

THE IDEAL LEGAL REGULATION FOR DECENTRALIZED FINANCE AS THE DEVELOPMENT OF INDONESIA CRYPTO ASSET TRADING

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Abstract

Decentralized Finance (DeFi) has positively impacted the development of crypto asset trading and has been adopted by various countries except for Indonesia. This study aims to identify the urgency of regulating DeFi as the development of crypto asset trading in Indonesia and construct the ideal regulation. This research is normative legal research with a statutory and conceptual approach. The research results stated the urgency of regulating DeFi as the development of crypto asset trading is: a) other countries have used DeFi because it can develop crypto asset trading for the better by creating value stability in crypto assets, having a function for lending and borrowing crypto assets, having transparency in transactions and lower crypto asset trading fees; b) DeFi technology adopted in the development of the Digital Rupiah project by BI and adopted by physical traders of crypto assets in Indonesia; c) as a form of legal protection from risks arising from technical or non-technical negligence or intention to protection from crime. Ideal legal regulation for decentralized finance as the development of Indonesia crypto asset trading is the formation of a regulation by CoFTRA in the form of technical guidelines and implementation mechanisms, in the form of a new written CoFTRA Regulation, in the form of a decree from the Head of CoFTRA whose focus is to regulate DeFi as development Crypto asset trading.

Keyword: *Crypto; Decentralized; Finance; Regulation.*

A. INTRODUCTION

Sustainable technology development has brought ambitions for fundamental changes in innovation practices that impact human life.¹ Various activities, such as carrying out economic activities, activities related to financial instruments, investment instruments and/or trading instruments, can be carried out through technology so that they can reach other countries in various parts of the world to carry out economic activities. The rapid development of technology needs to be limited through a form of

¹ Paul Weaver et al., *Sustainable Technology Development*, Routledge, London, 2017, page.18

regulation that quickly adapts to the times² to ensure user safety, security and comfort when carrying out technology-related activities.

Indonesia through the 1945 Constitution of the Republic of Indonesia (UUD NRI 1945) has provided guarantees regarding security protection in terms of taking action to use technology as a human right of the Indonesian people as stipulated in Article 28G paragraph (1), which states that "Every person has the right to protection self, family, honor, dignity, and property under his control, and are entitled to a sense of security and protection from threats of fear to do or not do something which is a human right".

Indonesia more specifically, in terms of providing and guaranteeing a sense of security, providing legal certainty and justice in terms of the use of information technology, has been stipulated in Act Number 11 of 2008 (Act 11/2008) concerning Information and Electronic Transactions which was amended by Act Number 19 the Year 2016 (Act 19/2016) concerning Information and Electronic Transactions, Article 4 letter e which states that "Utilization of Information Technology and Electronic Transactions is carried out to provide a sense of security, justice and legal certainty for users and providers of Information Technology".

The guarantee of safety, security and comfort that the state has given to its people has resulted in people's confidence increased to further explore the use of technology by utilizing one of them as a way to improve economic welfare in the form of investing and/or trading activities in these various instruments. This has also been guaranteed in Act 11/2011 Article 4 letter b, which states that "the use of Information Technology and Electronic Transactions is carried out to develop trade and the national economy in order to improve people's welfare".

Cryptocurrencies are one of the instruments for carrying out investment and/or trading activities that are currently popular, especially for hedging against global and domestic uncertainties.³ Cryptocurrency or crypto is a digital asset designed to function as a medium of exchange using strong cryptography to secure financial transactions, control the creation of additional units, and verify asset transfers. Cryptocurrencies use decentralized control instead of centralized digital currencies and Central Bank systems.⁴

Indonesia already has a legal basis for holding crypto assets, including: Act Number 32 of 1997 concerning Commodity Futures Trading as amended by Law Number 10 of 2011; Government Regulation Number 49 of 2014 concerning Implementation of Commodity Futures Trading, Ministerial Regulation Trade Number 99 of 2018 concerning General Policy for Organizing Crypto Asset Futures Trading; Commodity Futures Trading Regulatory Agency (CoFTRA) Regulation Number 2 of 2019 concerning

2 Chris Vickers dan Nicolas L. Ziebarth, *Lessons for Today from Past Periods of Rapid Technological Change*, New York, 2019, page. 26.

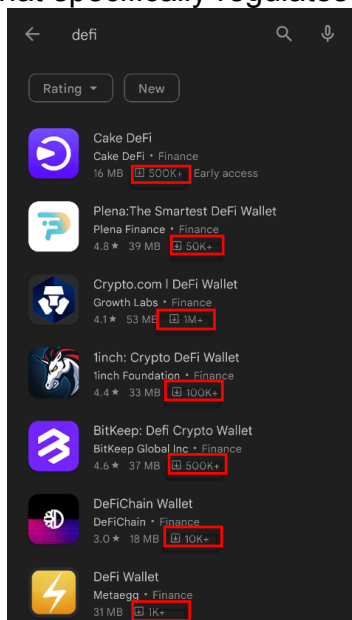
3 William Wardoyo, Chaikal Nuryakin, dan Sean Hambali, Bitcoin in Indonesia: Hedging or Investment Instrument?, *Jurnal Ekonomi Indonesia*, Vol. 9, No. 3, 2020, page. 232.

4 M Widyastuti dan Y B Hermanto, Cryptocurrency Analysis of Indonesian Market Education Facilities, *International Journal of Economics, Bussiness and Accounting Research (IJEBAR)*, Vol. 5, No. 2, 2021, page 546.

Organizing the Physical Market for Commodities on the Futures Exchange; CoFTRA Regulation Number 5 of 2019 concerning Technical Provisions for Organizing the Physical Market for Crypto Assets on Futures Exchanges, as amended by Regulation No. 9 of 2019, Regulation No. 2 of 2020, and Number 3 of 2020; CoFTRA Regulation Number 7 of 2020 concerning Establishment of a List of Crypto Assets That Can Be Traded on the Physical Crypto Asset Market.

