Asy-Syir'ah
Jurnal Ilmu Syari'ah dan Hukum

P-ISSN 0854-8722 | E-ISSN 2443-0757
Vol. 60, No. 1, 2026, pp. 62–87
https://doi.org/10.14421/ajish.v60i1.1674

Techno-Sharia in the Age of Intangible Assets: Digital Inheritance of Metaverse Property

Ahmad Muntazar[a*], Syafruddin[b], Oneng Nurul Bariyah[c] & Fouad Larhzizer[d]

[a]Department of Family Law, Universitas Muhammadiyah, Makassar, Indonesia
[b]Department of Islamic Religious Education, IAI Al-Aqidah Al-Hasyimiyyah, Jakarta, Indonesia
[c]Department of Islamic Economics, UIN Syarif Hidayatullah, Jakarta, Indonesia
[d]Dialogue of Civilizations and Comparative Religion, Hassan First University, Settat, Morocco
[*]ahmadmuntazar@unismuh.acid

Abstract

The emergence of intangible digital assets within the Metaverse, notably Non-Fungible Tokens (NFTs) adhering to the ERC-721 and ERC-1155 standards, presents significant challenges to Islamic inheritance law (*farāʾiḍ*), which has traditionally been predicated on tangible notions of property. Situated within the nascent discourse of Techno-Sharia, this study undertakes a reconstruction of the classical concept of *māl* (property) to ascertain the legal status and inheritability of such digital assets. Utilizing a qualitative, library-based methodology, the research employs a *taḥlīlī* (analytical) and *muqāran* (comparative) fiqh approach to deconstruct juristic criteria of māl and apply them to blockchain-based assets. The findings indicate that Metaverse assets satisfy the three fundamental conditions of *māl*: recognized market value (*al-taqawwum*), permissible utility (*al-manfaʿah*), and exclusive control through cryptographic ownership, which functions as a contemporary analogue to *al-ḥiyāzah* (possession). Accordingly, these assets qualify as part of the *tirkah* (inheritable estate). Nonetheless, their inclusion introduces considerable challenges for the implementation of *farāʾiḍ*, including inaccessible wallets resulting from lost private keys (rendering assets *māl ḍāʾiʿ*), valuation volatility (*taqwīm*), indivisibility (*qismah*), and conflicts between immutable smart contracts and Sharia-based distribution principles. This study proposes the adoption of fractionalized NFTs (fNFTs) and the development of Sharia-compliant smart contracts to ensure accessibility, validity, and justice in digital inheritance practices.

Keywords

Techno-Sharia; Intangible Assets; Digital Inheritance; Metaverse Property; Non-Fungible Tokens (NFTs)

Introduction

The twenty-first century has ushered in a new economic and social frontier known as the Metaverse, a persistent and shared virtual environment that integrates augmented reality, virtual reality, and decentralized finance. Although recent scholarship has examined the general permissibility of digital assets within Islamic law, these studies predominantly address the digital domain in a holistic manner without analyzing its underlying cryptographic structures. This digital ecosystem is rapidly transforming global trade and consumption patterns, driven by advancements in blockchain technology and an expanding youth consumer base actively engaging with digital assets.[1] Consequently, a significant knowledge gap persists regarding the extent to which specific

[1] Haryati, Junaidi, and Abdul Mughits, "Wealth and Its Acquisition in the Metaverse from the Perspective of Islamic Economic Law," *Az-Zarqa: Jurnal Hukum Bisnis Islam* 16, no. 2 (2025): 152–177; Dicki Surya Dharma,

cryptographic architectures align with the stringent material principles of classical fiqh. This study addresses these practical concerns by focusing specifically on tangible analogs such as virtual real estate in Decentraland and emerging asset classes like Non-Fungible Tokens (NFTs), which are governed by the ERC-721 and ERC-1155 smart contract standards. Within these virtual environments, NFTs have become crucial mechanisms for authenticating ownership and facilitating transactions, thereby representing a paradigm shift in the manner in which value is held and exchanged.[2]

Despite the substantial economic growth associated with virtual assets, their legal status remains highly complex and unresolved. Traditional legal frameworks, which were developed for physical objects and centralized intermediaries, face considerable challenges in adequately categorizing and regulating non-fungible tokens (NFTs).[3] This situation generates significant uncertainty regarding the fundamental classification of these assets—whether they should be considered securities, traditional property, or intellectual property—each classification bearing important implications for taxation and ownership rights.[4] The prevailing view in international legal scholarship is that existing laws frequently fail to accommodate the distinctive characteristics of the Metaverse, thereby necessitating urgent discussions on the development of comprehensive legal frameworks specifically designed for this virtual environment.[5] There is an imperative need for clear definitions and regulations concerning virtual asset ownership, intellectual property rights, and consumer protection within a marketplace susceptible to novel forms of fraud.[6]

The emerging virtual economy poses a significant, urgent, and largely unaddressed challenge to the global Muslim population, impacting not only secular legal systems but also the fundamental principles of Islamic law. This disruption has been increasingly documented in recent scholarship, which highlights the tensions between decentralized digital realities and traditional fiqh frameworks.[7] A primary area of conflict is Islamic inheritance law, or *farāʾiḍ*, a divinely ordained, comprehensive, and obligatory system governing wealth distribution. According to Islamic law, upon the death of a Muslim, their entire estate (*tirkah*) is subject to the immutable rules of *farāʾiḍ*, which allocate fixed shares to designated heirs. The advent of valuable, code-based assets such as

"Regulating the Metaverse: Ensuring Legal Protection and Intellectual Property Rights in the Digital Landscape," *Indonesian Law Journal* 16, no. 2 (2023): 161–184.

2 Shrushti Zade, Sakshi Atrik, and Aarti Pimpalkar, "Metaverse and NFT Blockchain," *Indian J. Comput. Sci. Technol.* (2024): 50–54.

3 Paul Atagamen Aidonojie et al., "The Prospect and Legal Issues of Income Tax in the Nigerian Metaverse," *Trunojoyo Law Review* 6, no. 1 (2024): 17–50; Pinar Caglayan Aksoy, "The Regulation of NFTs: Much Ado About Nothing?," *Business Law Review* 44, no. 4 (2023): 128–145.

4 Paul Atagamen Aidonojie et al., "The Prospect and Legal Issues of Income Tax"; Zhong Chen, "Building a Legal Framework for the Metaverse: Digital Identity, NFT Property Rights, and Global Legal Structures," *DSVG* 1, no. 1 (2025): 52–71.

5 Oleksii Kostenko et al., "Genesis of Legal Regulation of the Web and the Model of the Metaverse Electronic Jurisdiction," *Information and Law* 1, no. 48 (2024): 68–83,; Kyoung Shin Park, "The Study on IPR Issues Surrounding Uses of NFTs in Metaverse," *Law Research Institute Chungbuk National University* 13, no. 2 (2022): 83–121.

6 Dicki Surya Dharma, "Regulating the Metaverse: Ensuring Legal Protection and Intellectual Property Rights in the Digital Landscape," *Indonesian Law Journal* 16, no. 2 (2023): 161–184,; Aloysius Ansell Saerang, Meita Kristalina Laman, and Setiani Putri Hendratno, "Accounting Profession in Metaverse Era—NFT," *E3S Web of Conferences* 426 (2023): 02052.

7 Rim Hasan, "Metaverse through the Lens of Shariah: A Systematic Literature Review," *Journal of Islamic Marketing* 14, no. 11 (2023): 2714–2735; Haryati, Junaidi, and Abdul Mughits, "Wealth and Its Acquisition in the Metaverse from the Perspective of Islamic Economic Law," *Az-Zarqa: Jurnal Hukum Bisnis Islam* 16, no. 2 (2025): 152–177.

non-fungible tokens (NFTs) raises significant concerns for this established system. Traditional *farāʾiḍ* frameworks were inherently designed for the distribution of tangible assets, with detailed principles regulating the division of physical property. Addressing this tension requires an ontological paradigm shift within Islamic legal theory, moving from a Physical-Materialist to a Digital-Functionalist perspective. Consequently, the central question this research addresses is foundational: do these intangible, code-based assets qualify as inheritable property (*māl*) under Islamic law?

This paper contends that Metaverse assets constitute a novel category of property that challenges even the most developed definitions of *māl* within Islamic jurisprudence. The jurisprudential gap extends beyond mere intangibility to encompass the distinctive characteristics of blockchain-based assets. These assets problematize traditional conceptions of *māl*, which are fundamentally grounded in physical possession (*ḥiyāzah*) and tangibility (*ʿayn*). This issue is particularly pronounced within the strict Ḥanafī school, which mandates physical custody (*taḥayyuz*) and custodial storage (*iḥrāz*). Classical jurisprudence maintains a clear conceptual nexus between property and physicality (*ʿayn*), understood as the capacity for direct perception and control.[8] The intangible nature of non-fungible tokens (NFTs) renders their classification as ʿayn ambiguous, necessitating a nuanced technical and jurisprudential inquiry into whether an NFT—essentially metadata referencing a digital file—constitutes an *ʿayn* or merely an attribute (*ṣifah*).[9] More critically, these assets challenge the traditional notion of *ḥiyāzah* (possession), which is classically associated with the physical act of taking possession—a concept that proves difficult to define in the context of digital ownership.[10] Control over such assets is frequently mediated by decentralized platforms and immutable smart contracts, thereby transforming the conventional understanding of direct, physical *ḥiyāzah*.[11] This underscores a fundamental gap: how can cryptographic code fulfill the requirement of *ʿayn* within the traditionally materialistic framework of classical fiqh, and does exclusive control via private keys suffice to legitimize possession?

Literature Review

The discourse concerning digital assets within Islamic jurisprudence (*fiqh*) has evolved from fundamental inquiries about permissibility to intricate ontological debates regarding the nature of wealth in a post-physical economy. Central to this discourse is the reconceptualization of *māl* (property) and its alignment with the requirements of *farāʾiḍ*, which necessitates a paradigm shift from Physical-Materialism to Digital-Functionalism. The primary thematic debate focuses on the ontological status of digital *manfaʿah* (utility) versus physical *ʿayn* (tangible property). This foundational discussion about intangible assets is grounded in the distinction between the Ḥanafī

8 Qaiser Razi et al., "Non-Fungible Tokens (NFTs)—Survey of Current Applications, Evolution, and Future Directions," *IEEE Open Journal of the Communications Society* 5 (2024): 2765–2791.

9 Muhamad Izazi Nurjaman et al., "Analysis of Buying, Selling, and Leasing Virtual Land in the Metaverse: A Perspective from Sharia Economic Law," *Ulul Albab: Jurnal Studi dan Penelitian Hukum Islam* 6, no. 1 (2024): 12–26.

10 Mueen Uddin et al., "Exploring the Convergence of Metaverse, Blockchain, and AI: A Comprehensive Survey of Enabling Technologies, Applications, Challenges, and Future Directions," *Wiley Interdisciplinary Reviews Data Mining and Knowledge Discovery* 14, no. 6 (2024): e1556; Konstantinos Lianidis, Domen Bajde, and Mikkel Nøjgaard, "Ownership Technologies," *Marketing Theory* 25, no. 3 (2024): 497–505.

