms

(Dwicaksana & Pujiyono, 2020). The main reason for using Cryptocurrency is because the practices do not have to be tied to a bank, even though the value is very volatile. It is free from taxes as long as it is still digital money and is only subject to administrative fees if transformed into currency, either rupiah or foreign currency (Zain, 2018). Some examples of cryptocurrencies circulating include Ripple, Lisk, Ether, MaidSafeCoin, Litecoin, StorjCoinX, Ethereum, DogeCoin, Dash, Monero, Zcash, and Bitcoin (BTC) (Ausop & Aulia, 2018). The legality of using cryptocurrencies and the law of their use in business transactions still have various pros and cons.

The development of cryptocurrency as a digital currency causes various legal problems, such as regulation. Most countries still do not have the same attitude in drafting regulations regarding cryptocurrencies. Several countries such as China, India, Egypt, Nepal, Morocco, Saudi Arabia decided to expressly reject the circulation of cryptocurrencies because they have the potential for crime, fluctuating value, and do not meet the criteria to be considered a currency. Several other countries such as America, Japan, Germany, the United Kingdom, the Netherlands and Switzerland are open and provide legal status for cryptocurrencies while preventing money laundering and abuse. These countries are also implementing such rules regarding the use of cryptocurrencies (Sajidin, 2021). Other countries such as Argentina, Tunisia, Emirates, Peru, Uruguay, Tunisia and Jordan are neutral and have not taken a stand regarding cryptocurrency as a payment medium (Rohman, 2021).

There are several previous research studies on the implementation of cryptocurrencies in Indonesia. Some of them are as follows: 1) Tiara Dhana Danella, Sihabbudin, and Siti Hamidah stated that bitcoin could be a legal payment instrument in Indonesia because bitcoin fulfils most of the requirements for an object to be considered a means of payment, which is not easily damaged, has good quality, which tends to be the same, cannot be faked, is easy to carry, and has a stable value (Tiara Dhana Danella, Dr. Sihabbudin, S.H., M.H, Siti Hamidah, S.H., n.d.); 2) Mohammad Syamsul Muarif stated that digital coin transactions are carried out arbitrarily without any knowledge and are speculative, making them unlawful. However, if the transaction is carried out scientifically accompanied by knowledge of the risks that will occur and has been carefully analyzed, it is permissible to carry out the transaction. The payment using digital coins can still be done if the seller and buyer agree that payment is made using certain digital coins. In this case, the payment must be made simultaneously with the value of the digital coin agreed at that time (Muarif, n.d.); 3) Nurfia Oktaviani Syamsiah stated that

cryptocurrency has the characteristics of a currency because it can be accepted as a means of payment within a specific scope. Its value is maintained because the number of issuances is limited (Syamsiah, 2017); 4) F. Yudhi Priyo Amboro and Agustina Christi stated that Japan had legalized transactions using cryptocurrency by implementing the law amended on April 1, 2017, against the Payment Service Act (PSA). This law is intended to legalize it as a virtual currency with legal status like the other currencies. Singapore has also legalized cryptocurrency transactions through the Monetary Authority of Singapore (MAS) in the Securities and Futures Act, the primary law governing securities and investments in Singapore (Priyo Amboro & Christi, 2019).

The current study has differences from the publications of several previous studies. The current study examines the opportunities for applying cryptocurrency as payment. The study also examines Indonesia's challenges when implementing cryptocurrency as a payment medium. In addition, the study is analyzed using responsive legal theory to build a constitutional foundation that regulates cryptocurrencies. The results of this study are expected to increase understanding of the opportunities and challenges of implementing cryptocurrency as a payment medium and becoming literate for the public for the following legal study.