The government has also created a crypto exchange called the Digital Future Exchange, which functions as a form of greater guarantee for the safety, security and convenience of crypto asset customers.⁵ Indonesia's readiness to facilitate crypto asset trading has the right momentum to develop the world's cryptocurrency ecosystem. The world crypto market is starting to adopt Decentralized Finance (DeFi). DeFi is a decentralized financial technology with all the tasks and functions like centralized finance. In the operation process, DeFi runs independently without any regulatory authority; smart contracts govern all operations, so there is no intervention from anyone for any actions that will take place. Done through DeFi because all operations will be executed automatically with technology.⁶

Indonesia still needs to adopt DeFi in trading its crypto assets. This research will discuss the urgency of regulating DeFi as the development of crypto asset futures trading in Indonesia and how the ideal legal construction is to regulate it. This issue is important for research, because DeFi has been present in Indonesia through the playstore and appstore and has been widely downloaded and used by Indonesian people, but it does not yet have a legal basis that specifically regulates it.



5 Hikma Dirgantara, September 4th, 2022, *Digital Futures Exchanges Klaim Sudah Siap Beroperasi sebagai Bursa Aset Kripto*, Available on website: <https://investasi.kontan.co.id/news/digital-futures-exchanges-klaim-sudah-siap-beroperasi-sebagai-bursa-aset-kripto>. Accessed Januari 13rd, 2023.

6 Fabian Schär, Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets, *Review*, Vol. 103, No. 2, 2021, page. 153.

Figure 1. The DeFi platform on the playstore page in Indonesia and the number of downloaders

This study aims to analyze the urgency of establishing DeFi regulation as the development of crypto asset trading and to provide an ideal regulatory construction for DeFi as the development of crypto asset trading. Previous research on DeFi was conducted by Iwa Salami, who stated that DeFi has excellent benefits for trading crypto assets and peer-to-peer (P2) financial services. However, DeFi has various threats related to security and stability to centralized finance, so regulations are needed to regulate usage limits.⁷ The difference with this research is that the author's research identifies the benefits provided by DeFi to crypto asset trading in Indonesia and how the ideal legal construction is formed to regulate it so as not to cause concern over the threats posed by DeFi.

Another research on DeFi was conducted by Christoph Wronka, who stated that DeFi is considered one of the main steps to arouse public interest in crypto. DeFi is expected to play an essential role in the future and provide a viable alternative banking system better than current banking. Thus, the DeFi industry must address key risks to ensure user compliance.⁸ The difference with the author's research is that the author will analyze why DeFi can adopt the public to be more interested in crypto especially in Indonesia, so it is necessary to form regulations that become the legal standing for implementing DeFi as the development of crypto asset trading.

Research on DeFi was conducted by Giovanni Zaccaroni stated that the presence of DeFi is problematic according to European Union law. However, this may change with the entry into force of the Regulation on a pilot regime for market infrastructures based on distributed ledger technology. As well as increasing legal certainty and protection for consumers, it will introduce an entirely new paradigm in financial market legislation: DeFi. In addition, the Regulation imposes considerable obligations on market operators while also giving the European Securities and Markets Authorities and competent national authorities a relevant but complex role in supervising and monitoring the development of the pilot regime.⁹ The difference with the author's research is that Indonesia needs special regulations regarding the implementation of DeFi, so as not to create a legal vacuum that can provide legal certainty and protection for consumers against DeFi financial market legislation that supports the development of crypto asset trading in Indonesia.

B. RESEARCH METHODS

This research is normative legal research with a statutory and conceptual approach. The legal materials used are primary and secondary

7 Iwa Salami, Challenges and Approaches to Regulating Decentralized Finance, *AJIL Unbound*, Vol. 115, 2021, page. 429.

8 Christoph Wronka, Financial Crime in The Decentralized Finance Ecosystem: New Challenges For Compliance, *Journal of Financial Crime*, Vol. 30, No. 1, 2021, page.97

9 Giovanni Zaccaroni, Decentralized Finance and EU Law: The Regulation on a Pilot Regime for Market Infrastructures Based on Distributed Ledger Technology, *European Papers*, Vol. 7, No. 2, 2022, page 601.

legal materials obtained through literature studies and analyzed prescriptively to provide solutions to the problems studied.¹⁰

C. RESULTS AND DISCUSSION

1. The Essence of Decentralized Finance in Legal Regulations in Indonesia

This discussion will outline the primary form of DeFi on the elements that make DeFi able to have a complex function in developing crypto assets against Indonesian law. Decomposition of the essence of DeFi is carried out to determine the legality of an action. Legality guarantees individual freedom by limiting what activities are prohibited precisely and clearly and guaranteeing individuals permissible and prohibited information.¹¹

DeFi has functions like conventional banking, but with the arrival of DeFi, the function of conventional finance will be simplified using smart contracts whereby anyone and anywhere can access financial services based on digital assets. Using smart contracts as a DeFi operating mechanism is carried out with the aim that this technology can provide financial services without using a centralized entity by automating the contract process digitally to increase efficiency. That is, the primary form of DeFi is a smart contract that regulates all the functions and roles of DeFi.

A smart contract has a technical meaning, a program that ensures that transactions occur through regulations or agreements that have been mutually agreed upon in a distributed database network or blockchain. Smart contracts allow the terms of an agreement to be enforced automatically without the intervention of a trusted third party. As a result, smart contracts can reduce administration and save service costs, improve business process efficiency, and reduce risk.¹²

The concept of a smart contract was first recognized through The United Nations Commission on International Trade Law (UNCITRAL) in article 4, which states, "as between parties involved in generating, sending, receiving, storing or otherwise processing data messages, and except as otherwise provided, the provisions of chapter III may be varied by agreement" which if freely translated means "between the parties involved in generating, sending, receiving, storing, or processing data messages, and unless otherwise specified, the provisions of chapter III can be changed based on an agreement." However, UNCITRAL does not provide this definition as a smart contract but as an e-contract or electronic contract.

UNCITRAL does not mention the form of the contract directly, but UNCITRAL provides instructions on how valid a contract agreement is.

