

The Impact of Digitalization on Copyright Law Enforcement in Indonesia: The Case of Non-Fungible Tokens

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Abstract

Digitalization refers to the process of converting something into digital form. This can be observed in various real-life examples, ranging from digitized documents and images to digitized assets. The latter, in particular, includes non-fungible tokens (NFTs), which are unique units of data stored on blockchains that represent physical assets such as artwork, digital content, or videos. Although NFTs are subject to copyright law, how this law is implemented has been evolving. This paper aims to examine the impact of NFTs on copyright law enforcement in Indonesia and explore whether NFTs can be used as collateral.

Keywords: Digitalization; Copyright; Non-Fungible Tokens

Abstrak

Digitalisasi merujuk pada proses mengubah sesuatu ke dalam bentuk digital. Hal ini dapat diamati dalam berbagai contoh nyata, mulai dari dokumen dan gambar yang didigitalisasi hingga aset yang didigitalisasi. Yang terakhir, khususnya, mencakup non-fungible tokens (NFT), yaitu unit data unik yang disimpan di blockchain dan merepresentasikan aset fisik seperti karya seni, konten digital, atau video. NFT memberikan bukti kepemilikan atas token tersebut, tetapi bukan atas karya aslinya, karena pencipta tetap memiliki hak cipta atas karya asli tersebut. Meskipun NFT tunduk pada hukum hak cipta, cara penerapan hukum ini terus berkembang. Tulisan ini bertujuan untuk mengkaji dampak NFT terhadap penegakan hukum hak cipta di Indonesia dan mengeksplorasi apakah NFT dapat digunakan sebagai jaminan.

Kata Kunci: Digitalisasi; Hak Cipta; Non-Fungible Tokens

A. Background

The Digital Revolution began on January 1, 1983, when a computer network called Advanced Research Projects Agency Network adopted a communications model, allowing for a globally connected network that would later be known as our ‘internet’.¹ Ever since, a myriad of aspects of our lives have been digitized, from documents, images, and even assets. This has offered a variety of benefits such as, but not limited to, streamlined processes, increased productivity and efficiency, as well as enhanced connectivity. This much digitalization, however, can be a double-edged sword, especially in the world of copyright law enforcement.

The World Intellectual Property Organization (WIPO) describes intellectual property (IP) as “*creations of the mind*”. That is, literary and artistic works, designs and symbols, or names and images used in commerce, all of which are considered ‘inventions’.² Copyright falls under a general classification of IP, and its enforcement has been impacted by a surge in digitized assets, largely by Non-Fungible Tokens (NFT). This paper aims to examine 2 (two) research questions: in what ways NFTs have impacted copyright law enforcement in Indonesia, and can NFTs be used as collateral? Before we do so, we must first have a basic understanding of (1) copyright law in Indonesia, in addition to (2) NFTs and digital assets. These will be explained further below.

A.1 Overview of Copyright Law in Indonesia

We begin by explaining Indonesia’s sources of law. According to Article 7 (1) of Law No. 12 of 2011 on Formulation of Laws and Regulations, promulgated on 12 August 2011, a so-called ‘hierarchy of laws’ is enforced in Indonesia, to which such sources of law are rooted in Pancasila as our state ideology.³ The hierarchy of laws is as follows:

- a. The 1945 Constitution (*Undang-Undang Dasar 1945*);
- b. People’s Consultative Assembly Decision (*Ketetapan Majelis Permusyawaratan Rakyat*);
- c. Laws/Government Regulation in lieu of Law (*Undang-Undang/Peraturan Pemerintah Pengganti Undang-Undang*);
- d. Government Regulations (*Peraturan Pemerintah*);

¹ McLean, Caitlin. “Who invented the Internet? Everything you need to know about the history of the Internet.” *USA Today*, 28 August 2022. <https://www.usatoday.com/story/tech/2022/08/28/when-was-internet-created-who-invented-it/10268999002/>

² World Intellectual Property Organization (WIPO). “What is Intellectual Property?” Accessed 20 November 2024. <https://www.wipo.int/about-ip/en/>

³ Article 2, Law No. 12 of 2011 on Formulation of Laws and Regulations

- e. Presidential Regulations (*Peraturan Presiden*);
- f. Provincial Regional Regulations (*Peraturan Daerah Provinsi*); and
- g. City/Regency Regulations (*Peraturan Daerah Kabupaten/Kota*).

The 1945 Constitution, as laid out in Article 3 (1) of Law No. 12 of 2011, is a 'fundamental law'.⁴ Meaning, that all laws must be per its provisions. This includes copyright laws.

WIPO, wherein Indonesia has been a Member State since 1979, defines copyright as a creator's rights over his literary and artistic works.⁵ Similarly, Article 1 (1) of Law No. 28 of 2014 on Copyright, promulgated on 16 October 2014, views copyright as a creator's exclusive right, arising automatically based on a declarative principle once a creation is realized in a physical form, without prejudice to restrictions in accordance with provisions of applicable laws and regulations.⁶ The creator in question must be an individual or several people who, individually or collectively, have created a work that is distinctive and personal.⁷ The work can be based on any field—science, art, and literature—so long as such creation is produced based on "*inspiration, ability, thought, imagination, dexterity, skill, or expertise that is expressed in a tangible form*".⁸ For example, a song and/or music being used for commercial purposes in public service will entitle its creator to copyright royalties as governed by Article 3 (1) of Government Regulation No. 56 of 2021, promulgated on 31 March 2021, on Management of Copyright Royalties for Songs and/or Music.⁹

By having a legal framework on copyright, Indonesia demonstrates its steadfast commitment to protecting a legal person's reputation from other parties who wish to exploit or use his intellectual work without permission or legal rights. This is applicable in scenarios of distortion of a creation, mutilation of a creation, modification of a creation, or actions that harm a creator's honor or reputation which are further elucidated in Article 5 (1) (e) of Law No. 28 of 2014 (Table 1).

⁴ Article 3 (1), Law No. 12 of 2011 on Formulation of Laws and Regulations

⁵ World Intellectual Property Organization (WIPO). "Copyright - WIPO." Accessed 20 November 2024. <https://www.wipo.int/copyright/en/>

⁶ Article 1 (1), Law No. 28 of 2014 on Copyright

⁷ Article 1 (2), Law No. 28 of 2014 on Copyright

⁸ Article 1 (3), Law No. 28 of 2014 on Copyright

⁹ Article 3 (1), Government Regulation No. 56 of 2021 on Management of Copyright Royalties for Songs and/or Music

Table 1. Elucidation to Article 5 (1) (3) of Law No. 28 of 2014

“Distortion of a Creation”	The act of twisting or altering the facts or identity of a Creation.
“Mutilation of a Creation”	The process or act of removing parts of a Creation.
“Modification of a Creation”	Any alteration made to a Creation.