11 Janice Denegri Knott, Rebecca Jenkins, and Siân Lindley, "Valuing Digital Possessions: The Role of Affordances," *Journal of Computer-Mediated Communication* 27, no. 6 (2022): 1–11.

school's requirement for physical tangibility (*taqābuḍ*) and the broader perspectives of the Maliki, Shafi'i, and Hanbali schools (*jumhūr*). The latter position is robustly articulated in the works of Ibn Qudāmah, who, in Al-Mughnī, affirms that intangible utility constitutes legitimate property, emphasizing utility (*manfaʿah*) and value (*qīmah*). Rather than viewing the schools as a monolithic consensus, scholars such as Laldin and Furqani argue that the *maqāṣid al-sharīʿah* (objectives of Sharia) necessitate a dynamic interpretation of *māl* that accommodates the financialization of the modern economy. They contend that any item, regardless of its physical form, that is recognized by social custom (*ʿurf*) and possesses economic value must be protected under Sharia. Importantly, contemporary fatwas issued by institutions such as the DSN-MUI and the International Islamic Fiqh Academy serve as a critical bridge, marking the transition from classical Ḥanafī strictness to contemporary Ḥanafī jurisprudence that accommodates digital utilities. This jurisprudential evolution is particularly significant for the Metaverse, as it provides the legal foundation for treating intangible code as inheritable wealth.[12]

Thematic discourse surrounding cryptographic custody (*ḥiyāzah*) and the Risk of Loss has been extended to the specific context of the Metaverse ecosystem. Contemporary scholarship offers a systematic examination of virtual environments, highlighting that the spatial characteristics of Metaverse assets, such as virtual land, differentiate them from conventional cryptocurrencies. These studies underscore that the value of such assets is derived from their social and commercial functionalities within a decentralized ledger system. While acknowledging the potential classification of these assets as *māl*, scholars caution that the absence of a centralized regulatory framework introduces significant risks to the preservation of wealth (*ḥifẓ al-māl*). Their analyses indicate that although the essence of property is present within the Metaverse, the legal certainty associated with such property remains unsettled. This situation gives rise to a philosophical quandary concerning cryptographic loss: if a private key is irretrievably lost, does the asset effectively become *māl ḍāʾiʿ* (wasted property), thereby fundamentally challenging the permanence traditionally ascribed to ownership within fiqh legal frameworks?[13]

The inherent intangibility of non-fungible tokens (NFTs) immediately raises questions concerning their classification as part of an inheritable estate. This complexity is further exacerbated by practical challenges, such as the difficulty in transferring ownership rights following an owner's death due to the immutability of blockchain technology. These challenges are particularly pronounced in jurisdictions where digital assets lack formal legal recognition, resulting in a legal vacuum wherein Shariah law mandates distribution, yet secular law offers no clear mechanism for enforcement.[14] Real-world instances, such as the sudden death of Mircea Popescu—who left behind an estimated $2 billion in inaccessible cryptocurrency due to lost private keys—vividly illustrate the inheritance crisis associated with digital assets. Moreover, the ecosystem surrounding these assets is characterized by high volatility and speculative behavior, raising concerns related to *gharar* (excessive uncertainty) and *maysir* (gambling) with respect to their underlying valuation (*taqwīm*). These factors may further complicate their legal status under

[12] Mohammad Mahbubi Ali and Rusni Hassan, "The Objective of Shariah in Islamic Finance: Its Relevance and Application," *ISRA International Journal of Islamic Finance* 10, no. 2 (2018): 196–209.

[13] Rim Hasan, "Metaverse Through the Lens of Shariah: A Systematic Literature Review," *Journal of Islamic Marketing* 14, no. 11 (2023): 2714–2735.

[14] Erika Nur Syarifah Daulay and Akhmad Budi Cahyono, "Legal Protection for Heirs with Non-Fungible Token Heritage Objects," *JLPH* 5, no. 3 (2025): 2216–2227.

Islamic jurisprudence.[15] The resulting legal and religious ambiguities concerning the status and treatment of Metaverse assets create fertile ground for disputes among heirs regarding valuation, ownership, and rightful entitlement, thereby critically undermining the objectives of the *farāʾiḍ* system in ensuring the equitable transmission of family wealth.

The resolution of this jurisprudential issue fundamentally depends on the definition of *māl* (property or wealth), as the *farāʾiḍ* system's framework relies on this classification to delineate the scope of the *tirkah* (inheritance). Classical Islamic jurists (*fuqahāʾ*) have developed a sophisticated and extensive corpus of literature on this concept, frequently advocating a broad interpretation that extends beyond tangible items. Nonetheless, portraying this interpretation as a unanimous consensus neglects significant scholarly disagreements (*khilāfiyyah*). Traditionally, *māl* is associated with any form of wealth that is ownable and possesses value. The majority of scholars (*jumhūr*) adopt an expansive understanding that encompasses not only physical objects (*ʿayn*) but also rights (*ḥaqq*) and benefits (*manfaʿah*) derived from property.[16] In contrast, the classical Ḥanafī school mandates the presence of physical substance (*ʿayn*), physical possession (*taḥayuz*), and custodial safeguarding (*iḥrāz*). Accordingly, the classification of a non-fungible token (NFT), which essentially functions as metadata referencing a digital file, necessitates a rigorous technical and jurisprudential examination to determine whether it constitutes an *ʿayn* or merely an attribute (*ṣifah*).

Classical jurisprudence exhibits a demonstrable capacity to engage with the concept of intangibility. Classical fiqh scholars systematically categorized *māl* and distinguished between *tamlīk* (full ownership, encompassing the rights to possess, use, and dispose of property) and *manfaʿah* (usufruct, defined as the right to utilize an asset without full ownership).[17] To employ Hanafite frameworks in legitimizing digital assets without engaging in epistemological selectivity, it is necessary to trace the nuanced evolution from classical physical prerequisites to contemporary Ḥanafī interpretations that accommodate digital realities. This distinction underscores a pre-modern conceptualization of intangible rights. The classical jurisprudential discourse concerning the status of *ḥaqq* and *manfaʿah* as independent categories of *māl* was both complex and nuanced. Debates centered on whether a *ḥaqq* could be acknowledged as property in its own right, possessing value comparable to tangible commodities or land,[18] or whether it functioned solely as a means to enjoy a tangible asset. Similarly, the notion of *manfaʿah* was scrutinized in relation to property rights over time, reflecting concerns regarding temporal limitations and excessive uncertainty (*gharar*).[19] The eventual, albeit contested, recognition of certain intangibles—such as intellectual property rights—as forms of *māl* illustrates the adaptive capacity of fiqh.

---

15 Ismail Rangga Wahana Putra, Gunardi Lie, and Jelita Sihite, "Bought and Lost: Perlindungan Hukum Bagi Konsumen Atas Kehilangan Aset Digital di Era Metaverse," *Jurnal Hukum Politik dan Ilmu Sosial* 4, no. 3 (2025): 212–221.

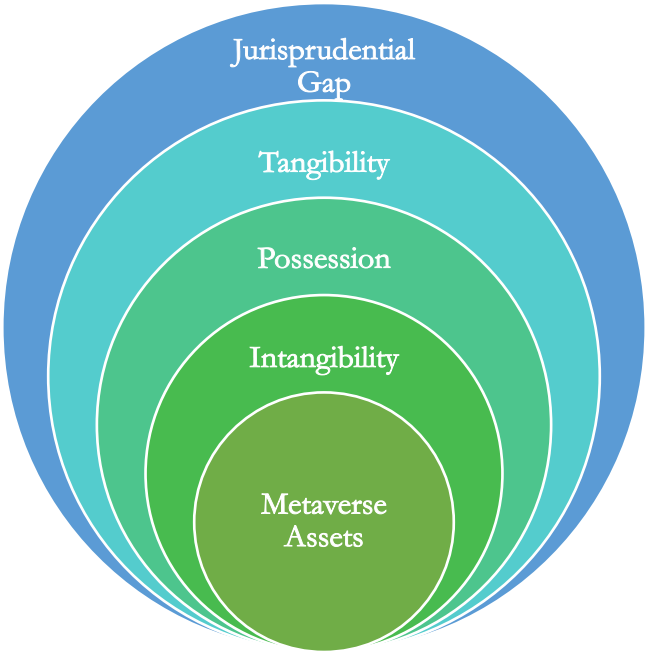
16 Sabil Mokodenseho et al., "Analysis of the Influence of Fiqh and Maqasid Al-Syariah in the Formation of Islamic Legal Policy in Indonesia," *WSiSS* 2, no. 1 (2024): 30–37.

17 Yenik Candra Kiranawati et al., "Islamic Banking Governance in Maqashid Sharia Perspectives: A Systematic Literature Review," *Share: Jurnal Ekonomi dan Keuangan Islam* 12, no. 1 (2023): 59–74.

18 Zefan Jiang, "The Legal Nature of Digital Collectibles and the Adaptive Challenges of the Civil Law Property System," *Current Research in Law & Practice* 3, no. 1 (2025): 55–70.

19 Hussein 'Azeemi Abdullah Thaidi et al., "Voidable Financial Contracts ('Uqud Fasidah) and the Rectification Mechanisms: A Fiqh Juristic Review," *Journal of Fatwa Management and Research* 29, no. 2 (2024): 58–78.

Figure 1. Conceptual layers of jurisprudential challenges in Metaverse asset ownership.



Source: Authors' elaboration, 2026

In response to the pressing challenges delineated in Figure 1, there is an imperative need for contemporary *ijtihād* (independent legal reasoning) to adapt Islamic law in a manner that upholds the principles of justice and equity fundamental to *farā'iḍ*.[20] The argument for recognizing digital assets as *tirkah* (inheritable estate) must be grounded in the economic value and functional utility these novel assets provide.[21] While existing scholarship has extensively examined the general permissibility of digital assets and their classification as *māl*, the majority of studies have concentrated primarily on cryptocurrencies or generic non-fungible tokens (NFTs). This research distinguishes itself by specifically focusing on the Metaverse as a unique legal and spatial category that more closely parallels real-world property (*ʿaqār*) than digital currency. In contrast to prior investigations that conceptualize digital inheritance merely as accessing a wallet, this study explores the intersection of persistence, utility, and divisibility within virtual environments. In particular, it assesses whether the technical differentiation between 'virtual real estate' and 'functional avatars' entails distinct legal implications (*athār fiqhī*). For example, virtual land may be subject to joint ownership (*shirkah*) or digital partitioning through Fractionalized NFTs (fNFTs), whereas functional avatars may embody indivisible, highly personal usufruct rights. The principal academic contribution of this work lies in the development of a Metaverse Farā'iḍ Framework. This framework transcends the binary inquiry regarding whether Metaverse assets constitute property and instead offers a nuanced analysis of how various types of virtual assets (e.g., virtual real estate versus functional avatars) should be classified and distributed.

[20] Sakshi Atrik and Shrsuhti Zade, "Metaverse Crypto Exchange," *International Journal of Scientific Research in Engineering and Management* 7, no. 11 (2023): 1–4.

[21] Umi Khusnul Khotimah, "The Law of Gender Justice in Digital Inheritance Distribution: A Fiqh Perspective on Crypto Assets and Non-Fungible Tokens in Dubai," *Sasi* 31, no. 2 (2025): 130–141; Habib Ahmed, "Security Tokens, Ecosystems and Financial Inclusion: Islamic Perspectives," *International Journal of Islamic and Middle Eastern Finance and Management* 17, no. 4 (2024): 730–745.

By bridging the technical limitations inherent in Web3 technologies with the divine injunctions of *farāʾiḍ*, this research establishes a rigorous theoretical foundation to address the challenge of indivisible digital assets, ensuring the continuity of Islamic estate law within the virtual domain. The objectives of this paper are as follows: (1) to deconstruct the classical fiqh definitions of *māl* and *tirkah* according to the four principal Sunni schools of thought, with particular attention to the foundational disputes (*khilāfiyyah*) concerning physical substance; (2) to examine the technical characteristics of ERC-721 and ERC-1155 smart contract standards and their distinctive ownership mechanisms; (3) to perform a comparative analysis that maps eighth-century terminology onto contemporary cryptographic architectures to assess whether these assets satisfy the classical criteria of *māl*; and (4) to explore the significant practical implications of this determination for the application of *farāʾiḍ*, including critical issues such as valuation (*taqwīm*), division (*qismah*), and heir access. This paper advances the thesis that Metaverse assets, despite their intangible nature, fulfill the essential conditions of *māl*. It contends that these assets possess recognized legal value (*mutaqawwim*), permissible utility (*manfaʿah*), and that the exclusivity of control enabled by cryptographic technology constitutes a modern digital analogue of *ḥiyāzah*. Consequently, this study concludes that such assets should be incorporated into the *tirkah* and distributed in accordance with *farāʾiḍ*, proposing technology-driven solutions—such as fractionalized NFTs (fNFTs) and sharia-compliant smart contracts—to address the attendant practical challenges.

