

How are NFT (Non-Fungible Token) transactions reviewed according to Islamic law?

Nur Rizqi Febriandika^{1✉}, Fadli², Denizar Abdurrahman Mi'raj³

^{1,2} Faculty of Islamic Religion, Universitas Muhammadiyah Surakarta, Indonesia

³ Faculty of Islamic Economics and Finance, Sakarya University Turkey, Turkey

✉ nrf679@ums.ac.id

Article info

Submitted:
2022-January-20

Reviewed:
2022-April-05

Accepted:
2022-May-20



This work is licensed under
a Creative Commons
Attribution-NonCommercial
4.0 International License

Publisher

Universitas Muhammadiyah
Magelang

ABSTRAK

Di era digitalisasi saat ini, banyak orang termotivasi untuk meningkatkan pendapatan ekonomi dengan berbagai cara, salah satunya dengan menggunakan teknologi digital NFT (Non-Fungible Token). Pemanfaatan teknologi yang terdapat dalam NFT berdampak positif bagi orang-orang yang memiliki keahlian di bidang seni digital; ini digunakan untuk meningkatkan pendapatan ekonomi secara signifikan. Penelitian ini membahas tentang sejarah NFT, mekanisme jual beli NFT, karakteristik NFT dan pandangan hukum Islam tentang transaksi jual beli NFT. Tujuan dari penelitian ini adalah untuk mengetahui apa yang dimaksud dengan NFT, sejarah terjadinya NFT, karakteristik NFT, bagaimana mekanisme penjualan NFT, dan untuk mengetahui bagaimana pandangan hukum Islam terhadap transaksi jual beli NFT. Penelitian ini merupakan jenis penelitian kualitatif; penulis menggunakan pendekatan deskriptif-analitis yang tergolong jenis penelitian kualitatif dengan mencari melalui data kepustakaan atau library research. Hasil penelitian ini menemukan bahwa sejarah NFT dimulai pada era SM (Before Cryptokittes) 2012-2016, Cryptokitties dan Cyptopunks (2017-2021), dan Era Decentraland (Metaverse) (2021-sekarang). Hukum jual beli NFT tidak terdapat dalam Al-Qur'an atau Hadits secara khusus tetapi dapat dipelajari berdasarkan rukun dan syarat jual beli yang telah diatur dalam hukum Islam. Menurut hukum Islam, transaksi jual beli NFT termasuk dalam jual beli yang dibolehkan; Transaksi jual beli NFT dianggap sah sebagai bentuk jual beli dalam Islam karena syarat dan rukun jual beli telah terpenuhi.

Keywords: Token Non-Fungible, Transaksi, Hukum Islam.

ABSTRACT

In the current digitalization era, many people are motivated to increase economic income in many ways, one of which is using digital technology NFT (Non-Fungible Token). The use of technology contained in NFT has a positive impact on people who have expertise in digital art; this is used to significantly increase economic income. This study discusses the history of NFT, the mechanism of buying and selling NFT, the characteristics of NFT and the view of Islamic law on buying and selling NFT transactions. The purpose of this study is to find out what is meant by NFT, the history of NFT, characteristics of NFT, how the mechanism of NFT sales is, and to find out how Islamic law views NFT buying and selling transactions. This research is a type of qualitative research; the author uses a descriptive-analytical approach which is classified as a qualitative research type by

Keywords: Non-Fungible
Token, Transaction,
Islamic Law.

searching through library data or library research. The results of this study found that the history of NFT began in the BC era (Before Cryptokittes) 2012-2016, Cryptokitties and Cyptopunks (2017-2021), and the Decentraland Era (Metaverse) (2021-present). The law of buying and selling NFT is not found in the Koran or Hadith specifically but can be studied based on the pillars and conditions of buying and selling that have been regulated in Islamic law. According to Islamic law, transactions in the sale and purchase of NFT are included in the permissible sale and purchase; the transaction of buying and selling NFT is considered valid as a form of buying and selling in Islam because of the terms and pillars of the sale and purchase have been fulfilled.

I. INTRODUCTION

Digital technology is developing very rapidly. Many people are currently looking for easier and more efficient work, one of which is by trading through digital tools (Sundari, 2019). Among other things, one way is to use the sale and purchase of NFT (non-fungible tokens). NFT is a digital asset on a blockchain network that has an identification code and has unique and different metadata from one another (Sugiarto & Musa, 2022). Just like digital currencies such as bitcoin, Bitcoin is a form of digital currency and means of payment with electronic ownership and uses a technology called cryptocurrency, which has high-security standards with cryptographic systems and algorithms as security (Taniady et al., 2021). NFT runs on a blockchain platform. Blockchain is a database containing trans around the world (Sarmah, 2018). The difference is, in cryptocurrencies such as bitcoin, the coin is in the form of a collection of codes and can be broken into many parts, while non-fungible tokens cannot be broken down like coins (Dean, 2021).