Source: Law No. 28 of 2014

These extensive considerations for protection are in line with Article 28G (1) of our Constitution which reads:

*Every person shall have **the right to protection of his/herself, family, honor, dignity, and property**, and shall have the right to feel secure against and receive protection from the threat of fear to do or not do something that is a human right [emphasis added].¹⁰*

Article 28H (4) of our Constitution adds:

*Every person shall have **the right to own personal property**, and such property **may not be unjustly held possession of by any party** [emphasis added].¹¹*

Although Pancasila does not explicitly recognize copyright, its second principle regarding a just and civilized humanity (*keadilan yang adil dan beradab*) can be attributed to copyright about fair practice.

Overall, Indonesia’s commitment to preventing counterfeiting or unauthorized use is reflected in its legislation and practices. Such practice includes civil and/or criminal penalties for copyright infringement, as seen in Supreme Court Decision 2192 K/PID.SUS/2009 where Priyo Santoso Amk.Am and Muslih Herdiansyah were imposed a prison sentence of 6 (six) months, and a fine of IDR 50,000,000 (fifty million Rupiah) each,¹² for intentionally distributing or selling computer programs resulting from copyright violations, and intentionally reproducing a computer program for commercial purposes without permission which is a violation under Article 72 (2) (3) of Law No. 19 of 2002 on Copyright, promulgated on 29 July 2002, as lastly amended by

¹⁰ Article 28G (1), 1945 Constitution

¹¹ Article 28H (4), 1945 Constitution

¹² Supreme Court Decision 2192 K/PID.SUS/2009, p. 7

Law No. 28 of 2014.¹³ However, such enforcement has been subject to change due to digitalization, primarily in NFTs.

A.2 Understanding Non-Fungible Tokens and Digital Assets

Generally, NFTs are unique units of data stored on blockchains, representing physical assets such as artwork, digital content, or videos.¹⁴ There is no legal definition for NFTs, at least at present. As per its digitized characteristic, NFTs are part of a larger umbrella of digital assets, which are generally anything created and stored digitally, is identifiable and discoverable, and has or provides value.¹⁵ Examples of digital assets include cryptocurrencies, and decentralized finance assets, alongside carbon credits and environmental assets.

They have existed since 2014 when a generative piece of art dubbed ‘Quantum’ was created by Kevin McCoy. 3 (three) years later, more NFTs were created using a special Ethereum-based computer program named ‘smart contract’.¹⁶ The rise of NFTs, however, was not until 2021. The interaction of communities of NFT users on Twitter and other channels, paired with a digital artist’s NFT being sold at an auction for \$69 million (sixty nine million dollars), has sparked wide interest in NFTs. This ‘boom’ was so large that sales of NFTs reached \$25 billion (twenty five billion dollars) in 2021, of which \$11.6 billion (eleven billion six hundred million dollars) came from Q4 (Figure 1).¹⁷ This is roughly equivalent to small countries’ gross domestic product.

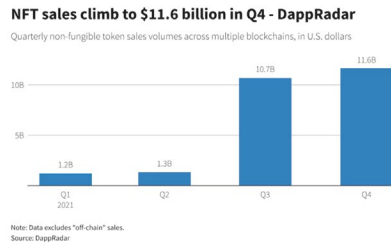


Figure 1. NFT Sales Climb to \$11.6 Billion in Q4

Source: DappRadar

¹³ Article 72 (3) (4), Law No. 19 of 2002 on Copyright

¹⁴ Investopedia. “Non-Fungible Token (NFT): What It Means and How It Works.” Accessed 20 November 2024. [https://www.investopedia.com/non-fungible-tokens-nft-5115211#:~:text=Non%2Dfungible%20tokens%20\(NFTs\),are%20stored%20in%20other%20places.](https://www.investopedia.com/non-fungible-tokens-nft-5115211#:~:text=Non%2Dfungible%20tokens%20(NFTs),are%20stored%20in%20other%20places.)

¹⁵ Investopedia. “Digital Asset: Meaning, Types, and Importance.” Accessed 20 November 2024. <https://www.investopedia.com/terms/d/digital-asset-framework.asp>

¹⁶ LCX. “The History of NFTs.” Accessed 20 November 2024. <https://www.lcx.com/the-history-of-nfts/>

¹⁷ Howcroft, Elizabeth. “NFT sales hit \$25 billion in 2021, but growth shows signs of slowing.” *Reuters*, 11 January 2022. <https://www.reuters.com/markets/europe/nft-sales-hit-25-billion-2021-growth-shows-signs-slowing-2022-01-10/>

For an individual to gain ownership of an NFT, he must either create or purchase one. The former involves several steps. Firstly, we must figure out what we want to create. Secondly, choose a blockchain to “mint” our NFT, or create our NFT. Thirdly, set up an NFT wallet to store our NFT. Fourthly, choose an NFT platform to have access to its marketplace. Last but not least, create our NFT and list such NFT for sale.¹⁸ As for purchasing an NFT, we must start by selecting and funding a crypto wallet to facilitate our sales and purchase. Secondly, we must choose a marketplace and create an account for where we would like to sell or purchase NFTs. Thirdly, our crypto wallet should be connected to our account. Lastly, choose and buy an NFT.¹⁹

Notably, purchasing an NFT does not grant ownership rights to its original creation. The ownership rights acquired after purchasing an NFT are limited to the NFT itself, granting its buyer exclusive access to and control over such NFT’s smart contract as stored on a blockchain. These rights do not extend to its original creation. The only exception would be when a creator of an NFT chooses to draft a licensing agreement, “*actively transfer[ring] the rights to the purchaser.*”²⁰ Nevertheless, while NFTs are subject to copyright law, their application has shifted. Traditionally, copyright is exercised on original, creative works of expression. In NFTs, copyright is a completely separate property from such original, creative work itself.²¹

This paper aims to analyze whether such differences in understanding copyright have given rise to copyright challenges in Indonesia and whether NFTs can potentially be used as collateral.

B. Research Method

This research examines the extent to which the current Indonesian legal framework addresses the presence of digitally traded goods. Especially in cases such as the use of NFTs as collateral in financial transactions, how it is regulated, and its possible challenges with the current legislature. Through a normative research approach involving a critical analysis of existing legal frameworks and principles, to recommend improvements or reforms based on ethical, moral, or social considerations.²² A

¹⁸ Wade, Jacob. “How to Create an NFT.” *Investopedia*, 13 July 2024. <https://www.investopedia.com/how-to-create-an-nft-6362495>

¹⁹ Becker, Sam. “How to buy NFTs in 4 easy steps.” *Business Insider*, 20 July 2024. <https://www.businessinsider.com/personal-finance/investing/how-to-buy-nfts>

²⁰ Eurojust. “Non-Fungible Tokens and Intellectual Property Rights - Eurojust.” Accessed 21 November 2024. <https://www.eurojust.europa.eu/sites/default/files/assets/eurojust-nfts-intellectual-property-rights-flyer.pdf>

²¹ Murray, Michael D. “Transfers and Licensing of Copyrights to NFT Purchasers.” *Stanford Journal of Blockchain Law & Policy*, volume 6, no. 1 (January 2023): 119; 123. <https://assets.pubpub.org/i7k40p13/41673329390078.pdf>

²²

conclusive data collection method of both primary and secondary sources will be implemented for this research to provide a balanced perspective for future recommendations. The primary sources used for the research are derived from sources of law and legislature applicable within Indonesia, in addition to secondary data derived from legal journals collected through online databases and archives.