RESEARCH METHOD

This legal research was carried out using doctrinal research methods. Doctrinal research is legal research that examines written law from various aspects. They are theory, history, philosophy, comparison, structure and composition, scope and material, consistency, general explanations and article by article, formality and binding power of law, and legal language used. However, it does not examine the implementation aspects (Ali, 2009). Objects and references in doctrinal research are the rules of norms, concepts and doctrines that develop in legal thought (Hakim, 2017). Doctrinal research is described in a qualitative descriptive manner. Qualitative descriptive research is a research technique that describes and interprets the meaning of the data collected by paying attention and recording as many aspects of the situation as a possible understudy to obtain a general and comprehensive picture of the actual situation (Akhmad, 2015). This qualitative descriptive research aims to analyze various opportunities and challenges of developing cryptocurrency as a payment medium in Indonesia. The type of data used in this study is using secondary data. Secondary data is data obtained indirectly in legal

materials such as legislation and previous research reports that were published and then combined in a discussion (Priyo Amboro & Christi, 2019).

RESULTS & DISCUSSION

Regulating Cryptocurrency as a Payment Media

Based on the Indonesian Law Number 7 of 2011 concerning currency which states: "Currency is money issued by the Unitary State of the Republic of Indonesia and every transaction that has the purpose of payment, or other obligations that must be met with money, or other financial transactions carried out in the Territory of the Unitary State of the Republic of Indonesia, it is obligatory to use Rupiah" (Nizar, 2020). The requirements for a currency to be used as a transaction tool include 1) Easy to carry means that the currency must be easy to carry and use anywhere. Currency provides convenience and security for currency holders because it can be stored in a particular place; 2) Durability means that a currency must be durable because a transaction tool often changes ownership to have the potential for damage. Therefore, the currency must have durable properties to prevent the value of money from decreasing due to physical damage; 3) Divisible into smaller units. It means that the currency must be broken down into smaller values when used in transactions with smaller values; 4) It Can be standardized. Currency can be used without doubting the quality of the currency and printed with its standards regulated by law; 5) To be recognized means that one of the conditions that must be met is recognition. This requirement is important because recognition provides a difference between valuable goods and unworthy goods; 6) The value is stable (value stability) means giving the currency a value that remains stable. Stability does not mean it has a fixed value but does not fluctuate sharply. The value is unstable, and the fluctuations in its value growth are not too sharp; 7) The amount is sufficient (the elasticity of supply) means that the amount of money in circulation must meet economic needs. If that is not enough, it will hinder the development of the world. Therefore, the currency must be able to see the economy's condition (Al-Amri, Zakaria, Habbal, & Hassan, 2019). So it can be concluded that cryptocurrency does not meet the provisions regarding money because it does not meet the recognized criteria, and its value is stable.

In Bank Indonesia Press Release Number 16/6/Dkom with the title "Bank Indonesia Statement Regarding Bitcoin and Other Virtual Currency", Bank Indonesia emphasized that all risks arising from the use of bitcoin and other virtual currencies are the responsibility of bitcoin

users. The Indonesian Government is not responsible for any risks that may occur and are experienced by users (Nitha & Westra, 2020). Bank Indonesia also issued another regulation, namely Bank Indonesia Regulation Number 19/12/PBI/2017, concerning the Implementation of Financial Technology. Based on Article 8 Paragraph (2) of the provision, Bank Indonesia reiterates that virtual currency is prohibited from being used by financial technology providers. In addition to being required to use rupiah, financial operators are, among other things, asked to 'apply the principles of anti-money laundering and the prevention of terrorism financing'. The definition of virtual currency based on these provisions is digital money issued by parties other than the monetary authority obtained by mining, purchasing, or transferring gifts (rewards). Prohibition of conducting payment system activities using virtual currency is not a legal tender in Indonesia.

Another regulation that mentions virtual currency is Bank Indonesia Regulation Number 20/6/PBI/2018 concerning Electronic Money. The Regulation responds to the need to respond to an increasingly digital solid financial climate. Article 62 of the provision states that electronic money payment processes are prohibited from using virtual currency with the same explanation, the money is not issued by the monetary authority. Article 1 number 7 of the Indonesian Regulation of the Commodity Futures Trading Supervisory Agency (In Indonesia: *Perbappebti*) Number 5 of 2019 concerning Technical Provisions for the Implementation of the Physical Market for Crypto Assets on the Futures Exchange states, "Crypto assets are intangible commodities in digital assets, using cryptography, peer to peer networks, and distributed ledgers; it is to regulate the creation of new units, verify transactions, and secure transactions without interference from other parties"(Krisnawangsa, Hasiholan, Adhyaksa, & Maspaitella, 2021). The provision stipulates that cryptocurrencies are subject to tradable commodities on futures trading exchanges. Bank Indonesia stated that the risk of implementing Cryptocurrency as a payment medium is capital outflows that could affect Bank Indonesia's monetary policy, causing financial system instability, breaching consumer protection, and theft of personal data (Winnie Stevani, 2021).