Cryptocurrency is a method of forming virtual coins and providing secure ownership and transactions using a cryptographic system (Harwick, 2016). This cryptographic technology is the main component of cryptocurrency technology (Febriandika & Sukmana, 2019). Cryptography is one of the techniques in maintaining the confidentiality of messages by encoding them into an incomprehensible form (Pabokory et al., 2016). Cryptocurrencies are also called the planning of using blockchain technology and are also one of the most discussed forms of business today (Serada et al., 2021). One example is ETH (Ethereum), the rare digital money that can be used for trading over the internet, similar to bitcoin (Sihombing et al., 2021).

The beginning of the emergence of NFT was influenced by the development of cryptocurrencies, not only cryptocurrencies that took part in the birth of NFT but there was also blockchain technology that took part. Blockchain plays an important role in the use and development of NFT, which continues to grow rapidly today (Sugiarto & Musa, 2022). NFT was first introduced by a platform called counterparty in 2014, with the first NFT made entitled Quantum, and this work is worth seven US dollars (Coggan, 2021). NFT is also the latest platform that can empower artists by using tools and methods that are easy to access secure and make it easier for artists to monetize their work with a more practical and efficient process (Aletha, 2021).

The idea of NFT actually dates back to a long history of being an investment tool for aesthetic pleasure and prestige; for example, the artworks of Pablo Picasso, Jean Michel Basquiat, Gerhard Richter, and Andi Warhol dominate traditional art auctions, and these auction artworks have sold hundreds of millions of dollars (Mahler, 2021). People are willing to buy the artwork at a fairly high price because it aims for a long-term investment. Because of its uniqueness, its selling value can be maintained in the long term; therefore, NFT came up with the idea of giving codes or tokens to art that can be traded digitally (Aletha, 2021). Based on the above background, the writer is interested in studying and researching further about NFT, the history of NFT, the mechanism of NFT and how Islamic law views the buying and selling of NFT, with the intention of having implications for future life.

II. METHOD

This study uses a descriptive analysis approach which belongs to the type of qualitative research. The method used in collecting data is through various literature, the type of research that the author uses is library research (Danandjaja, 2014). The literature review is a research method carried out by collecting data relevant to the topic or problem, which then becomes an object of research. And to get data in this research method is to read and collect references, both primary and secondary such as books, scientific articles, theses, dissertations, encyclopedias, the internet and other sources (Asikin, 2006).

III. RESULTS AND DISCUSSION

3.1. Brief Introduction to NFT (Non-Fungible Token)

NFT is a digital asset that can be traded via the blockchain, including the contents of the NFT are images, videos, music and even parts of the virtual world (Dowling, 2022). NFT is also called a certificate of authenticity that is unique on the blockchain, which is usually issued by the creator of the asset, and the asset is usually in digital or physical form (Ante, 2021). To understand NFT, we need to understand the two keywords, non-fungible and token. The word fungible can be interpreted as the ability of digital and non-digital assets to be exchanged or replaced with equivalent or exact assets (for example, the 2000 IDR banknote can be exchanged for four IDR 500 coins, and bitcoins are exchanged for USDT). While the term non-fungible is the opposite, someone will get something different (Chohan, 2021). The term token is a digital asset that represents goods, services, or other forms (Sugiarto & Musa, 2022).

NFT is simply a collection of data stored in a large digital ledger known as a blockchain. Similar to bitcoin currency, NFT runs on a blockchain currency. The difference is that in cryptocurrencies such as bitcoin, the coin is a collection of codes and can be split into many parts, while NFT is non-fungible, meaning it cannot be broken down like a coin. In NFT, the code collection can be digitally archived so as to make the code collection on the NFT unique from one another (Noor, 2021).

So the incorporation of the word NFT is in the form of a Non-Fungible Token which can be interpreted as a digital asset that describes tangible or intangible goods with a value that cannot be replaced, exchanged or compared with other digital assets because of their unique nature (one of a kind). Each NFT has a transaction history recorded on the blockchain network. In general, NFT is a digital asset that develops from cryptocurrencies and blockchain (Sugiarto & Musa, 2022).