Research Methodology

Type of Research

This study adopts a qualitative, library-based research methodology to examine the jurisprudential status of Metaverse assets within the context of Islamic inheritance law (*farāʾiḍ*). Rather than employing generalized qualitative justifications, the research delineates its scope through clearly defined inclusion and exclusion criteria for source selection. Within the domain of Islamic legal studies, this qualitative approach entails a thorough and systematic analysis of a diverse range of scholarly works, foundational legal texts (*nuṣūṣ*), classical fiqh treatises, contemporary fatwas (legal opinions), and relevant technical documentation. Specifically, primary classical literature was selected based on its authoritative status within the four Sunni schools of thought, with a systematic focus on treatises that explicitly address the ontological boundaries of *ʿayn* (substance), *iḥrāz* (custodial storage), and *manfaʿah* (usufruct).

The adoption of a qualitative, library-based research methodology is necessitated by the inherently hermeneutic and jurisprudential nature of the research problem. This methodology transcends mere description, engaging in rigorous analysis aimed at constructing a coherent legal argument through the integration of classical principles with contemporary phenomena. Scholars in this field undertake comprehensive literature reviews to address emerging challenges, such as the inheritance management of novel assets including cryptocurrencies and Non-Fungible Tokens (NFTs).[22] These inquiries, which provide the scholarly foundation for this study, enhance the

[22] Muhammad Amrullah Drs Nasrul et al., "Overview of Digital Asset and Its Process Under the Inheritance Management," *International Journal of Business and Technology Management* 5, no. S5 (2023): 199–208; Firdaus Fika Ananda and Irsan, "Pengaruh Perkembangan Cryptocurrency Sebagai Objek Harta Warisan Perspektif Ulama Kontemporer," *Usrah Jurnal Hukum Keluarga Islam* 6, no. 3 (2025): 30–51.

understanding of the application of traditional fiqh principles to these new categories of assets. Crucially, they also expose significant lacunae and ambiguities within existing legal frameworks, which were not originally designed to accommodate such novel property forms.[23] Through meticulous examination of both classical texts and modern scholarly discourse, this research elucidates the intricate legal, economic, and practical implications associated with digital assets. This analytical process is vital for making a substantive contribution to the specialized discourse concerning the permissibility (*ḥurmah*), ownership (*milk*), and, most importantly, the inheritance (*farāʾiḍ*) of these digital entities under Islamic law.[24] Moreover, the qualitative, library-based approach facilitates the application of critical discourse analysis, which is essential for exploring the complexities of wealth acquisition and transfer within the Metaverse from the perspective of Islamic economic law. This methodological approach enables the development of interpretative frameworks necessary to adapt classical jurisprudence to the evolving realities of digital transactions, thereby ensuring that legal rulings remain pertinent and effective amid rapidly changing socio-economic conditions.[25]

Data Analysis

This study is based on a hierarchical analysis of three distinct categories of data sources. The first and most fundamental category comprises the primary legal sources of Islamic law: the Qur'an and the Sunnah. These *nuṣūṣ* (textual sources) are examined to establish the immutable principles and objectives (*maqāṣid*) of the Islamic inheritance system (*farāʾiḍ*), which governs the distribution of a deceased individual's estate. The second category consists of classical fiqh texts. This study undertakes an extensive analysis of major jurisprudential works from the principal Sunni schools, including, but not limited to, the writings of Imams Al-Sarakhsi (Hanafi), Ibn Qudāmah (Hanbali), and Al-Nawawi (Shafi'i). These texts were purposively selected: Al-Sarakhsi's *Al-Mabsūṭ* is employed to address the most stringent conditions of physical custody (*taḥayyuz*) within the Hanafi school; Al-Nawawi's *Al-Majmūʿ* offers the definitive Shafi'i exposition on non-physical utility (*manfaʿah*); and Ibn Qudāmah's *Al-Mughnī* serves as the foundational text for comprehensively examining the Hanbali integration of property rights and usufruct. This textual analysis is essential for deconstructing the rich classical jurisprudential debate concerning the status of *ḥaqq* (rights) and *manfaʿah* (usufruct) as components of *māl* (property).[26] The research scrutinizes these classical texts to identify the specific characteristics that distinguish ownership (*tamlīk*) from mere use (*manfaʿah*),[27] as well as the precise conditions under which *manfaʿah* may exist, particularly with respect to temporal limitations.[28] This analysis of classical fiqh literature constitutes the foundation for establishing the criteria by which Metaverse assets will be evaluated.

---

23 Nur Rizqi Febriandika, Fadli, and Denizar Abdurrahman Mi'raj, "How Are NFT (Non-Fungible Token) Transactions Reviewed According to Islamic Law?," *Borobudur Law Review* 4, no. 1 (2022): 1–12.

24 Siti Fadhilah Ghazali, Naimah Abu Kasim, and Suharne Ismail, "Isu-Isu Fiqh Semasa dalam Pengurusan Harta Pusaka Kecil di Malaysia," *Jj* 3, no. 2 (2024): 268–280.

25 Haryati, Junaidi, and Abdul Mughits, "Wealth and Its Acquisition in the Metaverse from the Perspective of Islamic Economic Law," *Az-Zarqa: Jurnal Hukum Bisnis Islam* 16, no. 2 (2025): 152–177.

26 Zefan Jiang, "The Legal Nature of Digital Collectibles and the Adaptive Challenges of the Civil Law Property System," *Current Research in Law & Practice* 3, no. 1 (2025): 55–70.

27 Yenik Candra Kiranawati et al., "Islamic Banking Governance in Maqashid Sharia Perspectives: A Systematic Literature Review," *Share Jurnal Ekonomi dan Keuangan Islam* 12, no. 1 (2023): 59–74.

28 Hussein 'Azeemi Abdullah Thaidi et al., "Voidable Financial Contracts ('Uqud Fasidah) and the Rectification Mechanisms: A Fiqh Juristic Review," *Journal of Fatwa Management and Research* 29, no. 2 (2024): 58–78.

The third and most critical stage of the process involves bridging the gap between the two domains (fiqh and technology) by applying legal principles, derived from the first step, to the technical facts obtained in the second step. This application is primarily accomplished through the established Islamic legal methodology of *qiyās* (analogical reasoning). *Qiyās* functions as a fundamental tool for determining the legal status of new technologies, including blockchain and smart contracts. Scholars employ *qiyās* to draw analogies between established rulings on traditional assets and emerging digital assets, such as comparing cryptocurrencies to existing financial instruments.[29] This study will utilize *qiyās* to establish analogies between, for instance, the *ḥiyāzah* (physical possession) of a tangible good and the exclusive cryptographic control of a digital asset via a private key, isolating the *ʿillah* (effective cause) of ownership as the exclusivity of access rather than physical tangibility. This process necessitates identifying relevant characteristics shared between traditional and innovative systems and represents the standard jurisprudential method for informing new fatwas.[30]

To ensure that the research remains integrated within the discourse of Living Sharia, this study introduces a critical bridging category: Techno-Sharia. Resolutions issued by authoritative bodies such as the DSN-MUI and the International Islamic Fiqh Academy (IIFA) are examined to trace the evolution from classical doctrine to the governance of modern digital assets. The final category of data comprises technical documentation, representing a significant and innovative element of the study that bridges the domains of Islamic jurisprudence and technology. This dataset includes industry whitepapers, computer science literature, and technical descriptions elucidating the architecture of the Metaverse, the operational mechanisms of blockchains (public ledgers), the standards governing NFTs (ERC-721/1155), and the functionality of smart contracts. This technical analysis is essential, as these blockchain-based assets constitute a novel category that engenders disputes concerning ownership and control. It directly addresses the challenge posed by NFTs, as intangible assets, to traditional fiqh concepts of tangibility (*ʿayn*) and possession (*ḥiyāzah*).[31] The analysis will further explore the terms and conditions imposed by hosting platforms and the precise nature of digital ownership to assess whether cryptographic control via private keys can be considered legally and functionally analogous to the fiqh notion of *ḥiyāzah*.

Research Approach

The primary analytical framework employed in this research integrates *taḥlīlī* (analytical) and *muqāran* (comparative) fiqh methodologies. To transcend general descriptions, the unit of analysis in this comparative study is the specific legal prerequisite for asset validation across the various *madhāhib*. The analytical method facilitates a critical examination of contemporary financial instruments and digital assets to evaluate their compliance with established Islamic principles. Research employing analytical methodologies has been instrumental in elucidating the complexities of digital currencies, thereby providing a necessary framework for classifying these assets within

[29] Fatima Zohra Benali et al., "The Algorithmic *Fiqh*: *Qiyas* and the Cryptocurrency Paradigm," *IJIL* 8, no. 1 (2025): 1–28.

[30] Achmad Napis Qurtubi, Efendi Sugianto, and Muhammad Umar Kelibia, "Legality of Bitcoin in the Perspective of Fiqh Muamalah," *WSiSS* 2, no. 3 (2024): 172–180.

[31] Qaiser Razi et al., "Non-Fungible Tokens (NFTs)—Survey of Current Applications, Evolution, and Future Directions," *IEEE Open Journal of the Communications Society* 5 (2024): 2765–2791.

the context of Islamic law.[32] This analytical approach enables scholars to develop well-founded arguments regarding the legitimacy of cryptocurrencies and NFTs, considering not only their intrinsic technical features but also their potential economic and social implications within the broader framework of Sharia.[33] The present study analytically deconstructs the concept of ownership in the Metaverse by dissecting its technical components. Importantly, this research goes beyond mere technical summaries by examining the underlying mechanisms of smart contract architecture, isolating variables such as code immutability and programmable logic to assess how these elements technically and legally enforce or disrupt *milkiyyah* (ownership status).

The comparative component is indispensable, as comparative fiqh facilitates an examination of how different schools of thought—namely the Ḥanafī, Mālikī, Shāfiʿī, and Ḥanbalī—interpret and apply foundational legal concepts. This approach enables a nuanced understanding of their application within diverse contexts.[34] This study specifically employs this comparative lens to analyze the foundational concept of *māl* (property), focusing on the variations and points of consensus among the schools regarding its essential conditions (*shurūṭ*), with particular attention to the issue of intangibility. To reconcile eighth-century terminologies with contemporary 2024 ERC-721/1155 standards, the research undertakes three concrete methodological steps: (1) identifying the specific parameters of classical property conditions (e.g., physical custody or *iḥrāz*), (2) extracting the functional properties of modern smart contracts (e.g., cryptographic key pairs), and (3) mapping these technical variables directly onto the classical parameters to assess jurisprudential compliance.

To avoid presenting the concurrent application of *uṣūl al-fiqh* methodologies as a forced or arbitrary conclusion, this study clearly delineates their respective roles. In instances where strict analogy proves inadequate or counterproductive, the research adopts the principles of *istiḥsān* (juristic preference) and *maṣlaḥah* (public interest). A direct contradiction emerges under strict *qiyās* when a private key is lost: analogically, the loss of a house key does not result in the destruction of the house; however, the loss of a private key effectively extinguishes access to the asset, rendering it *māl ḍāʾiʿ* (wasted property). *Istiḥsān* permits a jurist to depart from this rigid analogical conclusion in favor of a ruling that may deviate when it serves a greater interest or prevents harm.[35] For example, this may involve legally mandating technological interventions—such as smart contract "backdoors"—to restore heirs' access, rather than adhering strictly to code immutability. This approach aligns with the principle of *maṣlaḥah*, which emphasizes the importance of considering societal benefits.[36] In this context, the application of maṣlaḥah is not a mere analytical expedient but rigorously satisfies the criteria of *maṣlaḥah mursalah* (unrestricted public interest). It directly supports the foundational Sharia objective of wealth preservation (*ḥifẓ al-māl*) by preventing the systemic socio-economic harm caused by permanently locking generational wealth within inaccessible digital wallets. By integrating *qiyās*, *istiḥsān*, and *maṣlaḥah*,

[32] Raihanun Nisa, Chairul Fahmi, and Riadhus Sholihin, "The Validity of Cryptocurrency's Zakat," *JJHK* 9, no. 2 (2025): 559–585.

[33] Firdaus Fika Ananda and Irsan, "Pengaruh Perkembangan Cryptocurrency Sebagai Objek Harta Warisan Perspektif Ulama Kontemporer," *Usrah Jurnal Hukum Keluarga Islam* 6, no. 3 (2025): 30–51.

