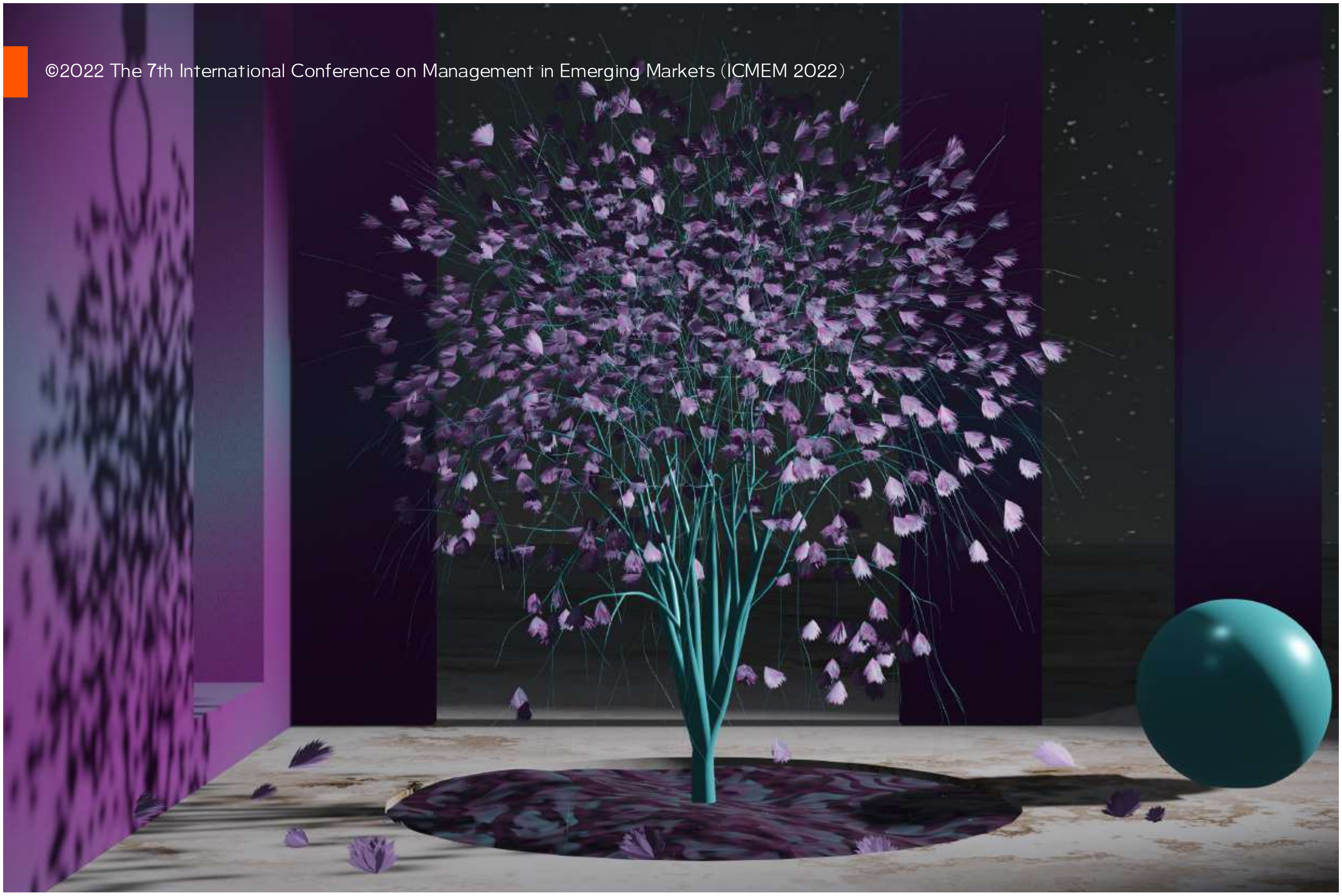

Paper 89

NFT Development and Ecosystem in Indonesia: The Future of Digital Finances or Just Bubbles?