3.2. The History of NFT (Non-Fungible Token)

NFT has existed since 2012, but at that time, NTF was not as popular as it is today. In a previous journal, it was also explained that NFT was first introduced in 2014 by a forum called counterparty, with the first NFT made being "Quantum" now the work is worth seven million US dollars or the equivalent of one hundred billion and fifty million Indonesian Rupiah (Noor, 2021). From 2017 to 2020, many people are interested in buying and selling of NFT; some of them are the NBA (National Basketball Association) and Nike. For example, Nike issued NFT in the form of its sneakers in digital form, and the NBA used NFT to make digital basketball player cards that can be collected like conventional basketball cards (Gallagher, 2021).

The idea for the emergence of NFT comes from an artistic background, as an investment tool for aesthetic pleasure and from the long history behind it. For example, the works of artists such as Jean Michell Basquiat, Fabio Picasso and Gerhard Richter won traditional art auctions that have sold hundreds of millions of dollars (Mahler, 2021). Although the price is high, people are busy hunting for these works of art, with the aim of investing, considering that the work has a value that can be maintained for a long time because of its uniqueness (Su, 2020). The history of NFT development from year to year can be seen as follows:

a. BC Era (Before Cryptokittes) 2012-2016

NFT was first built on the Bitcoin blockchain network, which many people are looking for because of its confidential data management and easy mechanism (Faizal et al., 2019). This is in contrast to the current situation where many use the Ethereum blockchain network. On 4 December 2012, through a whitepaper proposal entitled "Colored Coins" released by Meni Rosenfeld, Meni Rosenfeld is a researcher from Tel Aviv University (Sugiarto & Musa, 2022). The coloured coin is described as a method for presenting and managing assets that exist in the real world on the bitcoin blockchain network and can be used as proof of ownership of these assets (Yunsen & Kogan, 2018).

The emergence of Colored Coin is believed by cryptocurrency enthusiasts to be the start of the development of the NFT project. However, the Colored Coin project was never actually realized due to the limitations of the Bitcoin network in the development of the NFT project at that (Sugiarto & Musa, 2022). In 2014, Kevin McCoy was a digital image artist who has succeeded in creating NFT for the first time, known as NFT Quantum (Frye, 2021). The digital image of the Quantum NFT is an octagonal pixel image that forms a hypnotic image (hypnotic way). In 2021, NFT Quantum sold a staggering \$14 million at auction house Sotheby's (Delaplaine, 2021).

b. The Era of Cryptokitties and Cyptopunks (2017-2021)

In 2017, Cryptokitties was introduced to the cryptocurrency and blockchain community as a blockchain-based virtual game. Cryptokitties are digital cats that can adapt, breed, and can be sold directly via a crypto wallet (Serada, 2020). The efforts made by John Watkinson and Matt are evidenced by the launch of Cryptopunk in 2017. Cryptopunk is a limited-release NFT image character with only 10,000 characters (Sugiarto & Musa, 2022). The most popular crypto punk among cryptocurrencies is Cryptopunk which is based on the Ethereum blockchain network—for the first time using ERC-20 tokens for NFT launch and ERC-721 tokens in NFT character creation, making Cryptopunk the world's first hybrid NFT (Kong, 2021).

c. Decentraland Era (Metaverse) (2021-present)

The rapid development of NFT has taken the attention of the cryptocurrency and blockchain community to continue to develop secure, scalable and decentralized NFT continuity. The real development of NFT continues until the time when NFT is widely used in the metaverse world. The development of the metaverse is a very famous breakthrough for the development of NFT, which is used as a digital asset in the metaverse world. A well-known metaverse project is decentral, which was started at the end of 2015 by Argentinians Ari Meillich and Esteban Ordano. Desentraland is an online virtual game that inadvertently embodies the real world into a metaverse where the characters in it can interact with one another.

So the incorporation of the word NFT is in the form of a Non-Fungible Token which can be interpreted as a digital asset that describes tangible or intangible goods with a value that cannot be replaced, exchanged or compared with other digital assets because of their unique nature (one of a kind). Each NFT has a transaction history recorded on the blockchain network. In general, NFT is a digital asset that develops from cryptocurrencies and blockchain (Sugiarto & Musa, 2022).

3.3. The Mechanism of NFT transaction

The popularity of NFT cannot be separated from the purchase of digital art from artists, especially Beeple's digital artwork entitled *Everyday: The First 5000 Days*. This work was sold at auction in 2021, and it earned USD \$69.3 million. The work broke records in the auction industry (Bodo et al., 2022). Although the uploaded artwork does not really attract online buyers, there is pressure from digital artists to upload it on the NFT exchange; this can motivate artists to upload their works via NFT (Chohan, 2021).