[34] Norin Rahayu Shamsuddin et al., "Exploring the Nexus Between Zakat, Gold, and Silver: A Review of Scholarly Contributions," *International Journal of Research and Innovation in Social Science* 8, no. 10 (2024): 2454–2464.

[35] Mohammd Ali Al Zuraib, "Cryptocurrencies and Blockchain in Islamic Jurisprudence: A Comparative Legal and Economic Study," *Int. J. Environ. Sci.* 11, no. 1s (2025): 659–661.

[36] Aslam Mei Nur Widigdo, "Islamic Insurance: How Far Has It Been Researched?," *Fara'id and Wealth Management* 3, no. 2 (2023): 393; Faizi, "Are Cryptocurrencies Ḥaram? A Critical Analysis Toward MUI's Fatwā," *Al-Ihkam: Jurnal Hukum & Pranata Sosial* 18, no. 2 (2023): 420–442.

this approach ensures that legal reasoning coheres with the fundamental goals of Sharia[37] and the overarching aim of promoting justice and equity in inheritance distribution.[38] Moreover, the use of these jurisprudential tools is essential for addressing practical considerations, such as enhancing transparency and efficiency in estate management, which constitute public interests consistent with Islamic principles.[39]

Result

The fundamental element in determining the scope of the Islamic inheritable estate, or *tirkah*, is the jurisprudential concept of *māl* (property or wealth). The findings from the textual analysis, conducted using the *taḥlīlī* and *muqāran* methodologies, demonstrate that although definitions differ slightly in terms, a significant foundational dispute (*khilāfiyyah*) exists among the four principal Sunni schools of law concerning the essential conditions (*shurūṭ*) that an item must fulfill to be classified as *māl*. This classification constitutes the legal prerequisite for any asset to be subject to transaction, ownership, and ultimately, inheritance. The literature review reveals a sophisticated framework that defines *māl* not solely by its physical characteristics but by its capacity to be valued, owned, and utilized within the parameters of sharia.

Classical jurists have delineated several fundamental conditions for the concept of māl. These conditions, derived from classical fiqh literature and contemporary scholarly analysis, encompass the possession of economic value that facilitates exchange;[40] the capacity for clear and exclusive ownership (*milk*) by an individual;[41] the presence of permissible utility or benefit (*al-manfaʿah*), ensuring that the item serves a practical purpose consistent with Shariah principles;[42] and legitimacy, indicating that both the asset and its acquisition must conform to Islamic law and not violate its core tenets. Additionally, the asset must exist in some form—either physically or potentially—to enable financial claims and contracts to be recognized as *māl*. This multifaceted definition offers a comprehensive legal framework for classifying emerging phenomena. Among these conditions, the three most critical and consistently emphasized in this analysis are *al-taqawwum* (foundational legal value), *al-manfaʿah* (utility), and *al-ḥiyāzah* (possession or control).

A particularly salient jurisprudential distinction, emphasized in the literature and central to the Ḥanafī school, is the conceptual separation between *māl* (the property or asset itself) and *milk* (the legal right of ownership over that asset). Within this framework, *māl* broadly denotes any asset possessing economic value and capable of ownership. However, applying this Ḥanafī distinction to legitimize digital assets necessitates confronting a stringent jurisprudential reality: classical Ḥanafī jurists, as evidenced in primary sources such as Al-Sarakhsi's *Al-Mabsūṭ*, rejected *manfaʿah* (usufruct or utility) alone as constituting *māl* in the absence of a physical substance (*ʿayn*) that

37 Abhishek Behl et al., "Knowledge Development in Non-Fungible Tokens (NFT): A Scoping Review," *Journal of Knowledge Management* 28, no. 1 (2023): 232–267.

38 Umi Khusnul Khotimah, "The Law of Gender Justice in Digital Inheritance Distribution: A Fiqh Perspective on Crypto Assets and Non-Fungible Tokens in Dubai," *Sasi* 31, no. 2 (2025): 130–141.

39 Ioannis Karamitsos et al., "Transforming Airport Security: Enhancing Efficiency Through Blockchain Smart Contracts," *Electronics* 12, 4492 (2023): 1–20.

40 Enang Hidayat, "Induction and Its Relevance to the Transformation of Sharia Economic Law in Indonesia: A Study of Four Madhhabs," *Ulul Albab: Jurnal Studi dan Penelitian Hukum Islam* 7, no. 1 (2024): 71–87.

41 Musfira Musfira et al., "The Concept of Joint Property Ownership of Husband and Wife," *Proceedings of International Conference on Multidiciplinary Research* 4, no. 1 (2022): 15–19.

42 Sabil Mokodenseho et al., "Analysis of the Influence of Fiqh and Maqasid Al-Syariah in the Formation of Islamic Legal Policy in Indonesia," *WSiSS* 2, no. 1 (2024): 30–37.

could be subject to custodial storage (*iḥrāz*). Conversely, milk refers to the specific legal authority and right of ownership over that *māl*, encompassing the rights to use, manage, and dispose of the asset as prescribed by Sharia.[43] This distinction holds profound significance for contemporary assets. To avoid the epistemological error of selectively extracting classical principles from their original context, it is necessary to trace the nuanced evolution from this strict classical materiality to modern Ḥanafī applications. Stimulated by the *Majallah al-Aḥkām al-ʿAdliyyah* and contemporary fatwas, modern Ḥanafī jurisprudence has increasingly accommodated digital realities by prioritizing *ʿurf* (custom) over rigid physical *iḥrāz*, thereby enabling the legal framework to conceptualize assets such as digital files or tokens as *māl* due to their economic value, even though the nature of their ownership (*milk*) remains complex and demands reinterpretation. This inherent ambiguity in applying the concept of milk to rapidly evolving financial technologies necessitates ongoing jurisprudential discourse to reconcile these developments with traditional Islamic legal principles. [44]

This study demonstrates that classical Islamic jurisprudence is not a static discipline but has progressively evolved to encompass intangible assets within the concept of *māl* (property). This development is not a recent occurrence; rather, it is deeply rooted in the classical jurisprudential discourse concerning the status of *ḥaqq* (rights) and *manfaʿah* (usufruct). This foundational debate, which examined whether rights or benefits could be regarded as property in their own right, established the basis for subsequent legal adaptations. A particularly notable historical precedent is the recognition of intellectual property. Employing the methodological tool of *qiyās* (analogical reasoning),[45] jurists inferred that intellectual creations possess value analogous to tangible property, thereby classifying intellectual property rights, inventions, and goodwill as *māl* due to their capacity to generate economic benefits.[46] Similarly, the expansion of commerce necessitated the acknowledgment of contractual rights and financial instruments as forms of property, with classical legal texts recognizing the relational value engendered by such agreements. This responsive legal framework, which incorporated concepts such as trusts (*waqf*) and complex contractual arrangements into the definition of *māl*, exemplifies the fiqh's intrinsic ability to adapt to societal and economic transformations.[47] This historical evolution serves as a critical precedent for the analysis of Metaverse assets, thereby substantiating a broader paradigm shift within Islamic law from Physical-Materialism to Digital-Functionalism.

The first criterion, *al-taqawwum* (recognized legal value), necessitates rigorous substantiation beyond mere market presence. For an asset to be considered as possessing *al-taqawwum*, it must satisfy conditions such as providing utility, being ownable, and, importantly, having market value within the community.[48] However, reliance solely on market activity (*ʿurf al-tijārī*) is analytically problematic, as it risks conflating speculative value with legal value. Numerous contemporary

---

43 Enang Hidayat, "Induction and Its Relevance to the Transformation of Sharia Economic Law in Indonesia: A Study of Four Madhhabs."

44 Koko Komaruddin et al., "Islamic Perspectives on Cybersecurity and Data Privacy: Legal and Ethical Implications," *West Science Law and Human Rights* 1, no. 4 (2023): 166–172.

45 Fatima Zohra Benali et al., "The Algorithmic *Fiqh*: *Qiyas* and the Cryptocurrency Paradigm."

46 Mutlu Gül, "The Attribution of the Criteria for Critical Appraisal of Content in the Hanafīs' Hadīth Understanding to Abū Hanīfa," *Kocatepe İslami İlimler Dergisi* 4, no. 2 (2021): 283–297.

47 Khasif Hussain, "From Pulpit to Marketplace: The Evolution of Religious Political Parties in Pakistan," *World Affairs* 187, no. 2 (2024): 151–160.

48 Jihye Sin, "A Study on the Legal Nature of Blockchain-Based Virtual Assets from a Civil Law Perspective: A Critical Introduction to the UNIDROIT Principles on Digital Assets and Private Law," *Inst Leg Myongji Univ* 23, no. 2 (2025): 195–220.

scholars and Middle Eastern fatwa authorities justifiably reject certain crypto-assets because their prices do not reflect an underlying, foundational asset (*māl mutaqawwim*). Metaverse assets, particularly non-fungible tokens (NFTs), are actively traded in global markets, often for substantial sums. To demonstrate that this valuation is not merely an economic bubble—which, in fiqh, would constitute *gharar* (excessive uncertainty) and thereby negate their *mutaqawwim* status—it is necessary to establish a foundational basis of value. Unlike purely speculative "meme" tokens, Metaverse NFTs possess inherent programmatic utility, such as platform governance rights, digital yields, or exclusive access within their ecosystems. This functional architecture provides an intrinsic digital use-case. Although the speculative nature of these assets has prompted important scholarly debate concerning *gharar* and their long-term ethical implications,[49] this foundational utility indicates that the debate pertains to the quality and stability of their value rather than its existence. The fact that a market comprising millions of participants recognizes, prices, and exchanges these functionally backed assets constitutes sufficient evidence to conclude that they possess *al-taqawwum* and are not legally valueless (*māl ghayr mutaqawwim*).

The second criterion, *al-manfaʿah* (permissible utility), mandates that an asset must confer a benefit that does not contravene Sharia principles. A prevalent critique posits that digital assets lack real utility. However, this analysis, corroborated by existing scholarship, contends that such a perspective relies on an unduly narrow interpretation of *manfaʿah*. Islamic jurisprudence underscores the significance of utility in asset evaluation, recognizing that utility may assume diverse forms. Digital assets, such as NFTs, offer a novel yet discernible *manfaʿah* by signifying unique ownership and authenticity within digital domains, thereby conferring status, identity, and access within virtual environments.[50] Importantly, drawing upon contemporary Ḥanafī jurisprudence and its incorporation of *ʿurf* (customary practice), this digital utility is increasingly acknowledged as legally valid property, notwithstanding the absence of classical physical substance. Islamic scholars are progressively affirming that utility extends beyond physical consumption to encompass aesthetic appreciation, social status, and communal engagement. The acquisition of an NFT for its cultural or artistic value is functionally analogous to purchasing rare artworks in the physical realm,[51] a practice clearly recognized as possessing *manfaʿah*. As digital landscapes continue to evolve, the principle of *manfaʿah* must adapt to encompass these contemporary modes of interaction and the tangible socio-economic implications of virtual ownership and status.[52] Consequently, this study concludes that Metaverse assets embody a clear and recognized *manfaʿah* within their respective virtual ecosystems.

The final criterion, *al-ḥiyāzah* (possession/control), constitutes a central jurisprudential challenge. Classical fiqh, developed within a physical context, inherently associates *al-ḥiyāzah* with tangible possession and direct control. However, metaverse assets, as intangible lines of code, cannot be physically held, thereby creating a fundamental jurisprudential gap. This study contends, employing the analytical-analogical method (*qiyās*), that cryptographic control functions as the

[49] Zefan Jiang, "The Legal Nature of Digital Collectibles and the Adaptive Challenges of the Civil Law Property System," *Current Research in Law & Practice* 3, no. 1 (2025): 55–70.

[50] Hassan Mansur Hussien et al., "Blockchain-Based Access Control Scheme for Secure Shared Personal Health Records Over Decentralised Storage," *Sensors* 21, no. 7 (2021): 2462.

[51] Soo Jeong Kim, "Discussion on the Qualification of Virtual Assets as a Property," *The Korean Association of Civil Law* 106 (2024): 35–79.