10 Peter Mahmud Marzuki, *Penelitian Hukum*, Edisi Revisi, Kencana, Jakarta, 2016, page. 56 - 251.

11 Bambang Santoso, *Politik Hukum*, Unpam Press, Tangerang, 2021, page. 13-14.

12 Zibin Zheng et al., An overview on smart contracts: Challenges, advances and platforms, *Future Generation Computer Systems*, Vol. 105, No. C, 2020, page. 480.

Although the principle of all agreements is the same, namely "agreement," the form of electronic contracts can vary according to the media that developed this term is called "variation by agreement." In the e-contract, as mentioned by UNICTRAL, electronic networks are used to carry out acceptance and delivery (offer and acceptance), also known as EDI (electronic data interchange).¹³ The variations of e-contracts in its development are as follows:¹⁴

- a. Electronic mail contract is a contract legally formed through email communication. Offers and acceptances may be exchanged via email or in combination with other electronic communications, written documents, or faxes.
- b. Contract can also be formed through websites and other online services, in which a website offers the sale of goods and services, then consumers can accept the offer by filling out a form that is displayed on the monitor screen and transmitting it
- c. Contracts that cover the direct online transfer of information and services. The website is used as a medium of communication and at the same time, as a medium of exchange.
- d. Contracts that contain Electronic Data Interchange (EDI), an exchange of business electronically via computers belonging to trading partners (trading partners).
- e. Contracts via the Internet that are accompanied by a clickwrap and shrink-wrap license. Software downloaded via the Internet is usually sold with a click-wrap license. The license appears on the buyer's monitor the first time the software is installed, and the potential purchaser is asked if he is willing to accept the license terms. The user is given an alternative "i accept" or "i don't accept." Meanwhile, shrink wrap is usually a license sent in a package, for example, a floppy disk or compact disc.

Smart contract is defined as an electronic contract. Indonesian regulations governing electronic contracts are contained in Act 11/2008, Act 19/2016, and Government Regulation Number 71 of 2019 concerning the Implementation of Electronic Systems and Transactions (GR 71/2019). According to Article 1 number 17 of Act 19/2016, electronic contracts are "Agreements between parties made through an electronic system." According to Article 1 point 5 of Act 19/2016, electronic systems are "a series of electronic devices and procedures that function to prepare, collect, process, analyze, store, display, announce, transmit, and/or disseminate electronic information." The legal force of electronic contracts based on Article 18 paragraph (1) of Act 11/2008 is "Electronic Transactions that are poured into Electronic Contracts bind the parties."

13 Herianto Sinag, David A, dan I Wayan Wiryawan, Keabsahan Kontrak Elektronik (E-Contract) Dalam Perjanjian Bisnis, *Kertha Semaya : Journal Ilmu Hukum*, Vol. 8, No. 9, 2020, page. 1395.

14 Ardiana Hidayah, Asas Iktikad Baik Dalam Kontrak Elektronik, *Solusi*, Vol. 19, No. 2, 2021, page 164.

The previous definition of receiving and sending from UNCITRAL, according to Article 8 paragraph (4) of Act 11/2008 that "The Time of delivery is when electronic information and/or electronic documents enter the first information system which is beyond the control of the sender; and Time of receipt is when electronic information and/or electronic documents enter the last information system under the control of the recipient.

GR 71/2019 provides an understanding of electronic contracts in Article 1 number 17: "Agreement of parties made through an electronic system". The definition of an electronic system, according to Article 1 number 1 GR 71/2019, is "a series of electronic devices and procedures that function to prepare, collect, process, analyze, store, display, announce, send, and/or disseminate electronic information." These two things are the same as the meaning of Act 19/2016 and Law 11/2008. However, GR 71/2019 provides a specific explanation regarding electronic contracts.

Article 46 paragraph (2) GR 71/2019 explains that electronic contracts are considered valid if: a) there is an agreement between the parties; b) they are carried out by legal subjects who are capable or authorized to represent by the provisions of laws and regulations; c) there are certain things; and d) the object of the transaction may not conflict with statutory regulations, decency, and public order. Regarding the form of an electronic contract based on Article 47 paragraph (1), if the electronic contract is addressed to Indonesian residents, it must be made in Indonesian. If an electronic contract uses a standard clause, it must comply with the provisions of laws and regulations regarding standard clauses in accordance with Article 47 paragraph (2).

Parties that can enter into electronic contracts based on GR 71/2019 are divided into parties in the public sphere and parties from the private sphere. Parties in the public sphere described in Article 41 paragraph (2) include a) agencies; b) the institution appointed by the agency; c) inter-agency; d) between designated institutions; e) between agencies and designated institutions; and f) between agencies or institutions and business actors by the provisions of laws and regulations. Meanwhile, parties in the private sphere are explained in Article 41, paragraph (3), including a) between business actors, b) between business actors and consumers, and c) interpersonal.

Based on the above information, if it is associated with the nature of DeFi as an electronic contract that is operated using smart contract technology, then in essence, DeFi is an electronic agreement between parties involved in generating, sending, receiving, storing or processing data messages in the form of EDI as a form of a network of receiving and sending matters agreed by the meaning of Article 8 paragraph (4) of Act 11/2008.

Based on the elements of Article 46 paragraph (2) GR 71/2019, by agreeing on the DeFi platform, an agreement has been made between the parties, namely the recipient and the sender. The

agreement is carried out by a capable legal subject, namely that the operation of DeFi is carried out after the user fills in KYC with an identity of the maximum age who already has an identity card. Ownership of identity cards in Indonesia is at the age of 17 years. Objects used as transactions from DeFi are crypto assets. Crypto assets in Indonesia based on Ministerial Regulation Trade 99/2018 have been recognized as investment commodities. So, based on these elements, the electronic contract has fulfilled the legal requirements of the contract being carried out.

The operation of DeFi as an electronic contract has no restrictions on whether it can be operated by anyone so that it can be carried out by anyone, whether by individuals, agencies, or institutions, according to the provisions of Article 41 paragraph (2) and paragraph (3) GR 71/2019. However, DeFi in its function as the development of crypto asset trading in Indonesia, DeFi is operated by individuals with individuals whom organizers from DeFi facilitate. So based on the description above, the essence of DeFi in regulations in Indonesia is as an electronic contract.