The mechanism for selling NFT relies on file uploads through the auction market in NFT (Adhami & Giudici, 2019). The file is recorded in a digital ledger then recorded as an NFT and thus can be bought or sold using a digital currency (Wilson et al., 2021). Although NFT creations that represent works of art may be exclusive to an artist, they can still retain the copyright to the artwork (Ante, 2021). All buying and selling transactions carried out will be recorded automatically and officially in a digital book called the blockchain (Windiastuti & Athief, 2019). All buying and selling records can be accessed by the general public, so if someone wants to buy the artwork, then he must enter the cryptocurrency system (a kind

of digital marketplaces such as shopee, Bukalapak, Tokopedia and the like) to register his name as a buyer and thus he has the right to have a special license for the goods he bought (Setiawan, 2021).

In the process of selling NFT, it requires a blockchain platform to be able to run smart contracts, smart contracts, a program that can ensure that transactions that have taken place are in accordance with mutually agreed agreements in a distributed database network (Yulianton et al., 2018). So that NFT requires a network on a platform that can continue to oversee the NFT transaction process. The NFT runs on a blockchain with certain standards, one of which is ERC-721 and ERC-1155. The ERC-1155 standard is equipped with protocol capabilities that allow you to add code to track and trace ownership or transfer of ownership of digital archives on NFT (Das et al., 2022).

In the practice of buying and selling NFT, it is carried out in a marketplace that has been created to transact on buying and selling NFT. The first step in conducting an NFT buying and selling transaction is to prepare a digital wallet and then fill in the Ethereum balance. Once we have a digital wallet balance, we can upload the image to NFT and set the value when the asset is traded on the secondary market; if someone buys it, we will get royalties. If you want to buy on the digital market, you can choose and continue to pay to buy digital assets on NFT. Currently, the NFT market with the most demand is the OpenSea market, which is a blockchain-based online marketplace (Putra & Sarjani, 2022). There are also Rarible, Axie, NFT Showroom, and other marketplaces that provide NFT buying and selling markets. Everyone who has an account and balance on his digital wallet he can sell or buy NFT digital assets in the crypto world.

3.4. The Characteristics of NFT

The phenomenon of Non-Fungible Token or commonly abbreviated as NFT, is currently popular. NFT is a certificate or code for digitally traded goods (Setiawan, 2021). NFT has characteristics among the main characteristics of NFT include, including:

a. Unique

NFT can be used to create unique digital assets so that no single token is the same in every NFT, and tokens will be recorded on the blockchain network (Chohan, 2021).

b. Traceable (Traceable)

All records of ownership, source, and transaction movements of each NFT are visible on the entire historical blockchain data so that it can provide a transparent and traceable picture of NFT in real-time (Wilson et al., 2021).

c. Authenticated (Authenticated)

NFT cannot be faked or imitated; each token is stored in an immutable digital ledger and a decentralized network into the blockchain that allows tokens to be authenticated (Kugler, 2021). An example is the text of the proclamation, which was signed directly by Soekarno and Hatta, there is only one original copy of the text in the world, and of course, it cannot be falsified.

d. Adaptable (Adaptable)

NFT easily adapts to digital life in the metaverse world and supports used in NFT applications. Players can buy and trade NFT on various Platform marketplaces (Blaise et al., 2022).

3.5. The Analyse of NFT in Islamic law Perspective

In Islam, all forms of muamalah are basically permissible unless there is an argument that forbids it (Ghafur, 2018). As in the fiqh rules, which read: "The law of origin of something in muamalah, it is permissible unless there is a proof that forbids it" (Harun, 2017). In other fiqh rules that specifically discuss the field of muamalah or buying and selling in the book *Qawaid al-Buyu wa Faraid al-Furu'* by Walid bin Rashid Sa'idan (Mahfudhoh & Santoso, 2020), which states: "Basic principles in muamalah is lawful and permissible

The purpose of the two rules above is that every issue related to muamalah is permissible, both in the future and in the past. No one should intervene in the permissibility law unless there is a valid argument that clearly prohibits it (Fahrurrozi & Irwansyah, 2020). Likewise, the issue that regulates the law of buying and selling NFT is not found in the Quran or Hadith specifically except through the description of the problem. To find out the Islamic law that regulates the sale and purchase of NFT, the researcher describes the problems through the pillars and terms of buying and selling, then what is the view of Islamic law regarding the problems contained in the sale and purchase of NFT. The pillars and conditions for a valid sale and purchase include:

a. The existence of people who have a contract (seller and buyer)