[52] Krasnykov Yevgen Volodymyrovych, "Development and Implementation of New Organizational Structures in the Public Sector," *Democratic Governance* 32, no. 2 (2023): 11–27.

contemporary, practical, and legal equivalent of *al-ḥiyāzah*. In Islamic law, *al-ḥiyāzah* denotes direct control over an asset, conferring upon the possessor exclusive rights to use, manage, and dispose of it.[53] In the digital domain, possession of a private key grants the user authority to access and manage digital assets on a blockchain platform.[54] Control over the asset is exclusively maintained through this private key, which provides both exclusive access and the absolute capacity to transfer the asset. This correspondence aligns closely with the essence of *al-ḥiyāzah*.

Table 1. A Sharia-based evaluation of Metaverse assets as *māl* (legally recognized property).

No.	Fiqh Criteria	Classical Requirements	Application of Metaverse Assets	Concluding Remarks
1	*Al-Taqawwum* (Recognized legal value)	An asset must be ownable, useful, and possess recognized market value (*al-ʿurf al-tijārī*)	NFTs and virtual land are actively traded in global markets with transparent pricing and demand. While speculation influences value stability, it does not affect their existence	Fulfilled – Metaverse assets have recognized legal and commercial value
2	*Al-Manfaʿah* (Permissible utility)	The asset must provide a Sharia-compliant benefit. Its utility is not limited to physical consumption	Digital assets offer utility by providing status, access, identity, artistic value, and opportunities for community engagement within virtual ecosystems	Fulfilled – Metaverse assets provide valid and widely recognized utility
3	*Al-Ḥiyāzah* (Possession and control)	Ownership requires effective control, which is traditionally established through physical possession	Exclusive cryptographic control through private keys grants sole authority to access, manage, and transfer assets, effectively serving as digital ownership	Fulfilled – Cryptographic control represents the contemporary counterpart to *al-ḥiyāzah.*

Source: Authors' elaboration, 2026

Nevertheless, a simplistic analogy equating a physical house key with a digital private key fails to adequately address the finality of control. While the loss of a physical house key does not negate the existence of the house, which remains physically extant and legally recoverable through alternative means, the irrevocable loss of a private key results in the technical extinguishment or permanent inaccessibility of the asset, categorizing it jurisprudentially as *māl ḍāʾiʿ* (lost or wasted property). This raises the question of whether *al-ḥiyāzah* remains valid if legal control can be permanently severed by the loss of a single string of code. This research argues that the risk of permanent loss does not invalidate possession during the period in which the key is held; rather, the acceptance of absolute cryptographic risk constitutes an integral element of digital ownership. Legal analyses affirm that ownership of crypto-assets is presumed to reside with those who control

[53] Jiabin Lai, "Proof of Cryptoasset Ownership in England and Wales," *The International Journal of Evidence & Proof* 29, no. 2 (2024): 98–116.

[54] Irina Astrakhantseva and Roman Astrakhantsev, "Cryptocurrency as a New Financial and Legal Instrument: Defining Cryptoassets in Property Law," *SHS Web of Conferences* 93 (2021): 02002.

such keys, thereby directly reflecting the manner in which traditional possession confers ownership rights.[55] This analogical reasoning (*qiyās*), adapted to accommodate the absolute finality of cryptographic loss, effectively bridges the gap between classical jurisprudential requirements and contemporary technological realities. Consequently, cryptographic control may be understood as the *al-ḥiyāzah* of the twenty-first century.

Based on the preceding analysis, this study concludes that Metaverse assets—including non-fungible tokens (NFTs) and virtual land—satisfy all three essential conditions derived from classical Islamic jurisprudence. These assets meet the criterion of *al-taqawwum* through their established and recognized market value (*ʿurf al-tijārī*), which is grounded in fundamental digital utility. They fulfill *al-manfaʿah* by providing tangible benefits such as status, access, and artistic or social value within their respective virtual ecosystems. Most importantly, they satisfy *al-ḥiyāzah* via exclusive cryptographic control, serving as the digital equivalent of physical possession. Consequently, this fiqh analysis determines that Metaverse assets qualify as *māl*, legally defined as property. When owned by a Muslim at the time of death, such assets must be incorporated into the *tirkah* (inheritable estate) and subjected to the obligatory distribution rules of *farāʾiḍ* (see Table 1). Nonetheless, this theoretical classification remains premature if detached from practical considerations; the theoretical acknowledgment of their subjection to *farāʾiḍ* differs significantly from the technical implementation of such distribution.

The analysis presented above employs a rigorous application of comparative fiqh (*muqāran*) and analytical (*taḥlīlī*) methodologies to establish that Metaverse assets, including Non-Fungible Tokens (NFTs) and virtual real estate, satisfy the essential sharia conditions (*shurūṭ*) necessary to be classified as *māl* (property). This conclusion is supported by demonstrating that these assets possess *al-taqawwum* (recognized legal value) through their active market trading and inherent utility; *al-manfaʿah* (permissible utility) within their virtual ecosystems; and, most importantly, that the concept of *al-ḥiyāzah* (possession) is effectively and legally fulfilled by exclusive cryptographic control via a private key. Nonetheless, this jurisprudential determination represents not a terminus but rather the inception of a series of significant practical, legal, and theological challenges. By categorizing these assets as *māl*, they are consequently incorporated into the *tirkah* (inheritable estate) and become subject to the obligatory and non-negotiable rules of *farāʾiḍ* (Islamic inheritance law). Accordingly, this discussion examines the profound practical implications and intricate challenges that emerge from this pivotal classification. Moving beyond mere calls for conceptual *ijtihād*, this section advances concrete, technology-driven solutions aimed at addressing the technical indivisibility of assets, cross-border jurisdictional complexities, and the immutable nature of smart contract architectures that presently hinder sharia compliance in the context of digital estates.

Discussion

The foremost and most immediate challenge arising from the inclusion of digital assets within the *tirkah* pertains to the technical issue of access. The very mechanism that ensures exclusive cryptographic control, thereby satisfying the condition of *al-ḥiyāzah*, simultaneously represents its greatest vulnerability in the context of inheritance. Under Islamic law, the effective transfer of an estate in accordance with the rules of *farāʾiḍ* depends fundamentally on the accessibility of assets

[55] Jiabin Lai, "Proof of Cryptoasset Ownership in England and Wales."

by the rightful heirs. A direct conflict emerges when an individual die without providing heirs with the necessary means to access their digital wallet, such as a private key or recovery phrase. In such cases, the assets are effectively extinguished and legally considered lost forever, falling within the jurisprudential category of *māl dā'i'* (lost or wasted property). This situation engenders a direct contradiction: while sharia grants heirs a divine right to these assets, technological constraints render those rights unenforceable. Consequently, the heirs' inability to access these assets prevents the complete administration of the estate, thereby violating their established rights.[56]

The issue of inaccessibility fundamentally undermines the entire *farā'iḍ* process. When an asset is inaccessible, it cannot be accurately valued or incorporated into the estate calculation, thereby compromising the fundamental principle of equitable distribution.[57] The jurisprudential classification of an asset as *māl* becomes ineffective if it cannot be practically secured and distributed among the heirs. This challenge necessitates a proactive transformation in Islamic estate planning, extending beyond conventional financial advice to the establishment of binding legal obligations. The traditional concept of a *waṣiyyah* (will) should be broadened to encompass what may be termed a *waṣiyyah* of information. Muslim asset holders must be religiously mandated to provide explicit instructions regarding heirs' access to digital wallets, including the location of private keys or recovery mechanisms, to ensure transparency and fairness.[58] This *waṣiyyah* of information constitutes a Sharia obligation; failure to comply entails significant sinful consequences (*ithm*) due to the intentional neglect and violation of the heirs' rights (*ḥuqūq al-'ibād*).

In addition to social and religious guidance, it is imperative to develop technological and legal solutions. Islamic estate planners should advocate for mechanisms such as multi-signature wallets, which require approval from multiple parties to authorize transactions. This approach enables designated individuals, such as trusted heirs or executors, to access assets if the primary holder becomes unavailable.[59] Furthermore, decentralized custody solutions utilizing smart contracts that execute upon specific conditions—such as the verification of a death certificate—can ensure that trusted parties gain access to and securely manage assets for distribution.[60] Although custodial services that maintain backups of private keys offer a more straightforward recovery process,[61] they raise fiqh-related concerns regarding trust and third-party control. Ultimately, addressing this challenge necessitates the development of sharia-compliant code architectures designed from inception to incorporate programmatic backdoors for heirs' access. Such architectures would bridge the gap between digital asset management and inheritance, clarify procedural aspects, and provide legal recourse for recovering lost access.[62] This technological advancement must be

---

56 Nur Syaedah Kamis and Norazlina Abd. Wahab, "Analysing the Loopholes on Estate Administration of Cryptocurrency in Malaysia," *International Journal of Islamic Business* 7, no. 2 (2022): 65–77.

57 Oday Hassen et al., "Towards a Secure Signature Scheme Based on Multimodal Biometric Technology: Application for IOT Blockchain Network," *Symmetry* 12, no. 10 (2020): 1699.

58 Aam Slamet Rusydiana, "Islamic Inheritance," *Fara'id and Wealth Management* 1, no. 1 (2021): 68.

59 Casey Watters, "When Criminals Abuse the Blockchain: Establishing Personal Jurisdiction in a Decentralised Environment," *Laws* 12: 33 (2023): 1–16.

60 Arkadiy Gaidash and Farkhad Karagussov, "Investigating the Inheritance of Digital Currency: Legal Challenges and Criminological Perspectives," *PJC* 16, no. 3 (2024): 245–260; Norliza Katuk, Norazlina Abd Wahab and Nur Syaedah Kamis, "Cryptocurrency Estate Planning: The Challenges, Suggested Solutions and Malaysia's Future Directions," *Digital Policy Regulation and Governance* 25, no. 4 (2023): 325–350.

61 Hyeonsu Byun et al., "A Security Analysis of Cryptocurrency Wallets Against Password Brute-Force Attacks," *Electronics* 13, no. 13 (2024): 2433.

62 Sri Libra Oktavia et al., "Legal Analysis of the Distribution of Inheritance in the Form of Land Rights to Foreign National Heirs," *Journal of Multidisciplinary Academic Business Studies* 1, no. 1 (2023): 81–89.

complemented by comprehensive education for both asset holders and heirs about the unique characteristics of digital assets and the critical importance of secure succession planning.[63]

A significant challenge arises from the requirement of *taqwīm*, or valuation. The *farāʾiḍ* system, which allocates precise fractional shares, necessitates an accurate valuation of the entire tirkah at the time of the owner's death to ensure equitable and just distribution. Although the Results section established that Metaverse assets possess *al-taqawwum* (value) based on their *ʿurf al-tijārī* (market custom), the practical process of valuation remains highly problematic. The pronounced volatility of NFTs and virtual land, characterized by rapid and substantial price fluctuations, complicates the valuation process and renders it contentious. An asset valued at a considerable amount on the date of death may become nearly worthless by the time the estate is settled, or conversely, its value may increase significantly, thereby generating serious disputes among heirs. For instance, if an NFT's value declines by 90% during estate administration, the question arises as to who should bear the loss. This issue raises a fundamental concern of justice (*ʿadālah*) that is central to the framework of *farāʾiḍ*.

The inherent volatility introduces a considerable degree of *gharar* (excessive uncertainty) into the inheritance process. Consequently, Islamic jurisprudence mandates the adoption of methods that ensure fairness and adherence to Sharia, necessitating adaptations of conventional valuation techniques. The principal fiqh-compliant approach to *taqwīm* involves anchoring valuations in verified market transactions, consistent with the principle of *ʿurf al-tijārī*.[64] This approach entails gathering data from authenticated sales of similar or comparable NFTs, representing an application of *qiyās* (analogical reasoning) based on comparable physical assets.[65] However, employing *qiyās* to draw analogies between highly liquid physical art markets and fundamentally illiquid NFTs is fraught with challenges. Metaverse assets lack the intrinsic value buffers characteristic of physical property, rendering such analogies potentially invalid due to the pronounced disparities in market liquidity.