C. Result and Discussion

This section, by our formulation of issues, will be divided into (1) copyright challenges in Indonesia arising from NFTs, and (2) legal and practical considerations of using NFTs as collateral.

C.1 Copyright Challenges in Indonesia Arising from Non-Fungible Tokens

To extensively answer what copyright challenges may arise from NFTs in Indonesia, we shall delve into its (1) legal issues and unclear protections, (2) cases and examples, and (3) enforcement limitations in a digital world.

C.1.1 Legal Issues and Unclear Protections

The legal issues with digital ownership versus copyright protection vary. It includes, but is not limited to, copyright infringement, trademark infringement, and ambiguity in current laws regarding digital assets like NFTs. As stated above, purchasing an NFT merely grants ownership of such NFT, not its original creation. Buyers control an NFT's smart contract on a blockchain but lack rights to its underlying asset unless explicitly given via a licensing agreement. This, however, may not be common knowledge, leaving room for potential copyright infringement. This could occur when an individual creates an NFT of a digital asset without its creator's permission, or when such NFT is modified or built upon a copyrighted work without permission. Other examples include an NFT creator falsely claiming to own or have rights to a digital asset, or when NFT buyers unauthorizedly reproduce, distribute, or create derivative works – a scope outside of his licensing agreement. Thus, copyright infringement occurs in all scenarios where a copyrighted work is reproduced, distributed, performed, publicly displayed, or made into a derivative work without the permission of a copyright owner,²³ in which NFT markets are vulnerable.

²³ U.S. Copyright Office. "Definitions (FAQ)." Accessed 29 November 2024. <https://www.copyright.gov/help/faq/faq-definitions.html>

Aside from copyright infringements, NFT markets are also vulnerable to “trademark infringements”. Article 1 (1) of Law No. 20 of 2016, promulgated on 25 November 2016, on Trademarks and Geographical Indications reads:

*A trademark is a sign that can be graphically represented in the form of images, logos, names, words, letters, numbers, color arrangements, in two-dimensional and/or three-dimensional forms, sounds, holograms, or a combination of two or more of these elements to distinguish goods and/or services produced by individuals or legal entities in the trade of goods and/or services.*²⁴

Furthermore, Article 1 (6) of Law No. 20 of 2016 states:

*The Right to a Trademark is an exclusive right granted by the state to the owner of a registered Trademark for a specific period, allowing the owner to use the Trademark personally or grant permission to others to use it.*²⁵

From here, a deduction can be made that trademark infringements are breaches of an individual’s Right to a Trademark. As far as NFTs are concerned, disputes involving external parties may arise when NFTs involve recognizable brands or logos since a brand’s reputation may be affected, and confusion may be felt amongst its customers.²⁶ Despite such legal issues surrounding copyright infringements and trademark infringements, protections regarding a digital asset creator’s necessary rights and permissions to use his asset remain unclear. This is due to ambiguity in current laws regarding digital assets like NFTs. Currently, Indonesia does not have a specific legal framework for digital assets including NFTs. However, Indonesia does have its fair share of relevant laws, regulations, decrees, and associated policies.

Firstly, is Law No. 28 of 2014. The transfer of copyright can be divided into 2 (two) aspects: moral rights and economic rights. The former is written in Article 5 (2) of Law No. 28 of 2014 which declares:

*Moral rights, as referred to in paragraph (1), cannot be transferred while the Creator is still alive. However, the exercise of these rights may be transferred through a will or other lawful means in accordance with legislative provisions after the Creator's death.*²⁷

Contrastingly, Article 16 (2) of Law No. 28 of 2014 asserts that:

Copyright can be transferred or assigned, either wholly or partially, due to:

- a. *inheritance;*
- b. *donation;*
- c. *endowment;*

²⁴ Article 1 (1), Law No. 20 of 2016 on Trademarks and Geographical Indications

²⁵ Article 1 (6), Law No. 20 of 2016 on Trademarks and Geographical Indications

²⁶ Fajar Sugianto, Astrid Athina Indradewi, and Yohanie Maretta, “Book Pirates and Copycats : Infringement That Speaks For Itself” 2, no. 1 (2024): 259–69.

²⁷ Article 5 (2), Law No. 28 of 2014 on Copyright

- d. *will;*
- e. *written agreement; or*
- f. *other lawful reasons in accordance with the provisions of the legislation.*²⁸

Thus, the transfer of a creation is limited to the economic rights attached to a copyright, but not the moral rights of the creation. On one hand, this is in line with the concept of NFTs, especially since copyright can be transferred or assigned by a written agreement, i.e. licensing agreement. On the other hand, it is ambiguous because Law No. 28 of 2014 does not have any specific provisions on resale rights or ones that adhere to the principle *droit de suite* – a legal principle in which a creator receives profit for every sale of their creation in the sales chain – as done in the context of NFTs.²⁹

Secondly, Law No. 11 of 2008, promulgated on 21 April 2008, on Electronic Information and Transactions can be connected to NFTs. Under Article 25 of Law No. 11 of 2008, it is affirmed that:

*Electronic Information and/or Electronic Documents compiled as intellectual works, websites, and the intellectual works contained therein are protected as Intellectual Property Rights under the provisions of the applicable legislation.*³⁰

Additionally, Article 18 (1) (2) of Law No. 11 of 2008 avers that:

- (1) *Electronic Transactions incorporated into an Electronic Contract are binding on the parties.*
- (2) *The parties have the authority to choose the applicable law for the international Electronic Transactions they create.*³¹

Although it builds upon the idea that NFTs are subject to IP rights and that the ‘smart contract’ of NFTs is, indeed, binding, Law No. 11 of 2008 is also ambiguous because it does not have any specific provisions on what jurisdiction NFTs would fall into, in such a way that it would be difficult to regulate them, considering the different number of platforms.