Two parties consist of bai' (seller) and mustari (buyer), also called aqid, namely the person who carries out the contract in buying and selling (Susiawati, 2017). In the case of buying and selling of NFT, the seller and buyer are accounts registered in the NFT market, meaning that in the NFT sale and purchase transaction, two people have a contract or al-muta'aqdain have fulfilled.

b. There is shigat (pronunciation of consent and acceptance)

The contract, according to language, is a bond, while according to fiqh experts, the contract is a word between consent and qabul according to the way justified by syara' which determines both parties (As-Shiddiqiey, 1979). Shigat in the NFT transaction system is not done verbally because this type of transaction is included in buying and selling transactions carried out online. Transactions like this model are included in the e-commerce buying and selling model in general, offers and contracts in transactions are made in writing, where goods are displayed on the NFT website with a certain price tagged, then consumers and buyers want according to a certain price (Mustafa, 2016). The sale and purchase contract transactions can be made orally or in writing; both have the same legal force; therefore, the shigat in the NFT is considered legally valid.

c. There are items purchased (goods)

For the sale and purchase to be valid, there must be maq'ud alaih, namely the goods that are the object of buying and selling (Susiawati, 2017). Goods traded in the NFT

system are in the form of digital assets, including paintings, drawings, written works and movable objects and others (Noor, 2021).

d. There is an exchange rate

The exchange rate for substitute goods must meet three conditions; first, it can store value (store value), can value or value an item (unit of account), and can be used as a medium of exchange (medium of exchange) (Susiawati, 2017). In nominal NFT paid using crypto money or known as bitcoin (Yulianton et al., 2018). According to Oni Sahroni (Member of the National Sharia Council of the Indonesian Ulema Council, he explained that what can be used as a basis for assessing that NFT is in accordance with the stages of the transaction (Sahroni, 2022) include the following:

1) The stage of ownership of the copyrighted work

The work that will be sold through NFT, the work is obtained in a lawful way, not plagiarism or the like, perfectly owned, and does not contain pornographic content.

2) NFT process stage

Ensure that the NFT is valid and real proof of ownership.

3) Stage of selling NFT to OpenSea.io

OpenSea is a blockchain-based online marketplace commonly known as NFT (Putra & Sarjani, 2022). Among them must be clear and agreed on the value, means of payment, criteria, when and where it is handed over.

4) NFT buying and selling stage by fellow investors

There is a real transfer of NFT along with digital assets and payment instruments To ensure that there are digital assets that become the underlying assets.

5) Rights and obligations

Between each party must be clearly known, the rights of the parties are guaranteed, mitigate risks, and avoid misuse of transactions that contain elements of fraud and harm.

By law, the elements of buying and selling NFT are fulfilled in harmony; the terms of sale and purchase and sale and purchase of NFT transactions can be considered as legal buying and selling. However, it should be underlined that the legality of cryptocurrencies is still in question. The Indonesian Ulema Council (MUI) issued a fatwa that cryptocurrencies such as bitcoin Ethereum are haram currencies; this decision was the result of the Ijtima Ulama conducted at the Sultan Hotel, which was held on Thursday 11 November 2021 (Soleh, 2021). The MUI also states that cryptocurrency is a commodity or digital asset that is not legal to be traded because it contains elements of gharar, dharar, and qimar (Apandi et al., 2022).

Cryptocurrency is a commodity or asset that must meet the requirements as sil'ah; the meaning of the word sil'ah is goods that are still allowed (Rahmah & Jannah, 2021). And has underlying and has clear and legitimate benefits for trading. According to Ridwan Kamil (Governor of West Answer), he explained that the NFT sale and purchase transaction was clear because the sale was included in the stock exchange. Just like stocks

and buying and selling are in the form of points, which later these points can be disbursed in rupiah (Bestari, 2021). The Indonesian Ulema Council provides a view that there are two laws that apply to cryptocurrency, namely permissible for exchange activities and forbidden for investment (Alamanda et al., 2010)

So it can be concluded that the legal provisions of the sale and purchase of NFT transactions are included in the sale and purchase that is allowed in Islam, NFT buying and selling transactions are considered valid as a form of buying and selling in Islam because the pillars and conditions of the sale and purchase are fulfilled. NFT buying and selling transactions can be said to be haram if there is an element of gharar and the elements of the pillars and conditions of sale and purchase are not fulfilled. Until now, there have been no scholars or sharia institutions that have stated or explained the law on NFT buying and selling transactions. Considering that digital technology is getting more advanced, a fatwa related to buying and selling NFT is needed to educate the public, so they don't feel afraid to buy and sell NFT.