It can be concluded that cryptocurrencies cannot be used as payment transactions in Indonesia (Hari Sutra Disemadi, 2021). Nevertheless, several countries have recognized cryptocurrency as a payment medium, such as the United States, Singapore, Japan, Russia, and other countries. The adoption of cryptocurrencies as a medium of payment has positively impacted the country's economy. Therefore, there are various opportunities in the application

of cryptocurrencies in Indonesia. Although it presents various opportunities, it is undeniable that various challenges must be faced to legalize cryptocurrency as a legal payment medium.

Opportunities for Application of Cryptocurrency as a Payment Media

Cryptocurrency is a digital representation of value or contractual rights using distributed register technology and can be transferred, stored or traded electronically (Стойка, 2021). Cryptocurrencies with the use of blockchain structures can change the economy and revolutionize payment methods. The transition process will take a long time, although there is an excellent opportunity for implementation (Frecea, 2019). Opportunities for implementing cryptocurrency as a payment medium include 1) Increased e-commerce transactions and the growth of the customer base. Cryptocurrency acts as an alternative payment method, thereby contributing to increased e-commerce sales and sales turnover for e-commerce players and growing the customer base; 2) Implementation of a decentralized system that any agency/authority cannot control cryptocurrencies. The implementation of the system makes cryptocurrency democratic and minimizes money laundering or system closures due to outside interference (Srivastava, 2021); 3) A system with a high level of security. Funds deposited in cryptocurrencies are secured by a cryptographic system based on public keys. However, carrying out transactions with cryptocurrencies requires a private key (password) that belongs only to the owner. A potent combination of cryptographic techniques and long numbers minimizes the occurrence of digital hacking (hacking). Compared to other payment methods such as through banking institutions, transactions are processed through various stages. It has the potential to be a loophole for exploitation by unauthorized parties that can cause harm to the public (Fauzi, Paiman, & Othman, 2020) ; 4) System with a high level of confidentiality. Cryptocurrency transactions ensure the confidentiality of personal data so that the seller's identity remains anonymous (unknown) so that it is protected from exploitation by unauthorized parties; 5) Improved transfer efficiency and transaction speed on a global scale. The application of the transfer method is fast, precise, and low cost, so it is beneficial for the community. In addition, transactions can be made anywhere, fully operational for 24 hours, and applied in various global currencies; 6) Application of cryptocurrency as an alternative to banking services such as deposits, currency exchange, money transfers and others (Стойка, 2021). It can act as a reserve fund and alternative transaction tool in financial/monetary crises in the future (Fauzi et al., 2020); 7) Payments using cryptocurrencies have lower operational and transaction costs

than payments through third parties as intermediaries. For example, financial institutions which have relatively higher transaction fees, especially when having transactions to different countries. This direct interaction between users without intermediary financial institutions causes low transaction fees; 8) The value of cryptocurrencies is not affected by inflation but by many demands and supplies in the market. Based on this situation, cryptocurrency can provide multiple benefits at a time. However, it can cause losses because there is no explanation about fluctuations in cryptocurrencies (Sajidin, 2021); 9) The effectiveness and efficiency of other payment methods. Other methods must compete with cryptocurrencies in terms of advantages. They must make innovations in payment methods to be more effective and efficient in society (Al-Amri et al., 2019); 10) Improving the integrity of payment methods. Cryptocurrencies cannot be counterfeited, copied, or traded more than once; 11) The development of blockchain and cryptocurrency structures bring career opportunities in the digital industry. Then, it can play a role in increasing a country's job opportunities (Bans-akutey & Sassah-ayensu, 2019).