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Abstract - **NFTs (non-fungible tokens) are blockchain-based cryptographic assets that cannot be sold or traded for cash. These tokens are becoming more popular in Indonesia, and by 2022, they are predicted to have a significant impact on the worldwide economy. The paper aims to examine the NFT trends, its development and ecosystem in Indonesia, with the following research questions: What are the current trends in Indonesia for non-fungible tokens (NFTs), and how the concept of NFT developed in Indonesia and what is its ecosystem? Based on the literature studies, the NFT trend has risen in popularity in Indonesia since the Ghozali effect arose, and the general public has begun to notice it as a viable investment choice. As a result, blockchain (NFT) literacy is rapidly expanding. The younger generation in Indonesia is becoming more involved in the NFT business, taking on roles such as NFT marketplace developer, NFT creator, and NFT management.**

Keywords – **Non-Fungible Tokens (NFT), Blockchain, Ghozali Effect, Cryptos, Indonesia**

I. INTRODUCTION

Non-fungible tokens (NFTs) are cryptographic assets based on the blockchain that have unique identifiers and metadata that distinguish them from one another. Unlike cryptocurrencies, they cannot be sold or exchanged for equivalent. This contrasts with fungible tokens, such as cryptocurrencies, which are interchangeable and thus can be used as a medium of exchange. Non-fungible tokens (NFTs) are becoming more popular, and by 2021, they are predicted to have a significant impact on the global economy. Digital tagging for artwork, for example, is projected to be one of the NFT trends 2022, indicating a sector that will continue to grow, disrupt industries, and change our daily lives. Southeast Asian countries, particularly Indonesia, have shown a keen interest in this emerging technology.

Indonesia is debating the Non-Fungible Token, or NFT. NFT is a solution for the security of the assets, both physical and digital, according to Herry Irawan, a Research Center Researcher at Telkom University's Digital Business Ecosystem. This makes it simpler and safer to sell digital assets like NFT.

However, it is also important to consider the drawbacks of the present NFT trend, such as the sale of digital works created by others on the NFT marketplace. In Indonesia, there are currently no regulations that particularly control NFTs. However, there are already a number of copyright or intellectual property rights (IPR) restrictions in place. Many difficulties remain in the way of this regulation's implementation, notably the difficulty of enforcing legislation in one country for violations committed by another.

Herry went on to say that, since the Ghozali effect emerged, the NFT trend has grown in popularity in Indonesia, and the public has begun to notice it as a beneficial investment option. Blockchain (NFT) literacy is fast increasing as a result of this. On the NFT marketplace, NFT creators have a big potential to sell their work. Herry also encourages Indonesia's younger generation to get involved in the NFT industry by taking on responsibilities such as NFT marketplace developer, NFT creator, and NFT manager.

Ghozali made headlines because the price of his selfies sold in NFT has risen dramatically. Indonesians have come to try their fortunes by selling diverse images as NFT once the Ghozali phenomena went popular. They, like Ghozali, decided to sell it on OpenSea, a global NFT marketplace. Unfortunately, because the general public currently has a poor grasp of NFT, digital photographs such as birthday cards are being utilized as NFT assets and sold. Despite the fact that this activity is illegal because it involves personal information.

Paintings, designs, music, films, and a variety of other digitized art goods can all be made using NFT. The NFT industry has a lot of potential, but creating a potential NFT for sale requires extensive market analysis.

The paper aims to examine the NFT trends, its development and ecosystem in Indonesia, with the following research questions:

1. What are the current trends in Indonesia for non-fungible tokens (NFTs)?

2. How the concept of NFT developed in Indonesia and what is its ecosystem?

II. LITERATURE REVIEW

According to Nadini, Alessandretti, and Di Giacinto (2021), Non-fungible Tokens (NFTs) are digital assets that represent things like art, collectibles, and in-game items. They're usually kept in smart contracts on a blockchain and traded online, most commonly with bitcoin. They believe that public interest in NFTs peaked in 2021, with record purchases, but that little is known about the industry's overall structure and evolution. Between June 23, 2017, and April 27, 2021, the researchers examined data from the Ethereum and WAX blockchains, which comprised 6.1 million transactions involving 4.7 million NFTs. They started by outlining the statistical characteristics of the market. Second, they build a network of interactions, indicating that traders specialize in NFTs linked to comparable products and form tight clusters with other traders trading the same objects. Third, they group things related to NFTs based on their visual characteristics, demonstrating that collections comprise visually uniform objects. Finally, they investigate the predictability of NFT sales using simple machine learning approaches, discovering that selling history and, secondarily, visual features are strong price predictors. They believe that this research will lead to future research into NFT creation, adoption, and trading in a variety of scenarios (Nadini, Alessandretti, & Di Giacinto, 2021).

The principles of blockchain technology are explained by Ali and Bagui (2021). Their study goes through the benefits of NFTs as well as the future use of the Ethereum blockchain. Data blocks are the foundation of blockchain technology, which is considered one of the most secure ways to keep data safe (p. 50). Blockchain technology is a fast, open, low-cost, easy-to-use, transparent, and programmable system that enables the instantaneous movement of data and/or financial assets from one location to another. It's a protocol that establishes the rules and regulations that govern the exchange of value. The technology's safety is determined by the qualities of the chains that connect the blocks. The preceding block's hash is calculated and utilized as part of the data for the next block in the chain to be added (p. 50). ERC-20 defines fungible tokens as having a property that makes each token the same kind and value as another token. The ERC-20 standard is one of the most prominent standards that contributed to the development of NFTs (p. 54). ERC-721 Non-fungible Token Standard (Ethereum Request for Comments 721). ERC-721 provides an API for tokens in Smart Contracts. This is a free open standard on the Ethereum blockchain that allows the production of non-fungible or unique tokens. ERC-721 extends the common interface for tokens with additional functionality, resulting in non-fungible tokens. These one-of-a-kind tokens were awarded NFTs. NFTs are the best approach to identify anything or someone that isn't interchangeable because they can't be exchanged for like-for-like objects. This type of token can be used on platforms that, among other things, sell collectibles, access keys, lottery tickets, and numbered seats at concerts or sporting events. When someone buys one of these one-of-a-kind items, they can use these NFTs to prove ownership. Because each token has only one unique attribute and is unlike any other NFT on the market, NFTs ensure uniqueness. Furthermore, at any given time, there is only one official owner, and ownership is safeguarded by the Ethereum blockchain, which assures that no one can alter the ownership record or establish a new NFT (Ali & Bagui, 2021, p. 54).

Karandikar, Chakravorty, and Rong (2021) suggest a blockchain-based system for energy asset transactions involving prosumers, electric vehicles, power companies, and storage providers in their paper. Two versions of the system were created with Hyperledger Fabric. Non-fungible tokens (NFT) are assets that have a unique identification or information in addition to value, whereas fungible tokens just have value. They devised token lifetime management algorithms, investigated their difficulties, and tested them in smart contracts. The results demonstrate that the two implementations perform similarly for the vast majority of key tasks. They also compared the use cases, design, performance, benefits, and downsides of NFT implementations. They were able to reach a throughput of 448.3 transactions per second for the slowest process, while having a rather small infrastructure (Karandikar, Chakravorty, & Rong, 2021).

In his work, Okonkwo (2021) discusses the relationship between NFT and copyright, as well as the potential difficulties and remedies, and how NFTs might be used to commercialize intellectual property. According to the researcher, disruptive technologies have broadened the horizon of possibility for intellectual property owners. The idea of selling copyrighted works digitally and then using the earnings to establish a digital currency is groundbreaking. This is one of the benefits of the Non-Fungible Token (NFT). However, this disruptiveness raises certain concerns, bringing the question of whether NFTs are a kind of intellectual property, or whether NFTs would alter the current copyright law paradigm. Governments, through her agencies, are likewise torn between trying to figure out what NFT is and whether it has any value for intellectual property (Okonkwo, 2021).