IV. CONCLUSION

Based on the results and analysis that has been done, the researchers get research results that will be used as conclusions to answer problems related to buying and selling NFT. First, the popularity of NFT has a very significant influence on artists. The NFT system is used to boost the development of the creative industry. NFT is a digital asset right that is traded through the blockchain in the form of any digital asset, including images, videos, and others. The NFT selling mechanism relies on uploading files through the NFT auction market, where the files are recorded in a digital ledger then recorded as NFT and can be bought or sold using digital currency. Legally buying and selling in Islam, the elements contained in the sale and purchase of NFT have been fulfilled both in harmony and the terms of sale and purchase in Islam. NFT buying and selling transactions can turn out to be haram if the terms and conditions in buying and selling are not met.

Authors' Declaration

Author contributions and responsibilities - The authors contributed substantially to the conception and design of the study. The author is responsible for data analysis, interpretation, and discussion of the results. The authors read and approved the final manuscript.

Funding – No funding information from the author

Availability of data and materials - All data are available from the authors.

Conflict of interest - The authors declare no conflict of interest.

Additional information - No additional information from the author.

Reference

Adhami, S., & Giudici, G. (2019). *Initial Coin Offerings: Tokens as Innovative Financial Assets*. 61–81. https://doi.org/10.1007/978-3-030-25275-5_4

- Alamanda, D. T., Hidayat, Y. M., Solikin, I., & Purnomo, B. S. (2010). OPINION MINING PEMUKA AGAMA DI INDONESIA TERHADAP CRYPTOCURRENCY MELALUI YOUTUBE Dini. *Syntax Literate: Jurnal Ilmiah Indonesia*, 362(20), 1945–1946. <https://doi.org/10.1056/nejmc0911005>
- Aletha, N. O. (2021). Non-Fungible Tokens (NFT) di Industri CryptoArt. *Center for Digital Society*.
- Asikin, Amiruddin Zainal. (2006). *Pengantar Metode Penelitian Hukum*, Raja Grafindo, Jakarta. (p. 133). PT Raja Grafindo.
- Ante, L. (2021). Non-fungible token (NFT) markets on the Ethereum blockchain: Temporal development, cointegration and interrelations. *SSRN Electronic Journal*, 22, 1–23. <https://doi.org/10.2139/ssrn.3904683>
- Apandi, A. B., Muhammad Iqbal Fasa, & Kumedi, A. J. (2022). Legalitas dan Pandangan Majelis Ulama Indonesia terhadap Reslaj: Religion Education Social Laa Roiba Journal. *Reslaj: Religion Education Social Laa Roiba Journal*, Volume 4 N, 311–320. <https://doi.org/10.47476/reslaj.v4i2.702>
- As-Shiddiqiey, H. T. (1979). *Pengantar Mu'amalah*. Bulan Bintang.
- Bestari, N. P. (2021). *Ridwan Kamil Dukung Token Kripto NFT, Halal atau Haram?* CNBC Indonesia. <https://www.cnbcindonesia.com/tech/20211125184143-37-294511/ridwan-kamil-dukung-token-kripto-nft-halal-atau-haram>
- Blaise, S., Jesus, D. De, Ocampo, C., Is, J., Colleges, Lord, Tibudan, A. J., & Tus, J. (2022). *Play-to-Earn: A Qualitative Analysis of the Experiences and Challenges Faced By Axie Infinity Online Gamers Amidst the COVID-19 Pandemic*. January. <https://doi.org/10.6084/m9.figshare.18856454.v1>
- Bodo, B., Giannopoulou, A., & Mezei, P. J. P. Q. (2022). *The rise of NFTs: These aren't the droids you're looking for*.
- Chohan, Raeesah J. P. (2021). What Markets need to know about non fungible tokens (NFTs). *Business Horizons*.
- Chohan, U. W. (2021). Non-Fungible Tokens : Blockchains , Scarcity , and Value Non-Fungible Tokens: Blockchains , Scarcity , and Value. *CRITICAL BLOCKCHAIN RESEARCH INITIATIVE*.
- Coggan, G. (2021). Confused about NTFs ? Here's All You Nedd to KNow. *Creativebloq*.
- Danandjaja, J. (2014). Metode Penelitian Kepustakaan. In *Antropologi Indonesia* (maret 2004, Vol. 0, Issue 52). Yayasan Obor Indonesia, anggota IKAPI DKI Jaya. <https://doi.org/10.7454/ai.v0i52.3318>
- Das, D., Bose, P., Ruaro, N., Kruegel, C., & Vigna, G. (2022). Understanding Security Issues in the NFT Ecosystem. In *Proceedings of* (Vol. 1, Issue 1). Association for Computing Machinery.
- Dean, S. (2021). *\$69 million for art? the NFT craze, Explained*.
- Delaplaine, S. (2021). *The Brave New Virtual Art World The Evolution of Digital Art: NFTs and their Effects on the Art Market in 2021*.
- Dowling, M. (2022). Fertile LAND: Pricing non-fungible tokens. *Finance Research Letters*, 44(April 2021), 102096. <https://doi.org/10.1016/j.frl.2021.102096>
- Faizal, R., Setiawan, B. D., & Cholissodin, I. (2019). Prediksi Nilai Cryptocurrency Bitcoin menggunakan Algoritme Extreme Learning Machine (ELM). *Jurnal Pengembangan Teknologi Informasi Dan Ilmu Komputer (J-PTIHK)*, 3(9), 4226–4233.
- Frye, B. L. (2021). *How to Sell NFTs Without Really Trying*. 23529(2), 1–45.
- Gallagher, J. (2021). NFTs Are the Biggest Interest Craze. Do They Work for Sneakers. *The Wall Street Journal*.
- Ghafur, A. (2018). Etika Bisnis dalam Perspektif Islam. *Iqtishodiyah: Jurnal Ekonomi Dan Bisnis Islam*, 4(1), 1–21. <https://doi.org/10.36835/iqtishodiyah.v4i1.74>
- Harun. (2017). *FIQH MUAMALAH* (Muhtarom (ed.)). Muhammadiyah University Press.
- Harwick, C. (2016). Cryptocurrency and problem of intermediation. *The Independent Review*, 569–588.
- Kong, D. (2021). *Alternative Investments in the Fintech Era : The Risk and Return of Non-fungible*