Cryptocurrency presents various opportunities as a payment method because it can make it easier for the younger generation to do business and work any time according to the time zone of each business owner without having to be tied to conventional working hours. Payment with cryptocurrency is the right option in the era of globalization, without worrying about various additional fees on other payment methods such as banking institutions (Fauzi et al., 2020). In addition, the younger generation can use cryptocurrency as a medium for saving, investing, and sending money to various parts of the world. Thus, it can reform business practices in the country's economy, bring in various opportunities, and develop the country's economy (Bans-akutey & Sassah-ayensu, 2019).

Cryptocurrency as a Payment Media in Responsive Legal Theory Review

Responsive law is formed to regulate the general public. The establishment of responsive law is considered a facilitator or means of responding to social needs and aspirations (Haliim, 2016). The concept of responsive law is a selective adaptation to demands & pressures, characterized by a shift in emphasis from rules to principles and goals and populist character both as a legal goal and a way to achieve it. Responsive law assumes that goals can be objective and controls adaptive rule-making (Utomo, 2020). The purpose of responsive law is to involve the broader community in its formulating process (participatory). The reflection of legal products must be the community's desires/social needs (aspirational). The legal language is

adapted to resolve the problems, not to give rise to ambiguous interpretations against the rules (precise) (Haliim, 2016).

The development of science and technology has created convenience in the activities and needs of the community, including payment methods. One of them is the application of cryptocurrency as a payment medium to make it easier for people to make transactions to obtain goods or services. The application of cryptocurrency as a payment medium acts as a form of response to the community's needs during the rapid development of digital science and technology. The application of cryptocurrency as a payment medium shows the need to develop transaction methods that are easy, fast, effective, and low cost. However, the application of cryptocurrency as a legal payment medium has not been regulated in the legal constitution/statutory regulations. The Indonesian legal constitution only recognizes cryptocurrencies as commodities that can be used in the futures trading exchanges. Nevertheless, cryptocurrency as a payment medium allows people to conduct digital transactions with various advantages. These advantages include fast, precise, low-cost payments with a high confidentiality and security system, decentralized, democratic, effective and efficient. In addition, cryptocurrencies are not subject to inflation and are likely to be of higher value in the future as digital technology develops. In line with Nonet and Selznick, Satjipto Raharjo also stated that responsive laws could be enforced in a progressive spirit (Ridwan, 2021). The application of cryptocurrency as a payment medium can bring various opportunities. The state needs further review to develop, adopt or even ratify cryptocurrency as a legal payment medium in Indonesia.

Challenges in Implementing Cryptocurrency as a Payment Media

Cryptocurrencies present various opportunities, but it is undeniable that there are various challenges in using them. These challenges arise because cryptocurrencies are decentralized created by private non-bank parties, so they cannot be controlled by the monetary authorities (Baharudin Vanani et al., 2021). There are several challenges in implementing cryptocurrency as a payment medium. They are: 1) Developing special laws and regulations to regulate cryptocurrencies in Indonesia. These statutory provisions will potentially inhibit or encourage the development of cryptocurrencies as a payment instrument for goods or services in the future (Harasim & Klimontowicz, 2013). These provisions must regulate the position of cryptocurrencies, restrictions and the usage, supervision of the flow of transactions, taxation,