Electronic contracts are conventional contracts in which, due to technological developments, the law will adapt to current developments. Regulations in Indonesia governing contracts are regulated in the Civil Code¹⁵ contained in Article 1338 of the Civil Code, which regulates freedom of contract and states, "All agreements made legally apply to laws for those who make them.". The legal terms of the agreement are regulated in Article 1320 of the Civil Code, which states, "The legal terms of an agreement are that those who bind themselves are capable of making an agreement regarding a certain matter and a lawful cause."

2. The Urgency of Decentralized Finance Regulations for the Development of Crypto Asset Trading in Indonesia

a. Decentralized Finance as The Development of Crypto Trading in Various Countries

DeFi is an innovation from crypto that appears with functions and uses that exceed conventional banking and other boundaries so that DeFi can gradually create a global financial ecosystem. DeFi's focus on this is related to its development in terms of developing crypto ecosystems in various parts of the world. Cryptocurrency has gone through several stages of development to reach the development of crypto to date. Crypto has created an internet owned by its users, and DeFi empowers those users to own part of that financial ecosystem. DeFi is a growth phase of crypto with various innovations to offer. The crypto economy has been in a growth phase that has allowed increasingly complex internet communities to form¹⁶.

15 M. Alvi Syahrina, Konsep Keabsahan Kontrak Elektronik Berdasarkan Hukum Nasional Dan Uncitral Model Law On Electronic Commerce, *Repertorium: Jurnal Ilmiah Hukum Kenotariatan*, Vol. 9, No. 2, 2020, page 122.

16 David Grider, *Decentralized Finance (DeFi) - Internet Banking Beyond Borders*, Georgia, 2021, page 5.

Based on the facilities for developing crypto asset trading offered by DeFi, in addition to the increasing number of DeFi protocol users, the number of DeFi network assets and protocols has also increased in recent years based on data related to the number of wallet addresses purchasing or selling DeFi assets around the world from December 2017 to January 9, 2023, as follows:¹⁷

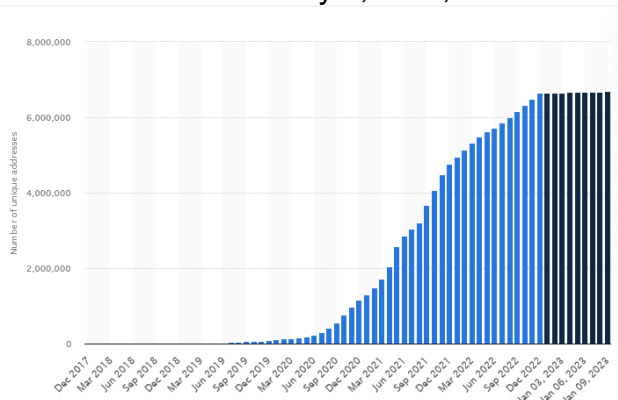


Figure 2. Increasing Number of DeFi Protocol Users, Assets and Network Protocols

With the growing number of DeFi protocol users, assets, and DeFi network protocols, DeFi market capitalization as part of crypto market capitalization has increased significantly based on statistical data regarding DeFi dominance, or DeFi market capitalization as a share of overall crypto market capitalization, worldwide from September 2020 to September 2021 as follows:¹⁸

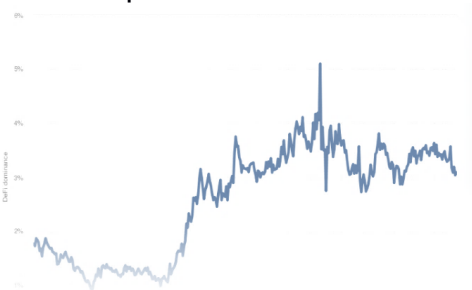


Figure 3. Increasing DeFi Market Capitalization

The various facilities and benefits possessed by DeFi make their interest in using crypto assets using this technology to develop their crypto trading. The function of DeFi is not limited to what has been described previously; more than that, DeFi has various benefits, including a) data and analysts; b) decentralized exchanges; c) payments; d) stablecoins; e) trading venues and liquidity; f) compliance and identity; g) industry predictions; h) crypto token

17 Raynor de Best, January 17th, 2023, *Number Of Unique Addresses That Either Bought Or Sold A Decentralized Finance (Defi) Asset Worldwide From December 2017 To January 9, 2023*, Available on website: <https://www.statista.com/statistics/1297745/defi-user-number/>. Accessed January 14th, 2023.

18 Raynor de Best, January 19th, 2023, *Defi Dominance, Or Defi Market Capitalization as a Share of The Overall Crypto Market Cap, Worldwide From September 2020 To September 2021*, Available on website: <https://www.statista.com/statistics/1262836/defi-dominance/>. Accessed January 21st, 2023.

assets; i) others. From these various functions, data related to DeFi usage from around the world was obtained from 2018-2021.¹⁹

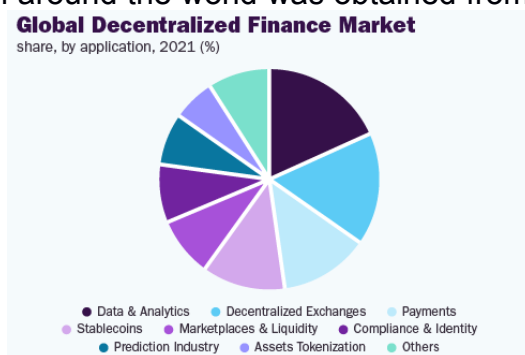


Figure 4. DeFi Usage Across Countries

DeFi usage is also classified by region. Each region has its own policies for organizing DeFi as follows:²⁰

1) Asian Region

In India, decentralized finance is emerging as a crypto innovation. Proponents of DeFi in India argue that decentralized finance will extend decentralized financial services to millions of unbanked Indian adults and will provide a low-cost alternative to borrowing and lending to Indian citizens. However, there are concerns that the government's ban on all blockchain-enabled cryptos will thwart privately sector efforts to grow India's decentralized finance sector.