Noor (2021) in his study examines the NFT concept and how it works, as well as how it relates to the field of archiving. The researcher uses the method of literature study and observation since NFT in the field of archives is yet incredibly limited to be explored. NFTs are well recognized for their ability to be utilized in archive management in a variety of ways, such as the use of ownership certificates in the form of a collection of code that runs on a blockchain platform and can be applied to a wide range of elements and spheres of life. In addition, the NFT gives digital art supporters the opportunity to launch their own businesses. Several obstructions or challenges may render NFTs unsustainable because to the large need for computer power and electricity, as well as their extremely fluctuating value (p. 223). The advantage of digital archives is that they are easy to reproduce. It's been tough to market digital works in the same way that conventional forms, such as paintings, have been difficult to sell. Because of the advancement of blockchain and cryptocurrencies, this is now achievable. The NFT (non-fungible token) enables the blockchain network to sell digital archives (Noor, 2021).

According to Schrader-Rank (2021), non-fungible tokens (NFTs) will have an exponential impact on the general public, and notably the art market, due to three factors. The first is the scarcity mindset, which is responsible for a person's sense of urgency for a certain commodity. The second point to explore is how NFTs might be used in real-world applications or across the economy. The appeal of NFTs is that they are nondiscriminatory, allowing people from all walks of life to participate. NFTs appear to be an excellent investment as scarcity appears to be increasing. The researcher investigates the physical effects of NFTs on the environment. When compared to paper money exchanged for a piece of actual artwork in a real setting, virtual 'tokens' used to fund digital art are theoretically significantly less detrimental to society (p. 1). Schrader-Rank (2021) performed a six-month examination from May to October 2021, using practice-led research, to reveal the true consequences of NFTs on the globe. The evidence obtained by the researcher is meant to assist others in grasping the fundamentals of art. According to the researcher, it is critical to educate individuals about the impact of NFTs on the arts, especially since they are still in their early stages of development (Schrader-Rank, 2021).

III. RESULTS AND DISCUSSIONS

The adoption of blockchain in Indonesia is influenced by global developments in this sector (Hardjanto, 2022). The Indonesian people's expectations of blockchain were still particular as a traditional financial service solution in the start of its development phase. Internal and external factors also contribute to these expectations. The internal aspect stems from the development of blockchain, which is still mostly focused on financial sector applications, while the external factor stems from numerous media headlines that concurrently expose Bitcoin and blockchain. Although this is typical, the conflation between Bitcoin with blockchain can lead to societal misunderstandings. Furthermore, the Indonesian people's expectations about blockchain are still negative. This is largely due to the media's widespread coverage of the rising habit of exploiting Bitcoin for criminal transactions. The Indonesian government was forced to interfere as a result of these negative expectations. To protect the public, the Financial Services Authority (OJK) has suspended various crypto currency transaction activities (Financial Services Authority, 2017a).

Bank Indonesia (BI) is also involved in the Indonesian Blockchain 1.0 development. The use of cryptocurrency is forbidden in Indonesia, according to BI. This is in accordance with Law No. 7 of 2011 on Currency, Bank Indonesia Regulation (PBI) No 18/40/PBI2016 on Payment Transaction Processing, and Bank Indonesia Regulation (PBI) No 19/12/PBI/2017 on Financial Technology, all of which state that Rupiah must be used for financial transactions within the Unitary State of the Republic of Indonesia (NKRI). Furthermore, BI forbids the use of cryptocurrencies because they are extremely dangerous, volatile, and lack a governing body. As a result, Bank Indonesia believes that cryptocurrency could be used for unlawful purposes like money laundering and terrorism financing.

Payment mechanisms, particularly those connected to blockchain technology, remain one of the major roadblocks to the digital economy's expansion. That's because cryptocurrency is still a contentious topic in Indonesia. Taxes are one aspect of blockchain technology that is at the base of all issues. The sale of Ghozali's selfie images is an example. Others argue that Ghozali is obligated to pay taxes (Hardjanto, 2022).