deposit guarantees, and assimilation of blockchain systems and concepts in the management (Sajidin, 2021); 2) Implementation of payment methods via mobile technology. Payments via mobile technology are the unique environment in cryptocurrencies. In addition, it is necessary to develop mobile banking that can accommodate cryptocurrency as a payment instrument (Piotrowska, 2017); 3) The development of the blockchain structure is based on a series of transactions stored in a database that can be viewed directly by the public. The function of the blockchain structure is to assist digital payment procedures, which have been compiled in digital code and a transparent database. It has been protected from deletion, tampering, and revision (Lakhani, 2017); 4) Lack of public understanding of the concept and the function of cryptocurrency (Al-Amri et al., 2019); 5) Establishment of a particular institution/authority to monitor cryptocurrency as a payment medium. Due to the application of cryptocurrency as a payment medium, it potentially causes an increase in digital crimes or cybercrimes (Darmawanto, 2018) such as theft of personal data to carry out illegal transactions, black markets for selling personal data, selling personal data profiles, illegal marketing, illegal monitoring, fraud, money laundering, and others. It can reduce Indonesia's security level in the eyes of the world (Tan & Disemadi, 2021). Therefore, it is necessary to form a special institution/authority to accommodate this phenomenon. Moreover, in developing these institutions, they must collaborate with Bank Indonesia and the Indonesian Security Services Authority (In Indonesia: *OJK*); 6) The application of payments with cryptocurrencies in trades ranging from companies to retail includes a fairly significant transition phase. So that preparation is needed in various aspects to accommodate the transition; 7) Payments with cryptocurrency are non-refundable after the payment process. If the buyer transfers cryptocurrency to another wrong address, the buyer cannot apply for a refund unless the seller sends it back. In addition, if the user loses information regarding the private password, then there is no way to retrieve the cryptocurrency (Hamukuaya, 2021); 8) Establishing and maintaining relationships with banking institutions and money transfer operators. There are concerns about cryptocurrency exchange rate risks. If there is a cryptocurrency exchange in addition to payment activities, there is also a risk of tariffs (Hileman & Rauchs, 2017); 9) Banking institutions must be more innovative in developing existing payment methods because they have been regulated with substantial statutory restrictions and provisions. In contrast, cryptocurrencies do not have solid restrictions and are superior in taxation because they are free from taxes as long as in digital form (Harasim & Klimontowicz, 2013); 10) Potential to cause

anxiety, doubt, and discomfort to the public. People are still new to the concept of digital payments with cryptocurrencies. In doing business or transactions, they are considered risky by the community (Darmawanto, 2018); 11) Potential to cause financial system instability because no underlying asset determines the cryptocurrency price. This situation causes the value of cryptocurrency trading to be very volatile. It is vulnerable to the risk of bubbles, resulting in financial system instability and harm to the public (Yudi Anton Rikmadani, 2021); 12) Misuse as a method to avoid tax obligations. So it is necessary to reform and develop a tax system that can accommodate cryptocurrencies (Ciupa Katarzyna, 2019).

CONCLUSION

Cryptocurrency is a digital representation of value or contractual rights using distributed register technology and can be transferred, stored, or traded electronically. Due to several factors, Indonesia has not recognized cryptocurrency as a legal payment medium. Those factors are: there is no legal/regulatory constitution at risk of causing financial system instability, consumer protection violations, and personal data theft. However, Indonesia still recognizes cryptocurrency as a commodity traded on futures trading exchanges. The application of cryptocurrency as a payment medium can bring various opportunities. They increase e-commerce transactions and turnover for business actors, realize democratic payment methods with a decentralized system, secure payments with a high level of confidentiality, and fast, precise, and low-cost transactions. The application of cryptocurrency can encourage other payment methods to be more innovative in developing their products and improve the integrity of payments in Indonesia. In addition, cryptocurrencies can also serve as an alternative to payments and investments because their value is not affected by inflation and has excellent potential to increase in the era of the digital economy. Therefore, with the various opportunities presented, further review is needed by the state to develop, adopt or even ratify cryptocurrency as a legal payment medium in Indonesia. Although there are various benefits of cryptocurrency as a payment medium, there are also several challenges. Those challenges are the need for the development of particular laws and regulations to accommodate the legitimacy of cryptocurrencies as a payment medium; the development of the blockchain structure and its implementation in cellular technology; the lack of public knowledge; manifesting in retail and

corporate payments can cause anxiety, doubt, discomfort, and economic instability; they can be misused to commit digital crimes and avoid tax obligations.