The development of decentralized finance in China is growing very fast. The Central Bank of China has adopted blockchain technology to create a digital yuan or central bank digital currency (CBDC). The main concern about DeFi in China is that the size of decentralized financial services can become so large that it reduces the ability of the Chinese government to eliminate fraud and tax evasion through smart contracts and other crypto assets. When this reaches a critical point, the government can clamp down on decentralized financial activities. In Singapore, decentralized finance is growing very fast. Currently, there is no decentralized financial regulation in Singapore. The Monetary Authority of Singapore has not banned or restricted any blockchain-enabled crypto activity. Singapore's lack of decentralized finance regulation makes it extremely risky for unsophisticated customers and investors who do not have money they are willing to lose when investing or trading DeFi-related crypto tokens on crypto exchanges in Singapore.

Other Asian countries, such as Vietnam, Thailand, and

¹⁹ Grand View Research, January 8th, 2023, Decentralized Finance Market Size, Share & Trends Analysis Report By Application (Payments, Stablecoins), By Component (dApps, Blockchain Technology), By Region (EU, North America, APAC), And Segment Forecasts, 2022 - 2030, Available on website: <https://www.grandviewresearch.com/info/about-us>. Accessed Januari 13rd, 2023.

²⁰ Peterson K. Ozili, Decentralized finance research and developments around the world, *Journal of Banking and Financial Technology*, Vol. 6, No. 2, 2022, page 133.

Hong Kong, have also adopted DeFi into their country's development. This means that several countries in Asia have started operating DeFi on their various functions for the development of crypto asset trading despite concerns that the holding of DeFi will shift centralized financial functions as well as concerns over the security of DeFi users. Indirectly, these countries still provide flexibility to explore the use of this technology. However, for all the risks, users must prepare themselves because these countries still need comprehensive rules for implementing DeFi.

2) Oceania Region

Australia is one of many countries enthusiastic about adopting new technologies. This is shown by several Australian decentralized finance projects that emerged in 2020, such as Rocket Pool, Ren, and mStable. Rocket Pool is a decentralized Eth2 staking service that allows users to run their validators on the blockchain. Ren is a decentralized way to create pegged Bitcoins and coins that can be used in decentralized finance. mStable allows users to trade US dollar stablecoins without slippage and earn high yields. Show that favorable regulations back the blockchain underlying decentralized finance innovation in Australia. In addition, Australian MPs have considered whether to treat assets created for decentralized finance as eligible for treatment under the existing Basel Framework (with some modifications) if they have a low risk or subject them to a new precautionary treatment). In New Zealand, decentralized finance is promoted by interest groups advocating the adoption of blockchain technology. In 2020, the decentralized finance space in New Zealand had NZ\$1.5 billion of funds locked in public blockchain-enabled finance applications, while over NZ\$150 billion has been poured into DeFi applications in 2021.

3) Europe Region

The recent interest in decentralized finance in Europe has been mainly due to the need to reduce the cost of financial services. European businesses want to reduce transaction costs and seek a peer-to-peer decentralized financial product that eliminates intermediaries and their associated fees. Moreover, in the European banking sector, changing regulations, low-interest rates, and competitive financial technology (Fintech) are putting enormous pressure on banks and pushing banks to seek decentralized finance solutions to cut costs in some banking operations. Companies that are pioneering decentralized finance projects in Europe include: a) "Argent": a UK-based company that provides a gateway to a decentralized finance ecosystem; b) "Jellyswap": a crypto-agnostic decentralized financial exchange in Bulgaria; c) "Nexus Mutual": a London-based company offering decentralized insurance services; d) "AAVE": a UK-based

company that offers decentralized lending services; e) “Centrifuge”: a company in Germany that specializes in converting real-world assets into digital assets for clients; and finally, f) “Monolith”: a UK-based company that allows users to spend their ether (ETH) and ERC-20 tokens in the real world with a Visa debit card.

4) North America and South America Region

North America, i.e., Canada and the United States, are leaders in decentralized finance innovation. In Canada, proponents of financial decentralization argue that decentralized financial products can provide credit and liquidity in markets across jurisdictions where this has been difficult. This means that decentralized finance users in Canada can provide credit and liquidity via cryptocurrency to users in multiple countries. As of 2022, the only decentralized finance platform known to originate from Canada is “Prophecy DeFi,” a public investment issuer focused on the emerging DeFi sector in Canada. Interest in cryptocurrencies is widespread, driving the adoption of decentralized finance in the United States. Much of the adoption of decentralized finance in the US is driven primarily by cryptocurrencies, miners, traders, and investors looking for new sources of revenue via blockchain.

Meanwhile, other South American countries, such as Argentina and Venezuela, have repeatedly experienced economic instability due to sharp increases in inflation, which have rendered fiat currency nearly worthless. The increasing economic difficulties faced by Argentines and Venezuelans due to high inflation have led citizens to turn away from fiat money to invest and store their money in crypto assets and blockchain money alternatives to safeguard their wealth and as a means to protect against economic instability.

5) Middle East Region

Interest in DeFi adoption in the Middle East started in 2019, just before the COVID-19 pandemic. As of today, decentralized finance is in its infancy in Middle Eastern countries, and full adoption of the enabling blockchain technology is yet to be implemented in any Middle Eastern country. Recently, Bahrain has been studying the legal aspects of blockchain and preparing regulatory and legal frameworks for blockchain. The United Arab Emirates and Saudi Arabia are focusing on researching blockchain systems' current and future applications for government, financial and commercial services. In Qatar, DeFi advocates claim that blockchain-enabled decentralized finance can improve the financing of trade in the country. Meanwhile, in Saudi Arabia, the Saudi Arabian Monetary Authority has partnered with “Ripple” (an allied banking blockchain network) to help domestic banks settle payments and transactions with

regional banks to make monetary transfers more efficient and less expensive on the blockchain.

b. Use of Decentralized Finance in Indonesia

DeFi in Indonesia still needs to have legality in its implementation for a particular function. However, through the Indonesian Business Field Standard Classification (KBLI 62014), Indonesia can accept the use of DeFi to carry out blockchain technology development activities, such as smart contract implementation activities, designing public blockchain infrastructure, and private blockchains. The implementation of smart contracts is emphasized in KBLI 62014. The authors interpret that Indonesia can use DeFi for economic activities because smart contracts are the essence of DeFi, as explained in the previous discussion.

