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The Fiqh of Decentralized Finance: Assessing the Ontological and Economic Viability of Cryptocurrency through Islamic Financial Ethics

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ABSTRACT

Background. The rapid growth of cryptocurrency and decentralized finance (DeFi) has challenged conventional understandings of money, ownership, financial intermediation, and ethical value creation within Islamic finance. Therefore, a comprehensive Islamic ethical framework is required to evaluate digital financial innovations beyond their technological features.

Purpose. This study aimed to examine the ontological and economic viability of cryptocurrency from the perspective of Islamic financial ethics and to develop a differentiated framework for assessing decentralized financial practices based on asset characteristics, transactional substance, and ethical consequences.

Method. A qualitative normative-jurisprudential approach combined with comparative financial analysis was employed through the examination of classical Islamic legal sources, contemporary Islamic finance literature, regulatory documents, technical protocol descriptions, and selected cryptocurrency and DeFi cases.

Results. The findings indicate that cryptocurrency cannot be classified as a single legal category because digital assets vary in ownership structures, economic functions, value mechanisms, and risk profiles. Asset-backed and transparent utility-based tokens demonstrate stronger compatibility with Islamic financial principles, whereas speculative assets and interest-like lending mechanisms present significant concerns related to *riba*, *gharar*, *maysir*, market manipulation, and unjust wealth transfer. Furthermore, decentralization does not inherently guarantee ethical governance because authority, control, and risks may remain concentrated within certain protocols.

Conclusion. This study concludes that Islamic evaluation of cryptocurrency requires an ontological-functional approach that distinguishes between asset nature, contractual substance, and protocol-level impacts. Such a framework provides a more precise basis for assessing digital financial innovations that promote transparency, lawful ownership, real economic utility, equitable risk sharing, and the preservation of wealth within contemporary financial systems.

KEYWORDS

Cryptocurrency, Decentralized Finance, Islamic Finance.

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INTRODUCTION

Digital transformation has altered the architecture of contemporary financial systems by introducing decentralized networks, blockchain-based transactions, programmable assets, and forms of value exchange that

operate outside conventional banking intermediaries (Ghaemi Asl, Ben Jabeur, & Ben Zaied, 2024; Husain dkk., 2023; Parvin dkk., 2024). Cryptocurrency represents one of the most disruptive manifestations of this transformation because it combines technological innovation with new claims about money, ownership, trust, and economic sovereignty. Bitcoin, stablecoins, tokenized assets, and other blockchain-based instruments have challenged long-established assumptions that monetary legitimacy must depend on state issuance, central-bank control, or institutional intermediation. The emergence of decentralized finance therefore raises questions that extend beyond technological efficiency into deeper debates about the nature of wealth, monetary value, economic justice, and legitimate financial exchange.

Islamic finance approaches economic activity through an ethical and jurisprudential framework in which legality, value creation, risk sharing, transparency, ownership, public interest, and social justice are central considerations (Kyriazis & Corbet, 2026; Snene Manzli & Jeribi, 2024; Zaman dkk., 2023). Financial transactions are evaluated not only according to profitability but also according to their compatibility with prohibitions against riba, excessive gharar, maysir, fraud, unjust enrichment, and harmful speculation. Cryptocurrency complicates this framework because its economic characteristics differ significantly across assets and use cases. Some digital tokens function primarily as speculative instruments, others are used for payment or settlement, while stablecoins, utility tokens, and tokenized assets may represent different forms of economic rights. A single legal classification is therefore difficult to apply across the entire cryptocurrency ecosystem.

The rapid expansion of decentralized finance has further intensified these challenges by allowing users to lend, borrow, exchange, collateralize, and generate returns through smart contracts without conventional intermediaries (Batra dkk., 2025; Choi dkk., 2024; Siddique dkk., 2023). DeFi protocols can potentially increase financial inclusion and reduce transaction costs, yet they also introduce substantial risks involving volatility, algorithmic failure, leverage, opaque governance, hacking, liquidity instability, and speculative behavior. Islamic financial ethics must consequently confront a new environment in which technical decentralization does not automatically produce ethical decentralization. The critical question is whether blockchain-based financial systems can generate genuine economic value and equitable exchange or whether they reproduce familiar forms of speculation and exploitation through new technological mechanisms.

The central problem addressed by this study concerns the ontological status of cryptocurrency within Islamic jurisprudence. Classical Islamic law developed categories such as mal, mutaqawwam, thaman, ‘ayn, dayn, and usufruct to distinguish different forms of property, value, and exchange (Billah dkk., 2026; Ghaemi Asl, Raheem, dkk., 2023; Nomran dkk., 2025). Cryptocurrency challenges these classifications because it is intangible, digitally constituted, decentralized, and often detached from physical commodities or state-backed monetary systems. Jurists therefore disagree over whether cryptocurrency should be treated as money, property, digital commodity, financial right, speculative asset, or an entirely new category requiring independent reasoning. The absence of conceptual clarity at the ontological level creates uncertainty for subsequent legal judgments.