REFERENCES

- Ade Onny Siagian, Cisilia Maiyori, Andrew Shandy Utama, Rini Nuraini, R. B. (2021). *Sistem Keuangan Era Digital* (Pertama; M. K. Rini Nuraini, S.T., ed.). Solok: Insan Cendekia Mandiri.
- Akbar, R. (2021). Penerapan Peradilan Elektronik di Masa Pandemi Dalam Tinjauan Teori Hukum Responsif Dan Teori Keadilan John Rawls. *LoroNG: Media Pengkajian Sosial Budaya*, 10(2), 147-158.
- Akhmad, K. A. (2015). Pemanfaatan Media Sosial bagi Pengembangan Pemasaran UMKM (Studi Deskriptif Kualitatif pada Distro di Kota Surakarta). *DutaCom Journal*, 9(1), 43–54.
- Al-Amri, R., Zakaria, N. H., Habbal, A., & Hassan, S. (2019). Cryptocurrency Adoption: Current Stage, Opportunities, and Open Challenges. *International Journal of Advanced Computer Research*, 9(44), 293–307. <https://doi.org/10.19101/ijacr.pid43>
- Ali, Z. (2009). *Metode Penelitian Hukum*.
- Amboro, Y. P., & Christi, A. (2019). Prospek Pengaturan Cryptocurrency sebagai Mata Uang Virtual di Indonesia (Studi Perbandingan Hukum Jepang Dan Singapura). *Journal of Judicial Review*, 21(2), 14-40.
- Ausop, A. Z., & Aulia, E. S. N. (2018). Teknologi Cryptocurrency Bitcoin Untuk Investasi Dan Transaksi Bisnis Menurut Syariat Islam. *Jurnal Sositoknologi*, 17(1), 74–92. <https://doi.org/10.5614/sostek.itbj.2018.17.1.8>
- Baharudin Vanani, A., Ekonomi Syariah, P., Ekonomi dan Bisnis Islam, F., Islam Negeri Sayyid Ali Rahmatullah Tulungagung Alvin, U., Suselo, D., & Artikel, I. (2021). *Analisis Legal Tender Uang Digital Bank Sentral Indonesia*. <https://doi.org/10.29407/jae.v6i3.16225>
- Bans-akutey, A., & Sassah-ayensu, M. (2019). *Benefits and Risks Associated With the Use of Blockchain and Cryptocurrency as a Form of Payment in Ghana : A Case Study of Selected Bitcoin Trading Companies*. 1–14.
- Barrdear, J., & Kumhof, M. (2017). The Macroeconomics of Central Bank Issued Digital Currencies. *SSRN Electronic Journal*, (605). <https://doi.org/10.2139/ssrn.2811208>
- Bhiantara, I. B. P. (2018). Teknologi Blockchain Cryptocurrency Di Era Revolusi Digital. *Jl. Udayana Kampus Tengah*, (0362), 27213.
- Ciupa Katarzyna. (2019). Cryptocurrencies: Opportunities, Risks and Challenges for Anti-Corruption Compliance Systems. *2019 OECD Global Anti-Corruption and Integrity Forum*.
- Danella, T. D. (2015). Bitcoin Sebagai Alat Pembayaran Yang Legal Dalam Transaksi Online (*Doctoral Dissertation, Brawijaya University*).
- Darmawanto, A. T. (2018). Virtual Currency Sebagai Tantangan Dan Peluang Terhadap