In the frequent absence of a liquid market for unique or rare NFTs, traditional valuation methods often prove inadequate. In such cases, the prevailing consensus favors reliance on expert appraisals. Engaging qualified experts or appraisers with expertise in digital marketplaces can yield objective assessments grounded in principles derived from the art and collectibles markets. This approach ensures that valuations are based on rigorous analysis rather than mere speculation, a methodology strongly supported by recent financial literature highlighting the hedonic pricing similarities between NFTs and traditional fine art markets.[66] Alternatively, a replacement cost approach may be employed, wherein the cost to create or acquire a comparable asset is calculated as a more objective basis for valuation. For example, in the context of virtual real estate on platforms such as Decentraland, if a highly customized digital storefront lacks recent comparable sales data, appraisers can estimate the baseline cost by combining the price of acquiring an

63 Muhammad Naqiyuddin Ismail, Norhazlina Ibrahim, and Safeza Mohd Sapian, "The Process of Claiming Asset in Bahagian Pembahagian Pusaka (BPP)," *International Journal of Academic Research in Business and Social Sciences* 13, no. 12 (2023): 3456–3465.

64 Nur Syaedah Kamis and Norazlina Abd. Wahab, "Analysing the Loopholes on Estate Administration of Cryptocurrency in Malaysia," *International Journal of Islamic Business* 7, no. 2 (2022): 65–77.

65 Fatima Zohra Benali et al., "The Algorithmic *Fiqh*: *Qiyas* and the Cryptocurrency Paradigm," *IJIL* 8, no. 1 (2025): 1–28.

66 Michael Dowling, "Fertile Land: Pricing Non-Fungible Tokens," *Finance Research Letters* 44 (2022): 102096.

equivalent parcel of virtual land with the developer fees necessary to code and construct a similar three-dimensional (3D) structure.[67]

Similarly, for utility-based NFTs—such as functional avatars or exclusive digital memberships—valuation can be anchored to the cost of commissioning a digital artist to replicate the avatar's functional attributes or the baseline cost of minting a new token conferring equivalent access rights. These methodologies adapt traditional intangible asset appraisal frameworks to the Web3 ecosystem, thereby ensuring that valuations are grounded in replicable economic costs rather than speculative factors. Given the inherent volatility of NFT markets, some scholars have proposed novel mechanisms such as volatility buffering, which involves establishing a fixed baseline value subject to adjustments based on market fluctuations. However, this approach introduces jurisprudential complexities, particularly in determining the precise cut-off point for valuation. This issue has been recently examined within Islamic fintech literature, which advocates for the use of time-weighted average pricing to systematically mitigate *gharar* (excessive uncertainty) during the *taqwīm* process.[68] At this juncture, the overarching objective of contemporary *ijtihād* is to develop a standardized *taqwīm* methodology that is defensible, transparent, and minimizes the potential for *gharar*-induced disputes among heirs.

Classical fiqh offers well-established and reliable solutions for addressing this specific issue, which can be directly applied. A prevalent and practical approach involves classifying the indivisible asset as being held in common, or joint, ownership (*shirkah*) among all heirs, in proportion to their *farāʾiḍ* shares.[69] In instances where co-ownership proves impractical or contentious, a traditional resolution involves the sale of the indivisible asset, followed by the distribution of the resulting liquid proceeds. This approach may necessitate a *bayʿ al-iḍṭirār* (forced sale) if consensus among parties is unattainable, thereby ensuring that the asset's value is allocated precisely in accordance with *farāʾiḍ* stipulations, thereby upholding the Sharia principle of fairness.[70] A consensus-based alternative is *takhāruj*, an agreement whereby one or more heirs relinquish their claim to the indivisible asset in favor of another heir, receiving alternative compensation such as cash or a larger portion of other estate assets.[71] This transfer must be equitable and consensual to remain compliant with *farāʾiḍ* guidelines. Nonetheless, exclusive reliance on these classical solutions is inadequate. The contemporary challenge for jurists lies in devising innovative, technology-driven mechanisms—such as fractionalized non-fungible tokens (fNFTs)—to inherently integrate these established fiqh principles of *qismah* into the structural design of virtual assets.

---

67 Michael Dowling, "Fertile Land: Pricing Non-Fungible Tokens," *Finance Research Letters* 44 (2022): 102096.

68 Adel Safaei et al., "Entrepreneurship in Metaverse Real Estate: A Comprehensive Review," *IJAEM* 7, no. 7 (2025): 148–152.

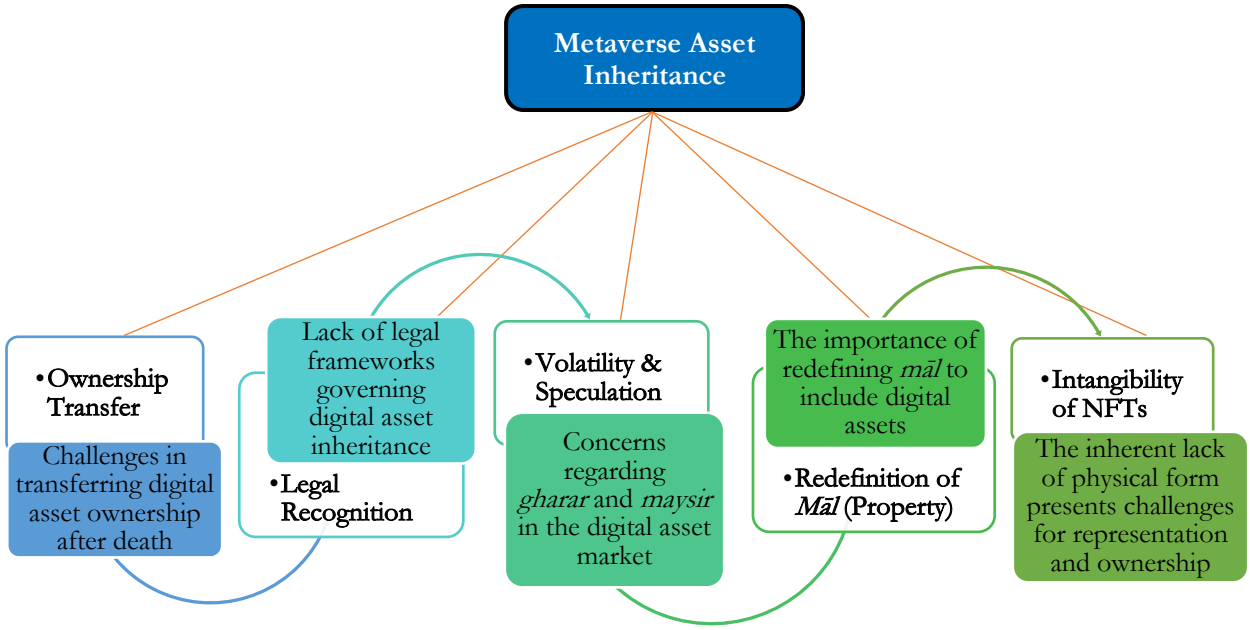
69 Syahrul Amsari, "Islamic Inheritance Law and Digital Assets: A Fiqh Analysis,"; Walid Mensi et al., "Dynamic Volatility Spillovers and Connectedness Between Global Cryptocurrencies and Islamic Stock Markets," *Pacific-Basin Finance Journal* 62 (2020): 230–238.

70 Wiliam Antonius and Amad Sudiro, "The Right of Inheritance of the Second Wife According to the Civil Code (Study of Supreme Court Decision Number 942/K/PDT/2022)," *Interdiciplinary Journal and Hummanity (Injurity)* 2, no. 11 (2023): 967–974.

71 Rahmat Ullah, Riaz Ahmad, and Irum Saba, "An Exploratory Study of Manfaʿah (Usufruct) in Ijārah Accounting from the Sharīʿah Perspective," *Isra International Journal of Islamic Finance* 15, no. 4 (2023): 4–24; Vu Tuan Truong, Long Le, and Dusit Niyato, "Blockchain Meets Metaverse and Digital Asset Management: A Comprehensive Survey," *IEEE Access* 11 (2023): 26258–26288; Jesse David Dinneen et al., "Information Science and the Inevitable: A Literature Review at the Intersection of Death and Information Management," *Journal of the Association for Information Science and Technology* 75, no. 3 (2023): 268–297.

Although the asset itself remains undivided, each heir possesses a proportional claim; for instance, an heir entitled to 25% would hold a 25% share of the NFT. This arrangement necessitates collective agreement regarding the management of the asset, such as licensing it (where feasible) to generate income for distribution or instituting rotating usage rights (*manfaʿah*). However, relying solely on *shirkah* overlooks the practical realities of cryptographic infrastructure: if an NFT is jointly owned, the question arises as to who is legally authorized to hold the singular private key or exercise its daily benefits without infringing upon the rights of the other owners. To address this challenge, the present study proposes a technology-driven techno-shariah solution: fractionalized NFTs (fNFTs) implemented via secondary smart contracts. By securing the parent NFT within a digital vault and issuing fractional, fungible tokens corresponding to the heirs' prescribed shares, fNFTs constitute an innovative form of digital *qismah* (division), inherently ensuring compliance while eliminating the complications associated with rotating usage rights.

Figure 2. Techno-Sharia framework for Metaverse asset inheritance.



Source: Authors' elaboration, 2026

Within the context of Techno-Sharia framework for Metaverse asset inheritance (see Figure 2), *qismah* represents a classical issue in fiqh that is significantly complicated by the emergence of digital assets. The *farāʾiḍ* system prescribes the allocation of fixed fractional shares (e.g., 1/8th, 1/6th, 1/3rd) to designated heirs. While this system functions effectively when distributing cash or fungible assets, it becomes practically unfeasible when the principal asset of an estate consists of a single, indivisible, high-value item. This raises the question of how *farāʾiḍ* can be applied to a solitary high-value Non-Fungible Token (NFT) or a specific, indivisible parcel of virtual land. The indivisibility of such assets complicates these distributions, despite the sharia framework's requirement that all heirs receive their rightful shares. A central aspect of this issue is that NFTs often embody indivisible utility, such as granting exclusive access to restricted digital clubs or private online communities.

The final and perhaps most jurisprudentially intricate challenge pertains to a conflict of laws, or more precisely, a conflict of sovereignty: the rules governing automated smart contracts versus

the divine mandates of *farāʾiḍ*. Numerous digital assets are "locked" within smart contracts that enforce their own regulations, which may directly contradict the provisions of *farāʾiḍ*. For instance, an asset might be staked in a decentralized finance (DeFi) protocol and locked for a predetermined period, such as one year, or a non-fungible token (NFT) within a game may be subject to terms of service—constituting a form of contract—that prohibit its transfer or sale. This situation engenders a direct conflict whereby the automated rules of the smart contract inhibit distribution, whereas *farāʾiḍ* mandates it.

This study holds significant practical implications concerning jurisdiction and digital sovereignty. It suggests that Islamic courts and governing authorities must be prepared to establish legal precedents that prioritize compliance with Sharia law over the coded provisions of smart contracts.[72] However, a fundamental question persists: how can a national authority, such as an Indonesian Religious Court, enforce a judgment against an anonymous digital wallet operating on a borderless, decentralized network? Judicial intervention cannot simply override or invalidate an immutable contract. Consequently, this finding underscores the urgent need for Muslim developers and users of blockchain technology to design automated contracts and protocols that are compliant with *farāʾiḍ* principles from the outset. Rather than depending on retrospective court orders, the ecosystem necessitates the creation of Sharia-compliant smart contracts incorporating pre-coded "backdoors"—for example, multi-signature triggers linked to verifiable death oracles—that automatically execute estate distribution mechanisms. These features should not be considered afterthoughts but must be integrated into the foundational architecture of the technology itself.

This study contends, consistent with the existing literature, that Sharia principles should theoretically take precedence over man-made automated contracts. The fundamental legal doctrine applicable in such conflicts is the *maqāṣid al-sharīʿah* (the higher objectives of Sharia), which prioritizes the realization of justice and the fulfillment of divine obligations. The provisions of a man-made contract cannot legally supersede or nullify the mandatory inheritance rights prescribed in the Qur'an. Consequently, Islamic legal scholars generally concur that any legal clause or contractual term—whether documented in writing or embedded within a smart contract—that contravenes the established principles of *farāʾiḍ* is deemed invalid (*bāṭil*). Nonetheless, labeling a smart contract as *bāṭil* is largely normative and poses practical challenges within a blockchain environment characterized by the principle of "Code is Law." An immutable decentralized protocol cannot be overridden or commanded by moral or religious injunctions.