Token (NFT) ↗ *Alternative Investments in the Fintech Era : The Risk and Return of Non-fungible Token (NFT)*.

- Kugler, L. (2021). Non-fungible tokens and the future of art. *Communications of the ACM*, 64(9), 19–20. <https://doi.org/10.1145/3474355>
- Mahfudhoh, Z., & Santoso, L. (2020). Analisis Hukum Ekonomi Syariah Terhadap Jual Beli Melalui Media Online Di Kalangan Mahasiswa. *SERAMBI: Jurnal Ekonomi Manajemen Dan Bisnis Islam*, 2(1), 29–40. <https://doi.org/10.36407/serambi.v2i1.143>
- Mahler, Z. (2021). Why Be a Great Women Artist When You Could Be Spectacular. *The Study of Women Old Masters in the Art History Canon Throught Art Market Bias*. https://scholar.google.com/scholar?hl=id&as_sdt=0%2C5&q=8+Villa%2C+Angelica+%282021%29.+The+Most+Expensive+Old+Masters+Artworks+Ever+Sold+at+Auction.+Tersedia&btnG=
- Fahrurrozi, Muhamad Hiqal, S. R. F., & Irwansyah, S. (2020). *Tinjauan Fikih Muamalah Akad Bai' terhadap Praktik Jual Beli Mystery Box di Situs Tokopedia*. Volume 6, 108–111.
- Mustafa, I. (2016). Fiqih Muamalah Kontemporer. In *Syariah Nurjati Press*. Rajawali Pers.
- Noor, M. U. (2021). Nft (Non-Fungible Token): Masa Depan Arsip Digital? Atau Hanya Sekedar Bubble? *Pustakaloka: Jurnal Kajian Informasi Dan Perpustakaan*, 13, 224–234. <https://www.creativebloq.com/features/what-are-nfts>.
- Pabokory, F. N., Astuti, I. F., & Kridalaksana, A. H. (2016). Implementasi Kriptografi Pengamanan Data Pada Pesan Teks, Isi File Dokumen, Dan File Dokumen Menggunakan Algoritma Advanced Encryption Standard. *Informatika Mulawarman : Jurnal Ilmiah Ilmu Komputer*, 10(1), 20. <https://doi.org/10.30872/jim.v10i1.23>
- Putra, I. K. J. D., & Sarjani, N. K. P. (2022). FENOMENA LATAH SOSIAL DALAM PEMBUATAN KONTEN VISUAL DI ERA INDUSTRI KREATIF DIGITAL. *AMARASI JURNAL DESAIN KOMUNIKASI VISUAL*, 03.
- Rahmah, S., & Jannah, M. (2021). Identitas Cryptocurrency : Halal Dan Haram. *Ar-Ribh: Jurnal Ekonomi Islam*, 4(2), 198–205.
- Febriandika, Rizqi N., & Sukmana, R. (2019). *Cryptocurrency Position in Islamic Financial System: A Case Study of Bitcoin*. *Icps*, 159–163. <https://doi.org/10.5220/0007539401590163>
- Sahroni, O. (2022). *Bagaimana Hukum Transaksi NFT?* REPUBLIKA.Id. <https://www.republika.id/posts/24320/bagaimana-hukum-transaksi-nft>
- Sarmah, S. S. (2018). Understanding Blockchain Technology. *Computer Science and Engineering 2018*, 8(2), 23–29. <https://doi.org/10.5923/j.computer.20180802.02>
- Serada, A. (2020). Cryptocurrency Gamefield : What Can We Learn by Playing Cryptokitties? *Proceedings of the 2020 DIRGA International Conference*, 1–15.