- Aspek Sosial. *Jurnal Ekonomika*, 9(2), 1–9.
- Disemadi, H. S., & Delvin, D. (2021). Kajian Praktik Money Laundering dan Tax Avoidance dalam Transaksi Cryptocurrency di Indonesia. *NUSANTARA: Jurnal Ilmu Pengetahuan Sosial*, 8(3), 326-340.
- Dwicaksana, H., & Pujiyono, . (2020). Akibat Hukum Yang Ditimbulkan Mengenai Cryptocurrency Sebagai Alat Pembayaran Di Indonesia. *Jurnal Privat Law*, 8(2), 187. <https://doi.org/10.20961/privat.v8i2.48407>
- Fauzi, M. A., Paiman, N., & Othman, Z. (2020). Bitcoin and Cryptocurrency: Challenges, Opportunities and Future Works. *Journal of Asian Finance, Economics and Business*, 7(8), 695–704. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO8.695>
- Ferry Mulyanto. (2015). Pemanfaatan Cryptocurrency sebagai Penerapan Mata Uang Rupiah ke dalam Bentuk Digital Menggunakan Teknologi Bitcoin. *Indonesian Journal on Networking and Security*, 4(4).
- Frecea, G. S. (2019). Risks and Opportunities in the Cryptocurrency Market. *Ovidius University Annals, Economic Sciences Series*, XIX(2), 879–883.
- Hakim, M. H. (2017). Pergeseran Orientasi Penelitian Hukum: Dari Doktrinal Ke Sosio-Legal. *Syariah Jurnal Hukum Dan Pemikiran*, 16(2), 105. <https://doi.org/10.18592/sy.v16i2.1031>
- Haliim, W. (2016). Demokrasi Deliberatif Indonesia : Konsep Partisipasi Masyarakat Dalam Membentuk Demokrasi dan Hukum yang Responsif. *Jurnal Masyarakat Indonesia*, 42(1), 19–30.
- Hamukuaya, N. H. (2021). The Development of Cryptocurrencies As a Payment Method in South Africa. *Potchefstroom Electronic Law Journal*, 24(24). <https://doi.org/10.17159/1727-3781/2021/v24i0a9364>
- Harasim, J., & Klimontowicz, M. (2013). Payment Habits As a Determinant of Retail Payment Innovations Diffusion: The Case of Poland. *Journal of Innovation Management*, 1(2), 86–102. https://doi.org/10.24840/2183-0606_001.002_0007
- Hari Sutra Disemadi, D. (2021). *Kajian Praktik Money Laundering Dan Tax Avoidance Dalam Transaksi Cryptocurrency di Indonesia*. 8(3), 326–340.
- Hileman, G., & Rauchs, M. (2017). Global Benchmarking Study. *Cambridge Centre for Alternative Finance*, 10.
- Ibrahim, J. (2013). Teori dan Metode Penelitian Hukum Normatif, cet. 7. Malang: Bayumedia Publishing.
- Katarzyna, C. (2019, March). Cryptocurrencies: Opportunities, Risks and Challenges for Anti-Corruption Compliance Systems. In *OECD Conference on Global Anti-corruption and Integrity Forum*. Paris, March (pp. 20-21).
- Krisnawangsa, H. C., Hasiholan, C. T. A., Adhyaksa, M. D. A., & Maspaitella, L. F. (2021). Urgensi Pengaturan Undang-Undang Pasar Fisik Aset Kripto (Crypto Asset). *Dialogia Iuridica: Jurnal Hukum Bisnis Dan Investasi*, 13(1), 1–15. <https://doi.org/10.28932/di.v13i1.3718>
- Lakhani, M. I. and K. R. (2017). The Truth About Blockchain.