Conclusion

This study offers a comprehensive theoretical framework aimed at reconciling classical Islamic jurisprudence with the contemporary digital economy. It concludes that Metaverse assets, such as non-fungible tokens (NFTs) and virtual land, fulfill the essential Sharia criteria of *al-taqawwum* (value), *al-manfaʿah* (utility), and *al-ḥiyāzah* (possession), thereby qualifying as *māl* (property). The principal jurisprudential argument posits that exclusive cryptographic control through private keys

[72] Norliza Katuk, Norazlina Abd Wahab and Nur Syaedah Kamis, "Cryptocurrency Estate Planning: The Challenges, Suggested Solutions and Malaysia's Future Directions," *Digital Policy Regulation and Governance* 25, no. 4 (2023): 325–350; Adel Safaei et al., "Entrepreneurship in Metaverse Real Estate: A Comprehensive Review," *IJAEM* 7, no. 7 (2025): 148–152; Irfan Irfan and Muhyarsyah, "A Fiqh Reconstruction in Company Zakat Accounting," *Afkaruna: Indonesian Interdisciplinary Journal of Islamic Studies* 16, no. 2 (2020): 175–208.

constitutes a valid modern analogue to the traditional notion of physical possession. This assertion signifies a fundamental ontological paradigm shift within Islamic legal theory, transitioning from Physical-Materialism to Digital-Functionalism. Accordingly, these assets should be incorporated into the *tirkah* (inheritable estate) and governed by the obligatory rules of *farā'iḍ*. This conclusion advances the discourse from questioning the permissibility (if) to addressing the methodology (how), highlighting substantial practical challenges that necessitate immediate *ijtihād* in the age of intangible assets. This study advances the existing body of knowledge by establishing a robust fiqh-based classification for these novel assets, thereby moving beyond theoretical discourse to propose concrete "Techno-Sharia" interventions, such as fNFTs and programmable smart contract backdoors. Future research should prioritize the development of practical frameworks—technological, legal, and educational—that specifically address issues of cross-border digital sovereignty. Such efforts are essential to ensure that the principles of *farā'iḍ* are applied justly and effectively in the digital era.

Nevertheless, this study acknowledges several limitations that present opportunities for further research. First, it is primarily doctrinal and library-based, relying on classical juristic texts and conceptual analysis; consequently, it lacks empirical validation concerning the actual access, management, and transfer of Metaverse assets in real inheritance cases. Second, the study does not comprehensively address jurisdictional diversity and regulatory fragmentation across different countries, factors that may influence the legal recognition and enforcement of digital inheritance. Third, the rapid evolution of blockchain technologies introduces uncertainty, indicating that the fiqh classifications proposed herein may require ongoing reassessment. Finally, ethical and security concerns—particularly those related to privacy, custodianship, and the potential misuse of access mechanisms—are not examined in depth. Future research should therefore adopt interdisciplinary and empirical methodologies, integrating fiqh analysis with legal studies, computer science, and socio-economic inquiry. Scholars are encouraged to develop and evaluate sharia-compliant technical prototypes, conduct case studies on digital estate management, and investigate comparative regulatory frameworks. Moreover, efforts to design user-friendly inheritance protocols and educational models for digital asset holders will be essential to ensure the practical and equitable implementation of *farā'iḍ* within the evolving digital landscape.

Acknowledgement

The authors wish to express their sincere gratitude to their respective institutions for providing academic support, a scholarly environment, and research resources that contributed to the completion of this study. They also extend their appreciation to colleagues and faculty members from their academic departments for their valuable insights, constructive critiques, and scholarly guidance. Special thanks are also extended to the anonymous reviewers for their thoughtful comments, critical evaluations, and constructive suggestions, which significantly enhanced the quality, clarity, and academic rigor of this article.

Disclosure Statement

The authors declare that they have no competing interests. They affirm that no financial, personal, or institutional relationships have influenced the research, analysis, or interpretation of the findings presented in this study.

Bibliography

Ahmed, Habib. "Security Tokens, Ecosystems and Financial Inclusion: Islamic Perspectives." *International Journal of Islamic and Middle Eastern Finance and Management* 17, no. 4 (2024): 730–745. https://doi.org/10.1108/imefm-04-2024-0195.

Aidonojie, Paul Atagamen, Obieshi Eregbuonye, Afolabi Toyin Majekodunmi, and Michael Inagbor. "The Prospect and Legal Issues of Income Tax in the Nigerian Metaverse." *Trunojoyo Law Review* 6, no. 1 (2024): 17–50. https://doi.org/10.21107/tlr.v6i1.23874.

Aksoy, Pinar Caglayan. "The Regulation of NFTs: Much Ado About Nothing?." *Business Law Review* 44, no. 4 (2023): 128–145. https://doi.org/10.54648/bula2023016.

Al Zuraib, Mohammd Ali. "Cryptocurrencies and Blockchain in Islamic Jurisprudence: A Comparative Legal and Economic Study." *Int. J. Environ. Sci.* 11, no. 1s (2025): 659–661. https://doi.org/10.64252/ncq8cs85.

Ali, Mohammad Mahbubi, and Rusni Hassan. "The Objective of Shariah in Islamic Finance: Its Relevance and Application." *ISRA International Journal of Islamic Finance* 10, no. 2 (2018): 196–209. https://doi.org/10.1108/IJIF-07-2018-0075.

Ananda, Firdaus Fika, and Irsan. "Pengaruh Perkembangan Cryptocurrency Sebagai Objek Harta Warisan Perspektif Ulama Kontemporer." *Usrah Jurnal Hukum Keluarga Islam* 6, no. 3 (2025): 30–51. https://doi.org/10.46773/usrah.v6i3.1906.

Antonius, Wiliam, and Amad Sudiro. "The Right of Inheritance of the Second Wife According to the Civil Code (Study of Supreme Court Decision Number 942/K/PDT/2022)." *Interdiciplinary Journal and Hummanity (Injurity)* 2, no. 11 (2023): 967–974. https://doi.org/10.58631/injurity.v2i11.148.

Astrakhantseva, Irina, and Roman Astrakhantsev. "Cryptocurrency as a New Financial and Legal Instrument: Defining Cryptoassets in Property Law." *SHS Web of Conferences* 93 (2021): 02002. https://doi.org/10.1051/shsconf/20219302002.

Atrik, Sakshi, and Shrsuhti Zade. "Metaverse Crypto Exchange." *International Journal of Scientific Research in Engineering and Management* 7, no. 10 (2023): 1–11. https://doi.org/10.55041/ijsrem26455.

Behl, Abhishek, Vijay Pereira, Achint Nigam, Samuel Wamba, and Rahul Sindhwani. "Knowledge Development in Non-Fungible Tokens (NFT): A Scoping Review." *Journal of Knowledge Management* 28, no. 1 (2023): 232–267. https://doi.org/10.1108/jkm-12-2022-0937.

Benali, Fatima Zohra, Wildan Miftahussurur, Rijal Ali Santos, and Zaenol Hasan. "The Algorithmic *Fiqh*: *Qiyas* and the Cryptocurrency Paradigm." *IJIL* 8, no. 1 (2025): 1–28. https://doi.org/10.35719/c3g8zb70.

Byun, Hyeonsu, Jueun Kim, Yunseok Jeong, Byoungjin Seok, Seonghyeon Gong, and Changhoon Lee. "A Security Analysis of Cryptocurrency Wallets Against Password Brute-Force Attacks." *Electronics* 13, no. 13 (2024): 2433. https://doi.org/10.3390/electronics13132433.

Daulay, Erika Nur Syarifah, and Akhmad Budi Cahyono. "Legal Protection for Heirs With Non-Fungible Token Heritage Objects." *JLPH* 5, no. 3 (2025): 2216–2227. https://doi.org/10.38035/jlph.v5i3.1198.

Dharma, Dicki Surya. "Regulating the Metaverse: Ensuring Legal Protection and Intellectual Property Rights in the Digital Landscape." *Indonesian Law Journal* 16, no. 2 (2023): 161–184. https://doi.org/10.33331/ilj.v16i2.131.

Dinneen, Jesse David, Maja Krtalić, Nilou Davoudi, Helene Hellmich, Catharina Ochsner, and Paulina Bressel. "Information Science and the Inevitable: A Literature Review at the Intersection of Death and Information Management." *Journal of the Association for Information Science and Technology* 75, no. 3 (2023): 268–297. https://doi.org/10.1002/asi.24861.

Dowling, Michael. "Fertile Land: Pricing Non-Fungible Tokens." *Finance Research Letters* 44 (2022): 102096. https://doi.org/10.1016/j.frl.2021.102096.

Faizi. "Are Cryptocurrencies Ḥaram? A Critical Analysis Toward MUI's Fatwā." *Al-Ihkam: Jurnal Hukum & Pranata Sosial* 18, no. 2 (2023): 420–442. https://doi.org/10.19105/al-lhkam.v18i2.8290.

Febriandika, Nur Rizqi, Fadli, and Denizar Abdurrahman Mi'raj. "How Are NFT (Non-Fungible Token) Transactions Reviewed According to Islamic Law?." *Borobudur Law Review* 4, no. 1 (2022): 1–12. https://doi.org/10.31603/burrev.6807.

Gaidash, Arkadiy, and Farkhad Karagussov. "Investigating the Inheritance of Digital Currency: Legal Challenges and Criminological Perspectives." *PJC* 16, no. 3 (2024): 245–260. https://doi.org/10.62271/pjc.16.3.245.260.

Ghazali, Siti Fadhilah, Naimah Abu Kasim, and Suharne Ismail. "Isu-Isu Fiqh Semasa dalam Pengurusan Harta Pusaka Kecil di Malaysia." *Jj* 3, no. 2 (2024): 268–280. https://doi.org/10.64638/jj.v3i2.014.

Gül, Mutlu. "The Attribution of the Criteria for Critical Appraisal of Content in the Hanafīs' Hadīth Understanding to Abū Hanīfa." *Kocatepe İslami İlimler Dergisi* 4, no. 2 (2021): 283–297. https://doi.org/10.52637/kiid.1002102.

Haryati, Junaidi, and Abdul Mughits. "Wealth and Its Acquisition in the Metaverse From the Perspective of Islamic Economic Law." *Az-Zarqa: Jurnal Hukum Bisnis Islam* 16, no. 2 (2025): 152–177. https://doi.org/10.14421/az-zarqa.v16.i2.4024.

Hasan, Rim. "Metaverse through the Lens of Shariah: A Systematic Literature Review." *Journal of Islamic Marketing* 14, no. 11 (2023): 2714–2735. https://doi.org/10.1108/JIMA-08-2022-0211.

Hassen, Oday, Ansam Abdulhussein, Saad Darwish, Zulaiha Ali Othman, Sabrina Tiun, and Yasmin Lotfy. "Towards a Secure Signature Scheme Based on Multimodal Biometric Technology: Application for IOT Blockchain Network." *Symmetry* 12, no. 10 (2020): 1699. https://doi.org/10.3390/sym12101699.

Hidayat, Enang. "Induction and Its Relevance to the Transformation of Sharia Economic Law in Indonesia: A Study of Four Madhhabs." *Ulul Albab: Jurnal Studi dan Penelitian Hukum Islam* 7, no. 1 (2024): 71. https://doi.org/10.30659/jua.v7i1.28692.

Hussain, Khasif. "From Pulpit to Marketplace: The Evolution of Religious Political Parties in Pakistan." *World Affairs* 187, no. 2 (2024): 151–160. https://doi.org/10.1002/waf2.12021.

Hussien, Hassan Mansur, Sharifah Md Yasin, Nur Izura Udzir, and Mohd Izuan Hafez Ninggal. "Blockchain-Based Access Control Scheme for Secure Shared Personal Health Records Over Decentralised Storage." *Sensors* 21, no. 7 (2021): 2462. https://doi.org/10.3390/s21072462.