Statista conducted a global study on cryptocurrency adoption in 55 nations in 2020, with between 2,000 and 12,000 respondents per country. Researchers discovered that with 21.1 percent of respondents saying they own or use cryptocurrency, Vietnam came in second. The Philippines came in third place with 19.8%, Thailand in fifth place with 17.6%, Indonesia in tenth place with 13%, and Malaysia in twelfth place with 12.3%. According to Triple-A, a cryptocurrency payments provider, there were more than 300 million cryptocurrency users globally in 2021, with a 3.9 percent ownership rate. Asia accounted for 160 million users, with Southeast Asian countries like Indonesia accounting for more than 7 million. Over 21 million people in Southeast Asia used cryptocurrencies.

The region's strong rate of cryptocurrency adoption and a global spike in NFT sales in the third quarter of last year indicate that the crypto market is ready for investment. Getting information on cryptocurrencies, NFTs, and DeFi in their native languages will go a long way toward dispelling myths and increasing NFT adoption and cryptocurrency usage among Southeast Asians.

According to the Finder survey, NFT adoption in Southeast Asia is stronger, with a higher percentage of adults in the region knowing what NFTs are, than in places like Japan, where 90% of individuals believe they are unaware of non-fungible tokens. Surprisingly, countries like the United Kingdom and the United States score poorly, with 78.8% and 70.6 percent, respectively, admitting they are unaware of NFTs.

Despite the existing limits on the use of cryptocurrencies/ virtual currencies as payment instruments, the laws and regulations in Indonesia largely allow for crypto trading operations (Situmorang & Putri, 2022). With the current popularity of Non-Fungible-Tokens 'NFT', Indonesians are becoming more interested in crypto assets. The legality is a hot topic of discussion, and many people want to know more.

Crypto assets in Indonesia are governed by the following rules:

a. MoT Regulation 99/2018 for Crypto Asset Future Trading;

b. BAPPEBTI Regulation No. 8 of 2021 on Guidelines for Physical Market Trading of Crypto Assets on Futures Exchanges ("BAPPEBTI Regulation 8/2021"); and

c. BAPPEBTI Regulation No. 7 of 2021 on Decree on the List of Tradeable Crypto Assets in the Crypto Asset Trading Market.

As defined in Art. 1 Point 7 of BAPPEBTI Regulation 8/2021, crypto assets are intangible commodities in digital form that use encryption, information technology networks, and distributed ledgers to govern the production of new units, verify transactions, and secure transactions without the interference of third parties.

Given the high volume of Crypto Assets exchanges in Indonesia, the government aims to construct a centralized Futures Exchange, as there are now no Futures Exchange facilities for Crypto Assets trading (Situmorang & Putri, 2022). In terms of NFT, despite the fact that there is a lot of interest in this area, it is still unregulated, the current restrictions on Crypto Assets will apply to NFT market operations. The licensing standards for Crypto Assets exchange activities should be followed by the NFT marketplace. This will continue to be the case as long as the Indonesian government/BAPPEBTI has not implemented any explicit NFT regulations.

In Indonesia, non-fungible tokens, or NFTs, have become a popular fad (Effendi, 2022). Baduy, a local artist, created digital artwork depicting a Baduy tribal member, which is currently available as an NFT on opensea.io for 0.01 ETH. Syahrini and The Goods Dept. followed suit, releasing their own lifestyle-themed NFTs.

The fast proliferation of NFTs in Indonesia has forced the country's legal authorities to increase their efforts to recognize the distinctive properties of these digital tokens. NFTs, on the other hand, are not yet regulated in Indonesia due to the existing regulatory position of crypto assets. Because their value is not established by the market, they are not classified as cryptocurrencies. Existing laws and regulations accept the use of blockchain technology. The numerous activities connected to fund-lending are likewise recognized in the various activities in the Indonesian standard industrial business categorization code.

NFTs have a role in the digital economy in Indonesia as well. By 2021, Indonesia is predicted to have six NFT marketplaces. The companies involved are TokoMall, paras.id, Enevti, Kolektibel, Baliola, and Artsky. The number is insignificant when compared to other e-commerce marketplaces in the country. However, because NFT is still in its early stages, there is still room for improvement.