- Lo, S., & Wang, J. C. (n.d.). *Bitcoin as Money ?* (14), 1–28.
- Marzuki, P. M. (2010). Penelitian Hukum Normatif. *Jakarta: Kencana Prenada Media Group*.
- Muarif, M. S. (n.d.). *Studi Kritis Analisis Teks dan Konteks Hukum Koin Digital Sebagai Alat Pembayaran*.
- Mulyanto, F. (2015). Pemanfaatan Cryptocurrency Sebagai Penerapan Mata Uang Rupiah Kedalam Bentuk Digital Menggunakan Teknologi Bitcoin. *Indonesian Journal on Networking and Security*, 4(4), 173-177.
- Nitha, D. A. F., & Westra, I. K. (2020). Investasi Cryptocurrency Berdasarkan Peraturan Bappebti No. 5 Tahun 2019. *Jurnal Magister Hukum Udayana (Udayana Master Law Journal)*, 9(4), 712. <https://doi.org/10.24843/jmhu.2020.v09.i04.p04>
- Nizar, M. A. (2020). The Controversies of Digital Currency. *Munich Personal RePEc Archive (MPRA)*, (97940), 1–22.
- Nuraliati, A., & Azwari, P. C. (2019). Akuntansi Untuk Cryptocurrency. *I-Finance: A Research Journal on Islamic Finance*, 4(2), 131–142. <https://doi.org/10.19109/ifinance.v4i2.2885>
- Okeke, U., Bans-Akutey, A., & Sassah-Ayensu, M. Benefits and Risks Associated With the Use of Blockchain and Cryptocurrency as a Form of Payment in Ghana: A Case Study of Selected Bitcoin Trading Companies.
- Piotrowska, A. I. (2017). Fields of Potential Use of Cryptocurrencies in the Payment Services Market in Poland – Results of an Empirical Study. *Copernican Journal of Finance & Accounting*, 5(2), 201. <https://doi.org/10.12775/cjfa.2016.023>
- Priyo Amboro, Y., & Christi, A. (2019). Prospek Pengaturan Cryptocurrency sebagai Mata Uang Virtual di Indonesia (Studi Perbandingan Hukum Jepang Dan Singapura). *Journal of Judicial Review*, 21(02), 14–40. <https://doi.org/10.37253/jjr.v21i2.665>
- Ridwan, A. (2021). Pemerintah Harus Jamin Kebutuhan Pokok Masyarakat Terpenuhi saat PSBB.
- Rikmadani, Y. A. (2021). Tantangan Hukum E-Commerce Dalam Regulasi Mata Uang Digital (Digital Currency) Di Indonesia. *SUPREMASI: Jurnal Hukum*, 3(2), 177-192.
- Rohman, M. N. (2021). Tinjauan Yuridis Normatif Terhadap Regulasi Mata Uang Kripto (Crypto Currency) di Indonesia. *Jurnal Supremasi*, 11(April 2020), 1–10. <https://doi.org/10.35457/supremasi.v11i2.1284>
- Sajidin, S. (2021). Legalitas Penggunaan Cryptocurrency Sebagai Alat Pembayaran di Indonesia. *Arena Hukum*, 245–267.
- Schipor, G. L. (2019). Risks and Opportunities in The Cryptocurrency Market. *Ovidius University Annals, Economic Sciences Series*, 19(2), 879-883.
- Siagian, A. O., Maiyori, C., Utama, A. S., Budiharjo, R., & Nuraini, R. (2021). Sistem Keuangan Era Digital. *Insan Cendekia Mandiri*.
- Srivastava, A. (2021). *A Study on the Impact and Potential of Cryptocurrency*. (October), 0–3. <https://doi.org/10.14293/S2199-1006.1.SOR-.PP86NLN.v1>
- Stevani, W & Disemadi, H.S. (2021). Urgency of Cryptocurrency Regulation in Indonesia :

- The Preventive Action for Ransomware Crime. *Hang Tuah Law Journal*, 5(1).
- Syamsiah, N. O. (2017). Kajian Atas Cryptocurrency Sebagai Alat Pembayaran Di Indonesia. *Indonesian Journal on Networking and Security*, 6(1), 53–61.
- Tan, K., & Disemadi, H. S. (2021). Urgency of Electronic Wallet Regulation in Indonesia. *Nagari Law Review*, 5(1), 1–14. <https://doi.org/10.25077/nalrev.v.5.i.1.p.1-14.2021>
- Tiara Dhana Danella, Dr. Sihabbudin, S.H., M.H, Siti Hamidah, S.H., M. . (n.d.). *Bitcoin Sebagai Alat Pembayaran Yang Legal Dalam Transaksi Online*.
- Utomo, P. (2020). Omnibus Law : Dalam Perspektif Hukum Responsif. *Nurani Hukum*, 2(1), 33. <https://doi.org/10.51825/nhk.v2i1.8168>
- Vanani, A. B., & Suselo, D. (2021). Analisis Legal Tender Uang Digital Bank Sentral Indonesia. *Jae (Jurnal Akuntansi Dan Ekonomi)*, 6(3), 74-83.
- Winnie Stevani, H. S. D. (2021). *Urgency of Cryptocurrency Regulation in Indonesia: The Preventive Action for Ransomware Crime*. 5(1), 52–66.
- Yudi Anton Rikmadani. (2021). Tantangan Hukum E-Commerce Dalam Regulasi Mata Uang Digital (Digital Currency) di Indonesia. *Supremasi Jurnal Hukum*, 3(2), 180.
- Zain, M. F. (2018). Mining-Trading Cryptocurrency dalam Hukum Islam. *Al-Manahij: Jurnal Kajian Hukum Islam*, 12(1), 119–132. <https://doi.org/10.24090/mnh.v12i1.1303>
- Стойка, М. (2021). Cryptocurrency : Definition, Functions, Advantages and Risks. *Підприємництво І Торгівля*, (30), 5–10. <https://doi.org/10.36477/2522-1256-2021-30-01>