Irfan, Irfan, and Muhyarsyah Muhyarsyah. "A Fiqh Reconstruction in Company Zakat Accounting." *Afkaruna: Indonesian Interdisciplinary Journal of Islamic Studies* 16, no. 2 (2020): 175–208. https://doi.org/10.18196/aiijis.2020.0120.175-208.

Ismail, Muhammad Naqiyuddin, Norhazlina Ibrahim, and Safeza Mohd Sapian, "The Process of Claiming Asset in Bahagian Pembahagian Pusaka (BPP)." *International Journal of Academic Research in Business and Social Sciences* 13, no. 12 (2023): 3456–3465. https://doi.org/10.6007/ijarbss/v13-i12/19691.

Jiang, Zefan. "The Legal Nature of Digital Collectibles and the Adaptive Challenges of the Civil Law Property System." *Current Research in Law & Practice* 3, no. 1 (2025): 55–70. https://doi.org/10.53104/curr.res.law.pract.2025.07005.

Kamis, Nur Syaedah, and Norazlina Abd. Wahab. "Analysing the Loopholes on Estate Administration of Cryptocurrency in Malaysia." *International Journal of Islamic Business* 7, no. 2 (2022): 65–77. https://doi.org/10.32890/ijib2022.7.2.5.

Karamitsos, Ioannis, Maria Papadaki, Khalil Al-Hussaeni, and Andreas Kanavos. "Transforming Airport Security: Enhancing Efficiency Through Blockchain Smart Contracts." *Electronics* 12, no. 21 (2023): 4492. https://doi.org/10.3390/electronics12214492.

Katuk, Norliza, Norazlina Abd Wahab, and Nur Syaedah Kamis. "Cryptocurrency Estate Planning: The Challenges, Suggested Solutions and Malaysia's Future Directions." *Digital Policy Regulation and Governance* 25, no. 4 (2023): 325–350. https://doi.org/10.1108/dprg-10-2021-0126.

Khotimah, Umi Khusnul. "The Law of Gender Justice in Digital Inheritance Distribution: A Fiqh Perspective on Crypto Assets and Non-Fungible Tokens in Dubai," *Sasi* 31, no. 2 (2025): 130–141. https://doi.org/10.47268/sasi.v31i2.2929.

Kim, Soo Jeong. "Discussion on the Qualification of Virtual Assets as a Property." *The Korean Association of Civil Law* 106 (2024): 35–79, https://doi.org/10.52554/kjcl.2024.106.35.

Kiranawati, Yenik Candra, Shifa Miarti Aziza, Arim Nasim, and Caria Ningsih. "Islamic Banking Governance in Maqashid Sharia Perspectives: A Systematic Literature Review." *Share Jurnal Ekonomi dan Keuangan Islam* 12, no. 1 (2023): 59–74. https://doi.org/10.22373/share.v12i1.15446.

Knott, Janice Denegri, Rebecca Jenkins, and Siân Lindley. "Valuing Digital Possessions: The Role of Affordances." *Journal of Computer-Mediated Communication* 27, no. 6 (2022): 1–11. https://doi.org/10.1093/jcmc/zmac019.

Komaruddin, Koko, Andrew Shandy Utama, Eko Sudarmanto, and Sugiono. "Islamic Perspectives on Cybersecurity and Data Privacy: Legal and Ethical Implications." *West Science Law and Human Rights* 1, no. 4 (2023): 166–172. https://doi.org/10.58812/wslhr.v1i04.323.

Kostenko, Oleksii, Vladimir Furashev, Dmytro Zhuravlov, and Oleksii Dniprov. "Genesis of Legal Regulation of the Web and the Model of the Metaverse Electronic Jurisdiction."*Information and Law* 1, no. 48 (2024): 68–83. https://doi.org/10.37750/2616-6798.2024.1(48).300772.

Lai, Jiabin. "Proof of Cryptoasset Ownership in England and Wales." *The International Journal of Evidence & Proof* 29, no. 2 (2024): 98–116. https://doi.org/10.1177/13657127241259803.

Lianidis, Konstantinos, Domen Bajde, and Mikkel Nøjgaard. "Ownership Technologies." *Marketing Theory* 25, no. 3 (2024): 497–505. https://doi.org/10.1177/14705931241279554.

Mensi, Walid, Ferihane Zaraa Boubaker, Khamis Hamed Al-Yahyaee, and Sang Hoon Kang. "Dynamic Volatility Spillovers and Connectedness Between Global Cryptocurrencies and Islamic Stock Markets." *Pacific-Basin Finance Journal* 62 (2020): 230-238. https://doi.org/10.1016/j.pacfin.2020.101361.

Mokodenseho, Sabil, Retnawati Siregar, Shohib Muslim, Kalijunjung Hasibuan, and Rahman Rahman. "Analysis of the Influence of Fiqh and Maqasid Al-Syariah in the Formation of Islamic Legal Policy in Indonesia." *WSiSS* 2, no. 1 (2024): 30–37. https://doi.org/10.58812/wsiss.v2i01.590.

Musfira, Musfira, Syahrizal Abbas, Khairani Khairani, and Wahyu Khafidah. "The Concept of Joint Property Ownership of Husband and Wife." *Proceedings of International Conference on Multidiciplinary Research* 4, no. 1 (2022): 15–19. https://doi.org/10.32672/pic-mr.v4i1.3733.

Nasrul, Muhammad Amrullah Drs, Nurin Athirah Mohd Alam Shahl, Najhan Muhamad Ibrahim, and Zati Ilham Abdul Manaf. "Overview of Digital Asset and Its Process Under the Inheritance Management." *International Journal of Business and Technology Management* 5, no. S5 (2023): 199–208. https://doi.org/10.55057/ijbtm.2023.5.s5.22.

Nisa, Raihanun, Chairul Fahmi, and Riadhus Sholihin. "The Validity of Cryptocurrency's Zakat." *JJHK* 9, no. 2 (2025): 559–585. https://doi.org/10.22373/jurista.v9i2.286.

Nurjaman, Muhamad Izazi, Sofian Al-Hakim, Iwan Setiawan, and Mualimin Mochammad Sahid. "Analysis of Buying, Selling, and Leasing Virtual Land in the Metaverse: A Perspective from Sharia Economic Law." *Ulul Albab: Jurnal Studi dan Penelitian Hukum Islam* 6, no. 1 (2024): 12–26. https://doi.org/10.30659/jua.v6i1.22782.

Oktavia, Sri Libra, Soerya Respationo, Erniyanti Erniyanti, Ramon Nofrial, and Muhammad Tartib. "Legal Analysis of the Distribution of Inheritance in the Form of Land Rights to Foreign National Heirs." *Journal of Multidisciplinary Academic Business Studies* 1, no. 1 (2023): 81–89. https://doi.org/10.35912/jomabs.v1i1.1815.

Park, Kyoung Shin. "The Study on IPR Issues Surrounding Uses of NFTs in Metaverse." *Law Research Institute Chungbuk National University* 13, no. 2 (2022): 83–121. https://doi.org/10.34267/cbstl.2022.13.2.83.

Putra, Ismail Rangga Wahana, Gunardi Lie, and Jelita Sihite. "Bought and Lost: Perlindungan Hukum Bagi Konsumen Atas Kehilangan Aset Digital Di Era Metaverse." *Jurnal Hukum Politik dan Ilmu Sosial* 4, no. 3 (2025): 212–221. https://doi.org/10.55606/jhpis.v4i3.5587.

Razi, Qaiser, Aryan Devrani, Harshal Abhyankar, Chalapathi, Vikas Hassija, and Mohsen Guizani. "Non-Fungible Tokens (NFTs)—Survey of Current Applications, Evolution, and Future Directions." *IEEE Open Journal of the Communications Society* 5 (2024): 2765–2791. https://doi.org/10.1109/ojcoms.2023.3343926.

Rusydiana, Aam Slamet. "Islamic Inheritance." *Fara'id and Wealth Management* 1, no. 1 (2021): 68. https://doi.org/10.58968/fwm.v1i1.68.

Saerang, Aloysius Ansell, Meita Kristalina Laman, and Setiani Putri Hendratno. "Accounting Profession in Metaverse Era—NFT." *E3S Web of Conferences* 426 (2023): 02052. https://doi.org/10.1051/e3sconf/202342602052.

Safaei, Adel, Saeed Najafi, Elham Aliniadoun, Toktam Parhizkarkhadiv, Mehri Houshyaramiri, Mohammadali, Rajabi Torbehbar, Seyed Hossein Alavi, Simin Naghibi, Masouleh, Salar Basiri, Ali Farzpourmachiani, and Mehdi Farzpourmachiani. "Entrepreneurship in Metaverse Real Estate: A Comprehensive Review." *IJAEM* 7, no. 7 (2025): 148–152. https://doi.org/10.35629/5252-0707148152.

Shamsuddin, Norin Rahayu, Khairul Adilah Ahmad, Taniza Binti Tajuddin, Moch Yusuf Asyhari, Pratiwi Susanti, and Juwari. "Exploring the Nexus Between Zakat, Gold, and Silver: A Review of Scholarly Contributions." *International Journal of Research and Innovation in Social Science* 8, no. 10 (2024): 2454–2464. https://doi.org/10.47772/ijriss.2024.8100203.

Sin, Jihye. "A Study on the Legal Nature of Blockchain-Based Virtual Assets from a Civil Law Perspective: A Critical Introduction to the UNIDROIT Principles on Digital Assets and Private Law." *Inst Leg Myongji Univ* 23, no. 2 (2025): 195–220. https://doi.org/10.53066/mlr.2025.23.2.195.

Thaidi, Hussein 'Azeemi Abdullah, Muhammad Farooq, Muhammad Firdaus Abd Rahman, and Huzaifa Aliyu Jangebe. "Voidable Financial Contracts ('Uqud Fasidah) and the Rectification Mechanisms: A Fiqh Juristic Review." *Journal of Fatwa Management and Research* 29, no. 2 (2024): 58–78. https://doi.org/10.33102/jfatwa.vol29no2.560.

Truong, Vu Tuan, Long Le, and Dusit Niyato. "Blockchain Meets Metaverse and Digital Asset Management: A Comprehensive Survey." *IEEE Access* 11 (2023): 26258–26288. https://doi.org/10.1109/access.2023.3257029.

Uddin, Mueen, Muath Obaidat, Selvakumar Manickam, Shams Ul Arfeen Laghari, Abdulhalim Dandoush, Hidayat Ullah, and Syed Sajid Ullah. "Exploring the Convergence of Metaverse, Blockchain, and AI: A Comprehensive Survey of Enabling Technologies, Applications, Challenges, and Future Directions." *Wiley Interdisciplinary Reviews Data Mining and Knowledge Discovery* 14, no. 6 (2024): e1556. https://doi.org/10.1002/widm.1556.

Ullah, Rahmat, Riaz Ahmad, and Irum Saba. "An Exploratory Study of Manfaʿah (Usufruct) in Ijārah Accounting from the Sharīʿah Perspective." *Isra International Journal of Islamic Finance* 15, no. 4 (2023): 4–24. https://doi.org/10.55188/ijif.v15i4.688.

Volodymyrovych, Krasnykov Yevgen. "Development and Implementation of New Organizational Structures in the Public Sector." *Democratic Governance* 32, no. 2 (2023): 11–27. https://doi.org/10.23939/dg2023.02.011.

Watters, Casey. "When Criminals Abuse the Blockchain: Establishing Personal Jurisdiction in a Decentralised Environment." *Laws* 12: 33 (April 2023): 1–16. https://doi.org/10.3390/laws12020033.

Widigdo, Aslam Mei Nur. "Islamic Insurance: How Far Has It Been Researched?." *Fara'id and Wealth Management* 3, no. 2 (2023): 393. https://doi.org/10.58968/fwm.v3i2.393.

Zade, Shrushti, Sakshi Atrik, and Aarti Pimpalkar. "Metaverse and NFT Blockchain." *Indian J. Comput. Sci. Technol.* (2024): 50–54. https://doi.org/10.59256/indjcst.20240302005.