In Indonesia, the majority of digital businesses must adhere to a number of legal requirements. Electronic system suppliers, for example, must register as system providers. Digital and electronic platforms operating in Indonesia must register their entity and server location in addition to registering with the appropriate authorities. Taxes are also levied on digital items. How NFTs will be controlled in the future is still unknown.

There are currently no particular regulations in place in Indonesia's tax legislation regarding blockchain technology (Cekindo, 2022). Because NFTs have a non-fungible property, it is difficult to classify them into a specific group. Because Indonesian banks only accept the rupiah as a form of payment, cryptocurrencies used for trading NFTs fall into a grey area of legal difficulties. The applicable laws for NFT transactions are hazy in a decentralized NFT marketplace. This creates apparent potential for international arthouses, artists, and any other type of digital creative to prosper in the Indonesian market, which is notoriously difficult to navigate. Big tech and digital enterprises can conduct early activities in Indonesia, even after having to deal with various regulatory obligations such as tax obligations or onerous business registrations, with the help of appropriate communities and the freedom provided by blockchain technology.

It would be foolish to ignore the aforementioned restrictions in light of the digital economy's rapid growth. However, given a company's business potential, having a local organization assist with business activities is highly recommended. When it comes to starting a business in Indonesia, using such a scenario would put organizations in the early adopter's stage.

Due to the epidemic, a group of 64 local and international artists, galleries, and curators in Indonesia have banded together to present Art Moments Jakarta, the first art exhibition to take a hybrid live-online format (Katherine, 2021). Art Moments Jakarta is supporting the NFT art scene, thanks to technological advancements sparked by the pandemic. The Ministry of Tourism and Creative Economy is also a sponsor of the event. In today's digitized environment, Indonesians are swiftly recognizing the authenticity and validity of NFTs. In the blockchain ecosystem, it has the same value as a land certificate because it was created by people for people.

Within the creative and entertainment industries, there is still room to make an impact and promote platforms that function on the Proof of Stake network. Hic et Nunc is home to a thriving, international community of artists and creators. The platform, which debuted in March 2021, topped 100,000 NFTs created in May (a monthly average of 35,000 NFTs), with over 2 million NFTs bought and resold. It recently surpassed OpenSea, one of the most popular Ethereum-based NFT exchanges, in terms of daily active users. Clean NFTs with a lesser carbon footprint are the favored option as producers and purchasers become more eco-conscious.

Indonesia is steadily progressing in the direction of digital network platforms. MetaRupa.com, an open-world virtual realm (or "Metaverse") exhibition place, will launch in the country soon (Katherine, 2021).

IV. CONCLUSIONS

NFTs (non-fungible tokens) are blockchain-based cryptographic assets that cannot be sold or traded for cash. These tokens are becoming more popular in Indonesia, and by 2022, they are predicted to have a significant impact on the worldwide economy. It will continue to expand, disrupt industries, and transform our everyday lives. This developing technology has piqued the curiosity of Southeast Asian countries, particularly Indonesia. The Non-Fungible Token, or NFT, is being debated in Indonesia. NFT is a solution for the physical and digital protection of assets. There are presently no regulations in place in Indonesia that specifically regulate NFTs. However, a lot of copyright and intellectual property rights (IPR) restrictions already exist. In reality, many obstacles remain in the way of this regulation's execution, the most significant of which being the difficulty of executing legislation in one country for violations committed in another.

The NFT trend has risen in popularity in Indonesia since the Ghozali effect arose, and the general public has begun to notice it as a viable investment choice. As a result, blockchain (NFT) literacy is rapidly expanding. The younger generation in Indonesia is becoming more involved in the NFT business, taking on roles such as NFT marketplace developer, NFT creator, and NFT management. When the Ghozali phenomenon became widespread, Indonesians decided to try their luck by selling various photos as NFT. They planned to offer it on OpenSea, a global NFT marketplace, just like Ghozali. Digital images are being used as non-financial assets (NFTs) and sold. Despite the fact that this behavior is unlawful due to the personal data involved.