Lastly, is Bank Indonesia Regulation Number 17/3/PBI/2015 of 2015, promulgated on 31 March 2015, on Obligation to Use Rupiah within the Territory of the Unitary State of the Republic of Indonesia. Article 2 of Bank Indonesia Regulation Number 17/3/PBI/2015 of 2015 can be seen as follows:

- (1) *Every party is obligated to use Rupiah in transactions conducted within the territory of the Unitary State of the Republic of Indonesia.*

²⁸ Article 16 (2), Law No. 28 of 2014 on Copyright

²⁹ Gultom, Alif Muhammad and Fitri Astari Asril. “Key Issues of Non-Fungible Token (NFT): How Transfer of Copyright Should Adapt?” (May 2023): 10. <https://perspektif-hukum.hangtuah.ac.id/index.php/jurnal/article/view/197>

³⁰ Article 25, Law No. 11 of 2008 on Electronic Information and Transactions

³¹ Article 18 (1) (2), Law No. 11 of 2008 on Electronic Information and Transactions

- (2) *The transactions referred to in paragraph (1) include:*
- a. *any transaction with the purpose of payment;*
 - b. *settlement of other obligations that must be fulfilled with money; and/or*
 - c. *other financial transactions.*³²

This would mean that cryptocurrency, as a payment instrument for NFTs, has been rendered invalid.³³ This may not be the case for foreign platforms like OpenSea from the United States of America (U.S.A.), Rarible from the Russian Federation, and Binance from the Republic of Singapore since the transactions would have occurred outside the territory of the Unitary State of the Republic of Indonesia, but it does raise the question as to the fate of the NFT platforms within the country such as the Paths to Alangö's NFT collection, launched by the Ministry of Tourism and Creative Economy/Tourism and Creative Economy Agency in collaboration with Quantum Temple.³⁴

C.1.2 Cases and Examples

With that being said, the legal issues and unclear protections as illustrated above do not mean that there have not been any copyright disputes related to NFTs as there are, in fact, plenty. On 25 October 2023, the Court issued a decision on *Yuga Labs, Inc. -v- Ripps, et al.* Based on the Factual Background, Yuga is the creator of one of the world's most well-known and successful NFT collections, known as the Bored Ape Yacht Club (BAYC) whereas Ripps and Cahen are the creators of their own NFT collection, known as the Ryder Ripps BAYC which "*point to the same online digital images as the BAYC [NFT] collection but use verifiably unique entries on the Ethereum blockchain.*"³⁵ This led Yuga to file a complaint against Ripps and Cahen, with the Court concluding that Yuga is the prevailing party concerning the copyright claims.³⁶

Another example is *MIRAMAX, LLC vs. QUENTIN TARANTINO; VISIONA ROMANTICA, INC.; and DOES 1-50*. It started when Tarantino launched an NFT collection, claiming each NFT would reveal a "secret" about his 1994 film. The NFTs

³² Article 2, Bank Indonesia Regulation Number 17/3/PBI/2015 of 2015 on Obligation to Use Rupiah within the Territory of the Unitary State of the Republic of Indonesia

³³ Shintaro Tokuyama Fajar Sugiarto, "The Extended Nature of Trading Norms Between Cryptocurrency and Crypto-Asset: Evidence from Indonesia and Japan," *Lex Scientia Law Review* 8, no. 1 (2024): 193–221, <https://doi.org/https://doi.org/10.15294/lslr.v8i1.14063>.

³⁴ Kemenparekraf/Baparekraf RI. "MOTCE x Quantum Temple Launch NFT Platform to Preserve Cultural Heritage." *Ministry of Tourism and Creative Economy/ Tourism and Creative Economy Agency Republik of Indonesia*, 13 March 2023. <https://kemenparekraf.go.id/en/articles/motce-x-quantum-temple-launch-nft-platform-to-preserve-cultural-heritage>

³⁵ *Yuga Labs, Inc. -v- Ripps, et al*, p. 2

³⁶ *Yuga Labs, Inc. -v- Ripps, et al*, p. 27

were tied to media from the screenplay, which Tarantino still owned the rights to. However, Miramax sued on the grounds of NFTs being an emerging technology it could profit from, and that Tarantino's limited rights to the screenplay did not permit him to create unique NFTs connected to the company's IP. Unlike *Yuga Labs, Inc. -v- Ripps, et al.*, both parties have agreed to settle as notified by the U.S. District Court for the Central District of California.³⁷

In *TAMARINDART, LLC v. Raisa Husain and Owais Husain as Administrators of the Estate of Maqbool Fida Husain*, Tamarind purchased Maqbool Fida Husain's painting, 'Lightning' and proceeded with an NFT project incorporating 62 (sixty two) unique aspects from 'Lightning' after his passing. This sparked backlash from Maqbool Fida Husain's estate which claimed that "although Tamarind owned the physical artwork, it did not own the copyright in the work, and therefore had no right to reproduce, distribute copies or create derivative works based on the work or display it publicly." Regardless, Maqbool Fida Husain's estate agreed to stop alleging that TamarindArt LLC never acquired the copyright to 'Lightning'.³⁸

C.1.3 Enforcement Limitations in a Digital World

Moving forward, enacting new legislation with specific provisions on NFTs can help regulate NFT-related activities. Even so, we must be mindful of enforcement limitations in a digital world. This includes challenges of monitoring, identifying, and enforcing copyright online due to factors like rapid production and distribution, evasion methods by copyright infringers, varying NFT platform policies, and limited accountability of NFT platform users.³⁹

This is exacerbated by jurisdictional challenges of monitoring ownership and copyright violations on decentralized platforms. This is because blockchains are, in essence, 'borderless'. This causes legal uncertainty, especially about resolving disputes, as users are not familiar with who has jurisdiction over NFT-related disputes. Even if jurisdiction is found, blockchain records may cover different jurisdictions,⁴⁰ in which such overlap can lead to a conflict of jurisdiction, presenting itself as a new issue entirely.

³⁷ *MIRAMAX, LLC vs. QUENTIN TARANTINO; VISIONA ROMANTICA, INC.; and DOES 1-50*, p. 1

³⁸ Nickels, Zach. "Hold Your Horses: Personal Property Rights, Licences, Copyright and NFT's." *IR Global*, 26 April 2022, <https://irglobal.com/article/hold-your-horses-personal-property-rights-licences-copyright-and-nfts/>

³⁹ Rahman, Zeeshan. "Enforcing Copyright on Online Streaming Platforms: Challenges Faced by Rights Holders in the Digital Era." *International Journal for Multidisciplinary Research (IJFMR) Volume 5, Issue 5* (September-October 2023): 7-12. <https://www.ijfmr.com/papers/2023/5/8075.pdf>

⁴⁰ ABOU NAJA Intellectual Property. "Blockchain Technology: Impact on Intellectual Property." Accessed 2 December 2024. <https://abounaja.com/blog/blockchain-technology-and-intellectual-property>

Hence, copyright challenges in Indonesia arising from NFTs include both ‘in the book’ and ‘in action’. It is important to consider both what is normative and what is concrete to be consistent with each other. This is in accordance with the principle of *das sollen* and *das sein*, which means what is and what ought to be. For Hans Kelsen, *sollen* is the validity as a prerequisite for the existence of positive law, whereas *sein* is the value as the foundation for natural law. In other words, solutions to the research questions formulated above – whether NFTs have given rise to copyright challenges in Indonesia, and whether NFTs can potentially be used as collateral – must have 2 (two) layers. Firstly, to ensure NFTs can be regulated within our society. Secondly, to ensure that NFT-related regulations are also implemented properly in practice.