The implementation of smart contracts in KBLI 62014 is not explained in terms of functional limitations, meaning that any activity related to implementing smart contracts can be carried out as a form of business activity in Indonesia as long as it fulfills the legal provisions of electronic contract activities according to Article 46 paragraph (2) GR 71/2019. As a result, the development of DeFi in Indonesia can be developed not only in the context of developing crypto asset trading but can do more than that according to the required needs, one of which is the use of DeFi on Digital Rupiah.

Digital Rupiah is money in digital format issued by Bank Indonesia (BI) and becomes BI's obligation to its holder. Digital Rupiah will be issued in two types, namely Digital Rupiah wholesale (w-Digital Rupiah) with limited access coverage and only distributed to serve wholesale transactions (parties who have direct access to Digital Rupiah from BI and have a role in distributing Digital Rupiah to retailers and users end), and retail Digital Rupiah (r-Digital Rupiah) with access coverage open to the public and distributed for retail transactions (parties who obtain Digital Rupiah through wholesalers and whose role is to distribute to end users). Digital Rupiah uses the same technology used by cryptocurrencies: blockchain, P2P, smart contracts, and so on.²¹

BI has officially announced Digital Rupiah. The presence of the Digital Rupiah is a digital financial innovation in Indonesia through a work project called Central Bank Digital Currency (CBDC) under the auspices of BI, until this research was conducted, BI was preparing a legal standing for CBDC. The background to the presence of the Digital Rupiah is inseparable from the role of DeFi, which triggers a phenomenon known as cryptoization (a condition when people start substituting legitimate local currency for crypto assets). As a result, digital disruption is no longer limited to shadow banking issues but has penetrated shadow currency issues and even

21 Bank Indonesia, *Proyek Garuda: Menavigasi Arsitektur Digital Rupiah*, Jakarta, 2022, page. 2

shadow central banking.²²

DeFi in Digital Rupiah is used to carry out the needs of presenting Digital Rupiah as a complement to various types of use in wholesale and retail ecosystems. Digital Rupiah will become a settlement asset for various types of transactions in the goods and services and financial markets, both in traditional and digital ecosystems. The presence of DeFi is also used to benefit the development of the Digital Rupiah to provide instant access to a variety of financial products, increase financial system inclusion and efficiency, including cross-border payments.²³

BI's step in carrying out digital financial transformation by adopting DeFi as its technology is a careful step by the government regarding reading opportunities for utilizing technology. ING Bank, a European-based global bank, has considered collaboration between banking and DeFi. ING Bank analyzes the risks and opportunities associated with DeFi by writing a report on its website entitled "Lessons learned from Decentralized Finance (DeFi)." This report explains that the best of both systems is achieved when centralized and decentralized financial services work together. Collaborative forms of centralized financial institutions must embrace innovation and move away from their risk aversion mindset. They must proactively contribute to developing regulations, ensuring the main advantages of DeFi are maintained.²⁴

Centralized financial institutions, in this case, conventional banking, can start offering DeFi services to those who do not have bank accounts. Providing consumers greater access to the blockchain ecosystem through their existing banking services can help close the financial gap for Micro, Small, and Medium Enterprises (UMKM). If the blockchain principles that DeFi relies on are integrated into the global financial architecture, society can see benefits such as faster international transactions, better working.

The use of crypto assets using other DeFi technology in Indonesia is a DeFi-based stablecoin created on the DeFi network, namely the Rupiah Token. The Rupiah Token is the first crypto asset whose price is intended to mimic the value of the Indonesian Rupiah. Rupiah Token is issued by PT Rupiah Token Indonesia, a startup based in Indonesia. As a token that resides on a DeFi network, Rupiah Token combines speed, security, transparency, and other desirable characteristics of a Blockchain network. PT Rupiah Token may collaborate with third-party market makers in cryptocurrency exchanges to help ensure Rupiah Token trading at a value close to the Indonesian Rupiah. The final price of the Rupiah Token on each

22 Ibid., page 3.

23 Ibid., page 22.

24 ING Bank, Oktober 9th, 2022, *Lessons learned from Decentralised Finance (DeFi)*, Available on website: <https://www.ingwb.com/en/insights/distributed-ledger-technology/lessons-learned-from-decentralised-finance-defi>. Accessed Januari 13rd, 2023.

cryptocurrency exchange will only depend on the strength of market supply and demand.²⁵

The primary purpose of the Rupiah Token is to facilitate the trading of crypto assets. Indonesian crypto asset customers need to exchange their volatile digital assets for crypto with better price stability. With the Rupiah Token, Indonesian crypto asset customers now have the option to convert their volatile crypto into a more stable token with Indonesian Rupiah. Not only that, if Rupiah Token is accepted or listed on several exchanges, Indonesian crypto traders can trade between exchanges.²⁶

c. Legal Protection

The need for regulation of DeFi as the development of crypto asset trading in Indonesia is because DeFi is inseparable from the risks that come with it. The risks are as follows:²⁷

First, there is execution risk in smart contracts. This risk arises from coding errors when forming smart contracts. Coding errors can create vulnerabilities that allow attackers to render code unusable or create vulnerabilities that allow attackers to steal funds embedded in smart financial contracts. The implication is that DeFi protocols are only as secure as the code that underlies smart contracts.

Second, there is a high risk of legal liability in DeFi smart contracts. This is because the average technology user who cannot read the code of a smart contract or evaluate its security could be misled into signing a regulated smart contract, exposing the user to unexpected risks and legal liability.