According to Bank Indonesia, the use of bitcoin and NFTs is prohibited in Indonesia. This is in line with Law No. 7 of 2011 on Currency, Bank Indonesia Regulation (PBI) No 18/40/PBI2016 on Payment Transaction Processing, and Bank Indonesia Regulation (PBI) No 19/12/PBI/2017 on Financial Technology, which all state that Rupiah must be used for financial transactions within the Unitary State of the Republic of Indonesia (NKRI). Furthermore, because cryptocurrencies and NFTs are exceedingly risky, volatile, and without a controlling body, Bank Indonesia prohibits their use. As a result, Bank Indonesia fears that these assets could be utilized for illegal activities such as money laundering and terrorism financing.

According to Statista's global assessment on cryptocurrency usage in 55 countries in 2020, Indonesia ranks tenth with 13 percent adoption of cryptocurrencies and NFTs. More than 7 million people in Indonesia use the service. Moments of Art Thanks to technological developments triggered by the pandemic, Jakarta is supporting the NFT art scene. Indonesia's Ministry of Tourism and Creative Economy is also supporting the event. Indonesians are quickly realizing the authenticity and validity of NFTs in today's computerized world.

Due to the current regulatory status of crypto assets, NFTs are not currently regulated in Indonesia. They are not classified as cryptocurrencies because their worth is not determined by the market. The use of blockchain technology is permitted under existing laws and regulations.

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REFERENCES

1. Ali, M., & Bagui, S. (2021). Introduction to NFTs: The Future of Digital Collectibles. International Journal of Advanced Computer Science and Applications, 12(10), 50-56. Retrieved from https://thesai.org/Downloads/Volume12No10/Paper_7-Introduction_to_NFTs_The_Future_of_Digital_Collectibles.pdf

2. Cekindo, e. t. (2022, February 8). NFT Indonesia: An Emerging Opportunity for Foreign Investors. Retrieved from Cekindo: https://www.cekindo.com/blog/nft-indonesia-an-emerging-opportunity

3. Effendi, D. (2022, January 12). Indonesian NFT, Economic Potential, and Legal Framework. Retrieved from Jakarta Daily: https://www.jakartadaily.id/explainers/pr-1622325728/indonesian-nft-economic-potential-and-legal-framework

4. Hardjanto, R. W. (2022). Digital Economy and Blockchain Technology Using the SWOT Analysis Model. International Journal of Innovative Science and Research Technology, 7(2), 513-520. Retrieved from https://ijisrt.com/assets/upload/files/IJISRT22FEB900_(1).pdf

5. Karandikar, N., Chakravorty, A., & Rong, C. (2021). Blockchain Based Transaction System with Fungible and Non-Fungible Tokens for a Community-Based Energy Infrastructure. Retrieved from MDPI: http://dx.doi.org/10.3390/s21113822

6. Katherine. (2021, July 2). NFTs set the stage for a sustainable future. Retrieved from The Jakarta Post: https://www.thejakartapost.com/academia/2021/07/01/nfts-set-the-stage-for-a-sustainable-future.html

7. Nadini, M., Alessandretti, L., & Di Giacinto, F. (2021, October 22). Mapping the NFT revolution: market trends, trade networks, and visual features. Retrieved from Nature.com: https://www.nature.com/articles/s41598-021-00053-8#citeas

8. Noor, M. U. (2021). NFT (Non-Fungible Token): Masa Depan Arsip Digital? Atau Hanya Sekedar Buble? Pustakaloka, 13(2), 223-234. Retrieved from https://jurnal.iainponorogo.ac.id/index.php/pustakaloka/article/download/3289/1984

9. Okonkwo, I. E. (2021). NFT, Copyright; and Intellectual Property Commercialisation. International Journal of Law and Information Technology. doi:https://doi.org/10.1093/ijlit/eaab010

10. Situmorang, M., & Putri, A. (2022, February 11). Crypto Assets: General Legal Framework Of Crypto Assets And Current Development Of Non-Fungible Tokens (NFT) In Indonesia. Retrieved from mondak.com: https://www.mondaq.com/fin-tech/1160546/crypto-assets-general-legal-framework-of-crypto-assets-and-current-development-of-non-fungible-tokens-nft-in-indonesia