C.2 Legal and Practical Considerations of Using Non-Fungible Tokens as Collateral

Despite having a multitude of challenges, NFTs introduces great potential in certain aspects. NFTs are intangible assets in nature, representing a unique form of asset through digital ownership. Unlike other digital currencies such as cryptocurrencies or other forms of fungible assets, each NFT is distinct and irreplaceable. This raises the question of whether and how these tokens, which embody IP or are linked to IP rights, can function as collateral in financial transactions. In theory, the use of NFTs as collateral in financial transactions may be beneficial as each asset is unique and has its own “value” similar to paintings of famous painters alike. Offering a unique asset value to its owner, similarly to any asset NFTs can be traded for its monetary value. However, unlike collateral, its intangible nature which is often linked to IP rights does not transfer to the NFT holder unless explicitly provided for in licensing agreements. This complicates their use in secured transactions and requires proper legal regimes to address the intersection of intellectual property protection and financial regulation. Below, we study (1) the concept of using NFTs as collateral, (2) its legal requirements and challenges, as well as (3) its precedents and international perspectives.

C.2.1 Concept of Using Non-Fungible Tokens as Collateral

Using assets as a means to secure a loan would involve appraisal or identifying the valuation of the asset itself, in the case of NFTs, the value of the asset is driven by variables such as; market demand; utility; rarity; provenance; and other instances the intellectual property attached to the NFT itself. These methods of valuation of an NFT can further be divided into a few approaches namely:

- a. Asset approach

The asset approach to valuation derives an asset's value through its underlying assets and subtracting its current obligations.

b. Cost Approach

The cost approach can be utilized to derive the asset's value through the opportunity costs as a proxy to the observable value. This method is typically relied upon as the method of valuation when information asymmetry occurs.

c. Market Approach

The market approach of valuation derives the value of an asset by comparing and the observation of similar NFTs currently in the market, which can be done by comparing NFTs from the same artists or collection. This approach to valuation will assume that similar NFTs can be sold at relatively similar prices.

d. Quality Theory of Money

In considering other variables, the quality theory of money valuation approach observes the changes in the overall economy or currency that the asset was purchased with, therefore if the currency rises so will the value of the NFT purchased.

Consequently, after the valuation of the asset, to ensure its security as collateral smart contracts can be employed for the duration of the loan. Smart contracts are programs that are run alongside the blockchain's distributed ledger, with the intended goal of creating a global network.⁴¹ Where each node in the blockchain network maintains an instance of a virtual machine and the state of this virtual machine is synchronized throughout this blockchain network.⁴² Smart contract platforms will control the environment in which the business transaction occurs, designed to create identical, predetermined execution environments on every node in the network. These programs will execute actions based on the preprogrammed conditions that are met and verified, such as the release of the NFT in the instance that the debtor defaults on its loan payment. In theory, if every node runs the same code in identical environments, providing identical predictable results, allowing a trade environment where both decentralization and synchronization can occur at the same time.⁴³ The goal for

⁴¹IBM. "What Are Smart Contracts on Blockchain?" Accessed 30 November 2024. <https://www.ibm.com/topics/smart-contracts>.

⁴² Poston III, Howard E. *Blockchain Security from the Bottom Up: Securing and Preventing Attacks on Cryptocurrencies, Decentralized Applications, NFTs, and Smart Contracts*. Hoboken, New Jersey: John Wiley & Sons, Inc, 2022.

⁴³ S R Giovani and S S Entoh, "Peran Hak Kekayaan Intelektual Terhadap UMKM Ditinjau Dari Aspek Hukum Dan Ekonomi Indonesia," *Anthology: Inside Intellectual Property Rights*, 2024, 184–207, <https://ojs.uph.edu/index.php/Anthology/article/view/8259%0Ahttps://ojs.uph.edu/index.php/Anthology/article/viewFile/8259/3881>.

decentralization from government institutions and creating global synchronization alongside global transparency is in line with the intended goal of digital currencies. In its essence, smart contracts allow the creditor to have a more guaranteed security right to reclaim the asset in cases of default while allowing the debtor to still possess ownership over the asset if the loan is successfully paid; the automation of this process ensures the rights of the parties are guaranteed when the right conditions are met.

C.2.1.1 Advantages of NFTs as Collateral

The rising surge of technological infrastructure allows the use of NFTs as collateral in loan agreements to be lucrative. NFTs uniqueness allows some degree of value retention to its price as it is less likely to be reproduced compared to other forms of intellectual property which may be devalued due to replicas. As stated by Luke Kelly, a Utah Museum of Fine Arts associate curator of collections “*Provenance essentially is the recorded journey of an artwork from its origin through one or more owners to the present day...*”,⁴⁴ through blockchain technology provenance can be easily traced ensuring the history and ownership of the NFT allowing for more transparency during transactions. Additionally, the usage of smart contracts allows for more efficiency during transactions as it allows steps to be automated and ensures secure execution of agreements, further reducing the need for intervention such as by the courts. Lastly, the NFTs global market allows creditors a broader market for liquidation of the NFTs in case of debtor default, in comparison to land or property as collateral which are tangible and fixed geographically.

C.2.1.2 Disadvantages of NFTs as Collateral

Market volatility will be a big aspect to be considered in using NFTs as collateral. In deciding investments Loan to Value (LTV) ratio is a crucial part of consideration, the ratio takes into account the risk borne by the creditor by determining the maximum amount of a secure loan based on the current market value of the asset pledged as collateral.⁴⁵ Through assessing the ratio, creditors can determine the level of risk they are willing to take on, for example when a debtor acquires a loan to buy a car, and the loan requested is near to the value of the car itself, it is presumed that the loan will have

⁴⁴Kelly, Luke. “What is Provenance — and Why Does It Matter?” *Utah Museum of Fine Arts*, 2021. <https://umfa.utah.edu/what-is-provenance#:~:text=Provenance%20essentially%20is%20the%20recorded,part%20of%20a%20larger%20collectio>
[n.](https://umfa.utah.edu/what-is-provenance#:~:text=Provenance%20essentially%20is%20the%20recorded,part%20of%20a%20larger%20collectio)

⁴⁵BDC. “Loan-to-value ratio.” Accessed 30 November 2024 <https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/templates-business-guides/glossary/loan-to-value-ratio>.

a higher LTV ratio. Meaning, that it can be assumed that the debtor has a greater chance of defaulting on the loan.

Additionally, it should be noted that not all NFTs are valued equally. The use of NFTs as collateral heavily relies upon the secondary market, similarly to other works of art not all works will be valued equally. Certain high-demand or popular NFTs would have high interest in the secondary market allowing the asset to be liquid, while those of lower demand can remain an illiquid asset.

Risk mitigation is highly important for creditors, considering the volatility of NFTs. Loan covenants can be implemented when using NFT-backed loans to offset risks, implemented within the agreement to ensure the protection of the creditor's financial interests.⁴⁶ In most cases, loan covenants are terms and conditions that are presented within the contract which can range from only a certain percentage of the loan being covered by the collateral;⁴⁷ while the remaining amount requires other generally "less volatile" assets to be used as collateral alongside the NFT or higher loan interests due the volatility of the NFT.