- Serada, A., Sihvonen, T., & Harviainen, J. T. (2021). CryptoKitties and the New Ludic Economy: How Blockchain Introduces Value, Ownership, and Scarcity in Digital Gaming. *Games and Culture*, 16(4), 457–480. <https://doi.org/10.1177/1555412019898305>
- Setiawan, A. (2021). Industri Musik, Pihak Ketiga, dan Fenomena Aset Digital. *Koran Tempo*.
- Sihombing, S., Rizky Nasution, M., & Sadalia, I. (2021). Analisis Fundamental Cryptocurrency terhadap Fluktuasi Harga: Studi Kasus Tahun 2019-2020. *Jurnal Akuntansi, Keuangan, Dan Manajemen*, 2(3), 213–224. <https://doi.org/10.35912/jakman.v2i3.373>
- Soleh, A. N. (2021). *Penjelasan Lengkap MUI Soal Bitcoin Cs Haram & Pinjol Haram*. CNBC Indonesia. <https://www.cnbcindonesia.com/tech/2021112090541-37-290974/penjelasan-lengkap-mui-soal-bitcoin-cs-haram-pinjol-haram>
- Su, Q. (2020). *Digital Commons @ SIA Connecting Art and the Public through Digital Marketing and Brand Collaboration – CO-ART , a New Art Marketing Agency*.
- Sugiarto, A., & Muhammad Yusuf Musa, M. J. F. (2022). *NFT & METAVERSE: BLOCKCHAIN, DUNIA VIRTUAL & REGULASI*. Perkumlan Kajian Hukum Terdesentrasi *INDONESIAN LEGAL STUDY FOR CRYPTO ASSET AND BLOCKCHAIN*.

- Sundari, C. (2019). Revolusi Industri 4.0 Merupakan Peluang Dan Tantangan Bisnis Bagi Generasi Milenial Di Indonesia. *Prosiding SEMINAR NASIONAL DAN CALL FOR PAPERS, Fintech dan E-Commerce untuk Mendorong Pertumbuhan UMKM dan Industri Kreatif*, 555–563.
- Susiawati, W. (2017). *Jual Beli dan dalam Konteks Kekinian*. *Jurnal Ekonomi Islam*. <https://journal.uhamka.ac.id/index.php/jei/article/view/836/350>
- Taniady, V., Permatasari, S. P., & Nugraha, R. W. (2021). *Crypto Asset-Trade Resilience During The Covid-19 Pandemic In Indonesia*. 11(1), 31–43. <https://doi.org/10.23917/jurisprudence.v11i1.13340>
- Wilson, K. B., Karg, A., & Ghaderi, H. (2021). Prospecting non-fungible tokens in the digital economy: Stakeholders and ecosystem, risk and opportunity. *Business Horizons*. <https://doi.org/10.1016/j.bushor.2021.10.007>
- Windiastruti, F. C., & Athief, F. H. N. (2019). Inacoin Cryptocurrency Analysis: An Islamic Law Perspective. *Journal of Islamic Economic Laws*, 2(2), 152–177. <https://doi.org/10.23917/jisel.v2i2.8585>
- Yulianton, H., Santi, R. C. N., Hadiono, K., & Mulyani, S. (2018). Implementasi Sederhana Blockchain. *Sintak*, 2(November), 306–309. <https://www.unisbank.ac.id/ojs/index.php/sintak/article/view/6635>
- Yunsen, W., & Kogan, A. (2018). Designing Confidentiality prespering blockchain based transaction processing systems. *International Journal of Accounting Information Systems* 30.