Third, there is a risk of data theft. Many DeFi protocols and applications use admin keys to upgrade smart contracts and perform emergency termination. If the key holder does not generate or store the key securely, a malicious third party can steal the key and compromise the smart contract. There is also a risk of association or risk of dependency. This risk arises because DeFi protocols allow various smart contracts and decentralized blockchain applications to interact with each other to offer new services based on existing combinations. These interactions introduce significant dependencies so that a problem with one smart contract may have far-reaching consequences for multiple DeFi applications across the entire DeFi ecosystem.

Another risk is that many DeFi applications rely on external data. When a smart contract relies on data that is not available on the blockchain, that data will be provided by an external data source. As a result, blockchain applications are subject to data quality and data availability issues when applications rely heavily on external data sources. Lastly, there is a high tendency for illicit activity when using DeFi apps. The decentralized financial system's decentralized

25 PT Rupiah Token Indonesia, White Paper Rupiah Token, Jakarta, 2019, page. 4

26 Ibid., page 5.

27 Schär, . Op. Cit, Page 170-172.

nature makes it attractive for illicit activities. Perpetrators with dishonest intentions can use decentralized financial applications to launder money and fund criminal activity

3. Ideal Legal Regulation for Decentralized Finance as The Development of Indonesia Crypto Asset Trading

DeFi has various benefits as well as risks that accompany its function for the development of crypto asset trading. The discussion regarding the urgency of the need for regulation of DeFi has explained coherently and comprehensively how important it is for DeFi to be regulated, even though, in essence, DeFi is a form of an electronic contract whose norms have been regulated in Act 11/2008, Act 19/2016, GR 71/2019. The DeFi arrangements in this discussion are related to the implementation of DeFi as the development of crypto asset trading, where the implementation has yet to be regulated in the regulation.

The things that need to be considered for organizing DeFi for the development of crypto asset trading from the previous description are: a) that DeFi has been widely developed in society and is a development of crypto technology that deserves to be used as the development of crypto asset trading on futures exchanges; b) that in order to protect the public and provide legal certainty to business actors in the field of blockchain technology development according to KBLI 62014, it is necessary to stipulate a general policy for implementing DeFi as the development of crypto asset trading on futures exchanges. So, based on these considerations, it is necessary to stipulate regulations for implementing DeFi.

Implementation of DeFi for the development of crypto asset trading certainly requires a foundation that becomes the legality of its implementation, so an ideal regulatory construction is needed, which can become a reasonable legal basis so that DeFi can become a means of developing futures trading on crypto assets in Indonesia. The DeFi context proposed in this study is the development of crypto assets, then based on Article 4 paragraph (1) of Act 10/2011 and Article 2 of the Minister of Trade 99/2018, which states that "regulation, development, guidance, and daily supervision of futures trading activities carried out by CoFTRA." The DeFi function as the development of futures trading activities, namely crypto assets, must be carried out under the responsibility and supervision of CoFTRA in terms of implementation.

The phrase "regulation" in Article 4 paragraph (1) of Act 10/2011 based on the elucidation of the article is under "regulation" is a technical arrangement made by CoFTRA in making technical implementing regulations as a further elaboration of laws, government regulations, presidential regulations, and Ministerial Regulations. In addition, CoFTRA provides instructions by the development of daily activities in the market so that the buying and selling of Commodities based on Futures Contracts, Sharia Derivative Contracts, and/or other Derivative Contracts on the Futures Exchange or other Derivative Contracts in the

Alternative Trading System can be carried out regularly. Reasonable, efficient, effective, and transparent.

CoFTRA is appointed by law and ministerial regulations to carry out the implementation, in this case, the implementation of DeFi as the development of crypto asset trading, then based on Article 6 of Act 10/2011, CoFTRA is given the authority to make arrangements in the form of technical guidelines regarding regulatory mechanisms, development, development and day-to-day supervision of futures trading activities. Technical guidelines based on the elucidation of the article are that CoFTRA is authorized to make technical guidelines and explanations, both written and oral regulations. A written explanation can be in the form of a decree or circular. In addition, because Futures Trading is a fairly complex activity, CoFTRA makes the most comprehensive possible explanation so that the economic objectives of Futures Trading can be realized as a means of hedging and a place for setting prices that are effective and transparent.

The difference between a decree and a circular is that a decree is a letter that contains a decision made by the leadership of an organization or government institution related to the policy of that organization or institution, which consists of a preamble, desideratum and dictum elements. At the same time, a circular letter based on Article 1 number 43 of the Minister of Home Affairs Regulation Number 55 of 2010 concerning the Layout of Official Documents in the Environment of the Ministry of Home Affairs is an official document that contains notifications, explanations and/or instructions on how to carry out certain matters that are considered essential and urgent.

The establishment of arrangements for the development, based on Article 5 of Act 10/2011, is to: a) realize regular, fair, efficient, effective, and transparent futures trading activities as well as in an atmosphere of fair competition; b) protect the interests of all parties in futures trading; and; c) realizing futures trading activities as a means of price risk management and transparent price formation. The interests of all parties in futures trading, based on the elucidation of the article, are to prevent the public from harmful trading practices, including persuading by good profits, providing misleading information, not channeling customer orders according to orders, carrying out transactions without the knowledge or orders of the customer, does not explain the risks faced to prospective customers, and does not place customer funds in separate accounts.

Based on the explanation above, the ideal form of regulation for implementing DeFi as the development of crypto asset trading regulations must be formed by CoFTRA in the form of technical guidelines and implementation mechanisms in the form of new CoFTRA Regulations in writing in the form of a decree from the head of CoFTRA whose focus is to regulate DeFi as a crypto asset trading development.