C.2.2 Legal Requirements and Challenges

2 (two) main legal issues are crucial to address to ensure the use of NFTs as collateral is safe and efficient. Firstly, information transparency should be regulated throughout the different platforms to address ownership and legal rights. Ownership of the underlying asset (the IP rights) is typically not transferred with the purchase of an NFT, instead NFTs typically only carry limited usage rights of the IP itself. Therefore buyers should exercise *caveat emptor*,⁴⁸ before the purchase of an asset to ensure buyers are aware of their rights to use such NFTs. Although there have been limited instances where the underlying IP Rights are transferred with the NFTs such as in the case of Nike's 'CryptoKicks',⁴⁹ buyers should remain cautious when approaching such assets similar to other forms of investment. Unless stipulated otherwise, the purchase of an NFT of a digital work does not immediately transfer rights of copyright or other forms

⁴⁶Peterdy, Kyle. "Loan Covenant." *CFI*, <https://corporatefinanceinstitute.com/resources/commercial-lending/loan-covenant/>.

⁴⁷TRUIST. "Understanding loan covenants." Accessed 30 November 2024. <https://www.truist.com/resources/commercial-corporate-institutional/financing/articles/understanding-loan-covenants>.

⁴⁸Legal Information Institute. "Caveat Emptor." July 2022. https://www.law.cornell.edu/wex/caveat_emptor.

⁴⁹ McDowell, Maghan. "Nike and Rtfkt take on digital fashion with first "Cryptokick" sneaker." *Vogue Business*, 23 April 2022. <https://www.voguebusiness.com/technology/nike-and-rtfkt-take-on-digital-fashion-with-first-cryptokick-sneaker>.

of IP rights to the NFT buyer, making it legally invalid for the NFT owner to utilize it as collateral in a financial transaction.

Secondly, the transfer of rights shall comply with the license agreement regulations which will be dependent on the platform's terms of use. Due to the digital market also being a global one, enforcement of IP Laws can be challenging with different legal regimes.⁵⁰ In its essence, the current state of the NFT market is based on license agreements that dictate the limits of rights transferred to the NFT holders; ambiguities within the different platforms may cause legal ambiguities and confusion among buyers, especially in Indonesia. As a result, with the current limited legal provisions surrounding the digital market the current state of NFTs in Indonesia remains uncertain as an intellectual asset. Furthermore, lack of regulation may also create challenges when disputes regarding ownership or IP infringement arise, creating further uncertainty on the status of such assets' collateral.

C.2.3 Precedents and International Perspectives

C.2.3.1 Limited Licensing Models

As stated previously, there are currently limited licensing models that allow greater scope to certain limited IP rights to an NFT purchase. One of the examples was 'CryptoKicks' by Nike after its patent was granted in 2019 which would allow Nike to tokenize the ownership of a shoe design matching its NFT to a physical shoe⁵¹. Nike has subsequently launched its first ever shoes under the CryptoKicks lineup in mid-2022,⁵² allowing the owners of Rtfkt's Mnlth, a mysterious digital box NFT that was airdropped, for free, to anyone who owned a Clone-X in February of 2022. The current model is observed as a way for brands to further create an engaging relationship with their consumer base, allowing the owners of the NFT to create shoe designs.

C.2.3.2 Decentralized Finance (DeFi) Platform

Although limited, there are current DeFi platforms such as NFTfi and Arcade which facilitate loans with NFTs as collateral. These DeFi platforms provide peer-to-peer lending which can be backed by NFTs as collateral.⁵³ On Arcade, NFTs with

⁵⁰ Billy Sugihono, David Ciang, and Jeff Antonio Yeo, "Perlindungan Hukum Konten Hak Cipta Dalam Ekonomi Kreatif Berbasis Teknologi Digital-Revolusi Industri Dan Bisnis Indonesia Era 5.0," *Anthology 2*, no. 1 (2024): 49–72.

⁵¹ Mukaddam, Farah. "NFTs and Intellectual Property Rights." *Norton Rose Fulbright*, Oktober 2021. <https://www.nortonrosefulbright.com/de-de/wissen/publications/1a1abb9f/nfts-and-intellectual-property-rights>.

⁵² McDowell, Maghan. "Nike and Rtfkt take on digital fashion with first "Cryptokick" sneaker." *Vogue Business*, 23 April 2022. <https://www.voguebusiness.com/technology/nike-and-rtfkt-take-on-digital-fashion-with-first-cryptokick-sneaker>.

⁵³Nftfi. "How NFT lending works." Accessed 30 November 2024. <https://nftfi.com/how-it-works/>.

specific loan terms may receive offers or choose to deposit them into a Vault for quick NFT borrowing options. As a creditor, in cases of loan default, the NFTs used as collateral may be collected or the creditors may choose to extend the loan repayment period.⁵⁴

C.2.3.3 International Jurisdictions

For an NFT to be used as collateral, it establishes its status as an “asset” or “property”. Currently, such status remains unrecognized globally except in states such as Singapore, which based on an unprecedented Singapore High Court ruling has acknowledged NFTs as “property”.⁵⁵ With its common law system, this case is significant not only because it is the first judicial decision in Asia that recognizes the protections of an NFT, which deals with whether NFTs are counted as assets. The case between *Janesh s/o Rajkumar v. Unknown Person* would create a precedent for future rulings in Singapore, allowing NFTs and their associated IP rights to be used as collateral in loan agreements.⁵⁶

In addition to Singapore, other jurisdictions such as the European Union’s Markets in Crypto-Assets have regulated some aspects of digital currencies; its current plans to develop guidelines for handling NFTs are yet to be released. Global implementation of NFT regulation remains limited at this time.

D. Recommendation and Conclusion

After discussing NFTs’ impact on copyright law enforcement in Indonesia and whether NFTs can be used as collateral, we shall proceed to our final section where we provide 3 (three) (1) recommendations, and (2) conclude our answers.

D.1 Recommendation

With the current infrastructure of the Indonesian law system, remaining inadequate to facilitate NFT-backed loans, certain steps can be considered. Firstly, establishing its stance of either recognizing NFTs as assets or rejecting their status as assets remains the main target. The lack of conversation or confirmation from the

⁵⁴NFTevening,. “What is NFT Lending and How Does It Work?” *NFTevening*, 25 November 2024. <https://nftevening.com/what-is-nft-lending/#:~:text=Arcade%20is%20a%20DeFi%20platform,assets%20as%20loans%20to%20others..>

⁵⁵THE HIGH COURT OF THE REPUBLIC OF SINGAPORE [2022] SGHC 264

⁵⁶ Choo & Lam, Thomas & Zhen Guang. “Singapore High Court recognises NFTs as a form of property.” *Clyde & Co*, 21 November 2022. <https://www.clydeco.com/en/insights/2022/11/singapore-high-court-recognises-nfts-as-a-form-of#:~:text=On%201%20October%202022%2C%20the,earlier%20in%20May%20this%20year..>

government creates room for legal ambiguities among citizens which will remain unprotected if an issue arises.

Secondly, if Indonesia decides to legally recognize NFTs as assets the introduction of specific targeted laws that address mechanisms of valuation, ownership verification, licensing models, and an updated IP Law that covers digital ownership such as NFTs can be increasingly beneficial. In drafting such laws, Indonesia should also take into account international standards and mechanisms that are employed not only as learning tools to create an efficient regulatory system but also to ensure seamless compatibility with international standards. Blockchain technology remains a decentralized system, meaning laws that reflect global changes would allow Indonesia to participate more actively in global trade.

Thirdly, in drafting regulation, Indonesia should take into account possibly addressing concerns such as forged NFTs, malicious NFTs, platform centralization, and Off-Chain asset storage as security threats. Additionally, as the usage of NFT-backed loans heavily relies on smart contracts, threat modeling of smart contracts such as using the STRIDE Model (*Spoofing, Tampering, Repudiation, Information Disclosure, Denial of Service, and Elevation of Privileges*),⁵⁷ may provide an added layer of security and legal certainty.

Moreover, although Indonesia is not alone in its lack of adequate regulation surrounding NFTs, if the government does choose to recognize NFTs as assets it may be advisable to navigate such complex regulatory frameworks through collaboration with international organizations such as WIPO. This ensures that Indonesia's legal development remains in line with the fast-growing digital market, fostering economic growth whilst establishing the appropriate IP protections among creatives and protecting consumer rights.

D.2 Conclusion

The sudden growth in popularity of NFTs in recent years, has undeniably reshaped the way intellectual products are viewed. Such a rapid shift in the landscape has also undoubtedly impacted how the Indonesian legal system is able to address new challenges and concerns. Through this study, it was evident that while NFTs have shown great potential to revolutionize ownership systems of intellectual products and loan collateral mechanisms, they simultaneously brought a new set of legal challenges

⁵⁷ Poston III, Howard E. *Blockchain Security from the Bottom Up: Securing and Preventing Attacks on Cryptocurrencies, Decentralized Applications, NFTs, and Smart Contracts*. Hoboken, New Jersey: John Wiley & Sons, Inc, 2022.

and enforcement limitations that has been a challenge to address globally. These challenges remain deeply prominent due to legal ambiguities surrounding the transfer of IP rights itself, the lack of jurisdictional authority within the use of decentralized platforms, and the lack of targeted legal frameworks addressing the unique challenges brought by NFTs.

Despite the fact that it is clear that Indonesia's legal framework remains inadequate, there is still potential for NFTs to contribute positively to the economy if Indonesia is capable of keeping up with international standards of regulation in the near future. A regulatory framework designed on how NFTs can be implemented as assets, alongside further regulation for its valuation, ownership verification, and establishing its jurisdiction, could mitigate risks and ensure a secure environment for Indonesia to take part in the use NFT based transactions. Furthermore, it may be beneficial for Indonesia to implement systems that leverage blockchain technology's transparency and efficiency such as the use of smart contracts to limit investor risks and streamline NFT related transactions.

Moreover, international precedents, such as Singapore's recognition of NFTs as property, highlights the importance of a proactive approach in adapting legal systems to the rapidly evolving digital industry. Indonesia may adopt global practices and by collaborating with international organizations like WIPO, in designing a comprehensive framework that prioritizes safeguarding the rights of creators (IP owners), buyers, investors, and financial institutions involved in such transactions.

Ultimately, the paradoxical nature of NFTs will demand for a balanced approach which is capable of addressing its legal complexities while harnessing its full economic potential. Future legal reforms must adequately integrate the developing technology, promote consumer protection and increase awareness to ensure NFTs are effectively utilized without threatening Indonesia's legal and economic systems.

BIBLIOGRAPHY

Laws and Regulations

1945 Constitution

Law No. 19 of 2002 on Copyright

Law No. 11 of 2008 on Electronic Information and Transactions

Law No. 12 of 2011 on Formulation of Laws and Regulations

Law No. 28 of 2014 on Copyright

Law No. 20 of 2016 on Trademarks and Geographical Indications

Government Regulation No. 56 of 2021 on Management of Copyright Royalties for Songs and/or Music

Bank Indonesia Regulation Number 17/3/PBI/2015 of 2015 on Obligation to Use Rupiah within the Territory of the Unitary State of the Republic of Indonesia

Books

Poston III, Howard E. *Blockchain Security from the Bottom Up: Securing and Preventing Attacks on Cryptocurrencies, Decentralized Applications, NFTs, and Smart Contracts*. Hoboken, New Jersey: John Wiley & Sons, Inc, 2022.

Scientific Journals

Damodaran, Aswath. "Valuation Approaches and Metrics: A Survey of the Theory and Evidence." *Foundations and Trends® in Finance*, volume 1, no 8, (November 2006): pp 693-784. <http://dx.doi.org/10.1561/0500000013>.

Fajar Sugianto, Shintaro Tokuyama. "The Extended Nature of Trading Norms Between Cryptocurrency and Crypto-Asset: Evidence from Indonesia and Japan." *Lex Scientia Law Review* 8, no. 1 (2024): 193-221. <https://doi.org/10.15294/lslr.v8i1.14063>.

Giovani, S R, and S S Entoh. "Peran Hak Kekayaan Intelektual Terhadap UMKM Ditinjau Dari Aspek Hukum Dan Ekonomi Indonesia." *Anthology: Inside Intellectual Property Rights*, 2024, 184-207. <https://ojs.uph.edu/index.php/Anthology/article/view/8259>.

Gultom, Alif Muhammad and Fitri Astarti Asril. "Key Issues of Non-Fungible Token (NFT): How Transfer of Copyright Should Adapt?" (May 2023): 10. <https://perspektif-hukum.hangtuah.ac.id/index.php/jurnal/article/view/197>

Hokianto, Hugo Fostin. "Non-Fungible Tokens: A Literature Review." *SaNa: Journal of Blockchain, NFTs and Metaverse Technology* 1, no. 1 (August 2023): 1-3. <https://doi.org/10.58905/sana.v1i1.32>.

Murray, Michael D. "Transfers and Licensing of Copyrights to NFT Purchasers." *Stanford Journal of Blockchain Law & Policy*, volume 6, no. 1 (January 2023): 119; 123. <https://assets.pubpub.org/i7k40p13/41673329390078.pdf>.

Rahman, Zeeshan. "Enforcing Copyright on Online Streaming Platforms: Challenges Faced by Rights Holders in the Digital Era." *International Journal for Multidisciplinary Research (IJFMR) Volume 5, Issue 5* (September-October 2023): 7-12. <https://www.ijfmr.com/papers/2023/5/8075.pdf>

Sugianto, Fajar, Astrid Athina Indradewi, and Yohanie Mareta. "Book Pirates and

Copycats: Infringement That Speaks For Itself” 2, no. 1 (2024): 259–69.