D. CONCLUSION

The urgency of regulating DeFi as the development of crypto asset trading is: a) other countries have used DeFi because it can develop crypto asset trading for the better by creating value stability in crypto assets, having a function for lending and borrowing crypto assets, having transparency in transactions and lower crypto asset trading fees; b) DeFi technology adopted in the development of the Digital Rupiah project by BI and adopted by physical traders of crypto assets in Indonesia; c) as a form of legal protection from risks arising from technical or non-technical negligence or intention to protection from crime. Ideal legal regulation for decentralized finance as the development of Indonesia crypto asset trading is the formation of a regulation by CoFTRA in the form of technical guidelines and implementation mechanisms, in the form of a new written CoFTRA Regulation, in the form of a decree from the Head of CoFTRA whose focus is to regulate DeFi as development Crypto asset trading

BIBLIOGRAPHY

Books:

- Bank Indonesia, 2022, *Menavigasi Arsitektur Digital Rupiah*, Proyek Garuda, Jakarta;
- Grider, David., 2021, *Decentralized Finance (DeFi) - Internet Banking Beyond Borders*, Georgia;
- Marzuki, Peter Mahmud., 2016, *Penelitian Hukum*. Edisi Revisi, Kencana, Jakarta;
- PT Rupiah Token Indonesia, 2019, *White Paper Rupiah Token*, Jakarta;
- Santoso, Bambang., 2021, *Politik Hukum*, Edited by Amelia Haryanti, Unpam Press, Tangerang;
- Vickers, Chris, dan Nicolas L. Ziebarth., 2019, Lessons for Today from Past Periods of Rapid Technological Change, ST/ESA/2019/DWP/158. New York;
- Weaver, Paul, Leo Jansen, Geert van Grootveld, Egbert van Spiegel, and Philip Vergragt., 2017, *Sustainable Technology Development*. 1 ed. Routledge, London;

Journals:

- Hidayah, Ardiana., Asas Iktikad Baik Dalam Kontrak Elektronik, *Solusi*, Vol. 19, No. 2, 1 Mei 2021;
- Ozili, Peterson K., Decentralized Finance Research and Developments Around The World, *Journal of Banking and Financial Technology*, Vol. 6, No. 2, 22 Oktober 2022;
- Salami, Iwa., Challenges and Approaches to Regulating Decentralized Finance, *AJIL Unbound*, Vol. 115, 6 Desember 2021;
- Schär, Fabian., Decentralized Finance: On Blockchain- and Smart Contract-Based Financial Markets, *Review*, Vol. 103, No. 2, 2021;

- Sinag, Herianto, David A, dan I Wayan Wiryawan., Keabsahan Kontrak Elektronik (E-Contract) Dalam Perjanjian Bisnis, *Kertha Semaya : Journal Ilmu Hukum*, Vol. 8, No. 9, 3 September 2020;
- Syahrina, M. Alvi., Konsep Keabsahan Kontrak Elektronik Berdasarkan Hukum Nasional Dan Uncitral Model Law On Electronic Commerce, *Repertorium: Jurnal Ilmiah Hukum Kenotariatan*, Vol. 9, No. 2, 2020;
- Wardoyo, William, Chaikal Nuryakin, dan Sean Hambali., Bitcoin in Indonesia: Hedging or Investment Instrument?, *Jurnal Ekonomi Indonesia* Vol. 9, No. 3, 4 November 2020;
- Widyastuti, M, dan Y B Hermanto., Cryptocurrency Analysis of Indonesian Market Education Facilities, *International Journal of Economics, Bussiness and Accounting Research (IJEBAR)*, No. 2, 2021;
- Wronka, Christoph., Financial Crime in The Decentralized Finance Ecosystem: New Challenges for Compliance, *Journal of Financial Crime*, 3 November 2021;
- Zaccaroni, Giovanni., Decentralized Finance and EU Law: The Regulation on a Pilot Regime for Market Infrastructures Based on Distributed Ledger Technology, *European Papers*, Vol. 7, No. 2, 2022;
- Zheng, Zibin, Shaoan Xie, Hong-Ning Dai, Weili Chen, Xiangping Chen, Jian Weng, dan Muhammad Imran, An overview on smart contracts: Challenges, advances and platforms, *Future Generation Computer Systems*, Vol. 105, April 2020;

Regulation:

- 1945 State Constitution of the Republic of Indonesia;
- Act of the Republic of Indonesia Number 10 of 2011 Concerning Amendments to Law No. 32 of 1997 concerning Commodity Futures Trading (State Gazette of the Republic of Indonesia of 2011 Number 79);
- Act of the Republic of Indonesia Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Information and Electronic Transactions (State Gazette of the Republic of Indonesia of 2016 Number 251);
- Government Regulation Number 71 of 2019 concerning Implementation of Electronic Systems and Transactions (State Gazette of the Republic of Indonesia of 2019 Number 185);
- Regulation of the Minister of Home Affairs Number 55 of 2010 concerning Official Manuscripts within the Ministry of Home Affairs (State Gazette of the Republic of Indonesia of 2010 Number 536);
- Regulation of the Minister of Trade Number 99 of 2018 concerning General Policy for Organizing Crypto Asset Futures Trading (State Gazette of the Republic of Indonesia of 2018 Number 1395);

Internet:

Best, Raynor de., *Defi Dominance, Or Defi Market Capitalization as a Share of The Overall Crypto Market Cap, worldwide from September 2020 to September 2021*, Statista, 2023.
<https://www.statista.com/statistics/1262836/defi-dominance/>;

———., *Number of Unique Addresses That Either Bought or Sold a Decentralized Finance (Defi) Asset worldwide from December 2017 to January 9, 2023*, Statista, 2023.
<https://www.statista.com/statistics/1297745/defi-user-number/>;

Dirgantara, Hikma., *Digital Futures Exchanges Klaim Sudah Siap Beroperasi sebagai Bursa Aset Kripto*, KONTAN.CO.ID, 2022.
<https://investasi.kontan.co.id/news/digital-futures-exchanges-klaim-sudah-siap-beroperasi-sebagai-bursa-aset-kripto>;

Grand View Research., *Decentralized Finance Market Size, Share & Trends Analysis Report By Application (Payments, Stablecoins), By Component (dApps, Blockchain Technology), By Region (EU, North America, APAC), And Segment Forecasts, 2022 - 2030.*, Grand View Research, 2022.
<https://www.grandviewresearch.com/info/about-us>;

ING Bank., *Lessons learned from Decentralised Finance (DeFi)*, ING, 2022.
<https://www.ingwb.com/en/insights/distributed-ledger-technology/lessons-learned-from-decentralised-finance-defi>.