<https://ojs.uph.edu/index.php/Anthology/article/view/8512>

Sugihono, Billy, David Ciang, and Jeff Antonio Yeo. “Perlindungan Hukum Konten Hak Cipta Dalam Ekonomi Kreatif Berbasis Teknologi Digital-Revolusi Industri Dan Bisnis Indonesia Era 5.0.” *Anthology: Inside Intellectual Property Rights* 2, no. 1 (2024): 49–72. <https://ojs.uph.edu/index.php/Anthology/article/view/8250>

Court Decisions

Supreme Court Decision 2192 K/PID.SUS/2009

MIRAMAX, LLC vs. QUENTIN TARANTINO; VISIONA ROMANTICA, INC.; and
DOES 1–50

THE HIGH COURT OF THE REPUBLIC OF SINGAPORE [2022] SGHC 264

Yuga Labs, Inc. -v- Ripps, et al

Internet Media

Becker, Sam. “How to buy NFTs in 4 easy steps.” *Business Insider*, 20 July 2024.

<https://www.businessinsider.com/personal-finance/investing/how-to-buy-nfts>

Campbell, Tessa. “What are NFTs? A beginners guide to non-fungible tokens” *Business Insider*, 11 October 2024.

<https://www.businessinsider.com/personal-finance/investing/nft-meaning>

Choo & Lam, Thomas & Zhen Guang. “Singapore High Court recognises NFTs as a form of property.” *Clyde & Co*, 21 November 2022.

<https://www.clydeco.com/en/insights/2022/11/singapore-high-court-recognises-nfts-as-a-form-of#:~:text=On%2021%20October%202022%2C%20the,earlier%20in%20May%20this%20year.>

EY Global. “Five legal considerations for businesses taking a lead on NFTs.” *EY*, 1 February 2023.

https://www.ey.com/en_ch/insights/tax/five-legal-considerations-for-businesses-taking-a-lead-on-nfts

Howcroft, Elizabeth. “NFT sales hit \$25 billion in 2021, but growth shows signs of slowing.” *Reuters*, 11 January 2022.

<https://www.reuters.com/markets/europe/nft-sales-hit-25-billion-2021-growth-shows-signs-slowing-2022-01-10/>

Kelly, Luke. “What is Provenance – and Why Does It Matter?” *Utah Museum of Fine Arts*, 2021.

<https://umfa.utah.edu/what-is->

[provenance#:~:text=Provenance%20essentially%20is%20the%20recorded,part%20of%20a%20larger%20collection.](#)

Kemenparekraf/Baparekraf RI. "MOTCE x Quantum Temple Launch NFT Platform to Preserve Cultural Heritage." *Ministry of Tourism and Creative Economy/ Tourism and Creative Economy Agency Republik of Indonesia*, 13 March 2023. <https://kemenparekraf.go.id/en/articles/motce-x-quantum-temple-launch-nft-platform-to-preserve-cultural-heritage>

Low, Dominic. "NFTs can be considered property, Singapore High Courts rules." *The Straits Times*, 24 October 2022. <https://www.straitstimes.com/singapore/nfts-can-be-considered-property-singapore-high-court-rules>.

McDowell, Maghan. "Nike and Rtfkt take on digital fashion with first "Cryptokick" sneaker." *Vogue Business*, 23 April 2022. <https://www.voguebusiness.com/technology/nike-and-rtfkt-take-on-digital-fashion-with-first-cryptokick-sneaker>

McLean, Caitlin. "Who invented the Internet? Everything you need to know about the history of the Internet." *USA Today*, 28 August 2022. <https://www.usatoday.com/story/tech/2022/08/28/when-was-internet-created-who-invented-it/10268999002/>

Mukaddam, Farah. "NFTs and Intellectual Property Rights." *Norton Rose Fulbright*, Oktober 2021. <https://www.nortonrosefulbright.com/de-de/wissen/publications/1a1abb9f/nfts-and-intellectual-property-rights>

NFTevening,. "What is NFT Lending and How Does It Work?" *NFTevening*, 25 November 2024. <https://nftevening.com/what-is-nft-lending/#:~:text=Arcade%20is%20a%20DeFi%20platform,assets%20as%20loans%20to%20others.>

Nickels, Zach. "Hold Your Horses: Personal Property Rights, Licences, Copyright and NFT's." *IR Global*, 26 April 2022, <https://irglobal.com/article/hold-your-horses-personal-property-rights-licences-copyright-and-nfts/>

Peterdy, Kyle. "Loan Covenant." *CFI*. <https://corporatefinanceinstitute.com/resources/commercial-lending/loan-covenant/>

Veradittakit, Paul. "NFTFi." *VeradiVerdict*, 9 November 2023. <https://www.veradiverdict.com/p/nftfi>

Wade, Jacob. "How to Create an NFT." *Investopedia*, 13 July 2024. <https://www.investopedia.com/how-to-create-an-nft-6362495>

- BDC. "Loan-to-value ratio." Accessed 30 November 2024. <https://www.bdc.ca/en/articles-tools/entrepreneur-toolkit/templates-business-guides/glossary/loan-to-value-ratio>.
- ABOU NAJA Intellectual Property. "Blockchain Technology: Impact on Intellectual Property." Accessed 2 December 2024. <https://abounaja.com/blog/blockchain-technology-and-intellectual-property>
- Eurojust. "Non-Fungible Tokens and Intellectual Property Rights - Eurojust." Accessed 21 November 2024. <https://www.eurojust.europa.eu/sites/default/files/assets/eurojust-nfts-intellectual-property-rights-flyer.pdf>
- IBM. "What Are Smart Contracts on Blockchain?" Accessed 30 November 2024. <https://www.ibm.com/topics/smart-contracts>
- Investopedia. "Digital Asset: Meaning, Types, and Importance." Accessed 20 November 2024. <https://www.investopedia.com/terms/d/digital-asset-framework.asp>
- Investopedia. "Non-Fungible Token (NFT): What It Means and How It Works." Accessed 20 November 2024. [https://www.investopedia.com/non-fungible-tokens-nft-5115211#:~:text=Non%2Dfungible%20tokens%20\(NFTs\),are%20stored%20in%20other%20places](https://www.investopedia.com/non-fungible-tokens-nft-5115211#:~:text=Non%2Dfungible%20tokens%20(NFTs),are%20stored%20in%20other%20places)
- LCX. "The History of NFTs." Accessed 20 November 2024. <https://www.lcx.com/the-history-of-nfts/>
- Nftfi. "How NFT lending works." Accessed 30 November 2024. <https://nftfi.com/how-it-works/>
- TRUIST. "Understanding loan covenants." Accessed 30 November 2024. <https://www.truist.com/resources/commercial-corporate-institutional/financing/articles/understanding-loan-covenants>
- U.S. Copyright Office. "Definitions (FAQ)." Accessed 29 November 2024. <https://www.copyright.gov/help/faq/faq-definitions.html>
- World Intellectual Property Organization (WIPO). "Copyright - WIPO." Accessed 20 November 2024. <https://www.wipo.int/copyright/en/>
- World Intellectual Property Organization (WIPO). "What is Intellectual Property?" Accessed 20 November 2024. <https://www.wipo.int/about-ip/en/>
- Legal Information Institute. "Caveat Emptor." July 2022. https://www.law.cornell.edu/wex/caveat_emptor.