The economic viability of cryptocurrency creates a second problem because market value does not automatically establish ethical legitimacy (Assaf dkk., 2026; Shahzad, Ghaemi Asl, Panait, dkk., 2023; Younis dkk., 2024). High volatility, speculative trading, token manipulation, leverage, and rapid price fluctuations raise concerns about excessive gharar and maysir. Some crypto-assets derive their value mainly from network scarcity and market confidence, while others are linked to underlying assets, utility functions, or collateral mechanisms. The challenge is to distinguish genuine economic usefulness from price formation driven primarily by speculative expectations.

Islamic financial ethics requires such differentiation because economic benefit must be assessed alongside risk, transparency, justice, and the avoidance of wealth transfer through exploitative uncertainty.

The decentralized structure of crypto markets creates a third problem concerning accountability and governance (Jegerson dkk., 2026; Madanchian dkk., 2025; Zafar dkk., 2026). Conventional Islamic finance evaluates contractual parties, ownership, consent, responsibility, and the legal consequences of financial obligations. Decentralized protocols distribute these functions across smart contracts, validators, developers, token holders, automated market makers, and anonymous users. Responsibility becomes difficult to locate when transactions are executed automatically or when failures arise from code rather than direct human intervention. The jurisprudential problem therefore extends beyond the permissibility of cryptocurrency itself toward the broader question of how legal accountability should operate within algorithmically governed financial systems.

The primary objective of this study is to examine the ontological status of cryptocurrency through the conceptual categories of Islamic jurisprudence (Ghaemi Asl, Ben Jabeur, Hosseini, dkk., 2024; Islam dkk., 2023; Lamine, 2025). The research seeks to determine whether different crypto-assets can legitimately qualify as property, medium of exchange, store of value, commodity, digital right, or hybrid financial instrument. Particular attention is directed toward the characteristics that make an asset economically recognizable within Islamic law, including ownership, transferability, lawful benefit, scarcity, market acceptance, and capacity to preserve value. This objective allows the study to move beyond generalized judgments about cryptocurrency and toward a differentiated legal classification based on the actual economic function of each asset.

The second objective is to assess the economic viability of cryptocurrency and decentralized finance through Islamic financial ethics (Ghaemi Asl, Nasr Isfahani, & Mohammadi, 2024; Ghaemi Asl, Rashidi, dkk., 2023; Hoque dkk., 2024). The research evaluates whether selected forms of crypto-based activity promote genuine exchange, productive utility, transparency, equitable risk distribution, and financial inclusion or instead depend primarily on speculation, leverage, artificial scarcity, and asymmetrical information. Principles related to riba, gharar, maysir, darar, maslahah, justice, and preservation of wealth are used to assess the ethical structure of digital financial activity. The study therefore examines not only what cryptocurrency is but also what kinds of economic behavior it produces.

The third objective is to construct a jurisprudential framework capable of differentiating among cryptocurrency functions and decentralized financial practices rather than treating them as a single legal phenomenon (Mehta & Chawla, 2024; Naifar dkk., 2023; Rabbani dkk., 2025). The proposed framework seeks to classify crypto-assets and DeFi activities according to their underlying economic purpose, ownership structure, risk profile, governance model, and relationship to real economic value. Such a framework is expected to provide practical guidance for Islamic finance scholars, regulators, investors, fintech developers, and financial institutions. The intended outcome is a more nuanced fiqh of decentralized finance that can adapt classical legal reasoning to digital financial innovation without weakening Islamic ethical principles.

Existing scholarship on cryptocurrency in Islamic finance has frequently concentrated on the binary question of whether Bitcoin or cryptocurrency is halal or haram. Many studies analyze volatility, uncertainty, speculation, and the absence of intrinsic value, while others emphasize market acceptance, scarcity, transferability, and the technological benefits of blockchain (Ghallabi dkk., 2024; Rehman & Wu, 2025; Shahzad, Ghaemi Asl, & Tedeschi, 2023). These debates have contributed important insights but often treat cryptocurrency as a homogeneous category.

Significant differences among payment tokens, stablecoins, utility tokens, asset-backed tokens, governance tokens, and speculative meme-based assets receive insufficient attention, creating the risk of overgeneralized jurisprudential conclusions.

Research on Islamic digital finance has also focused heavily on contractual compliance while devoting less attention to the ontological foundations of digital assets. Legal judgments concerning gharar, maysir, or riba depend partly on prior assumptions about what type of object is being exchanged and what economic rights it represents (Drăgan dkk., 2025; Fallah dkk., 2024; Ghaemi Asl, Ben Jabeur, Goodell, dkk., 2024). Limited conceptual analysis of mal, monetary function, digital ownership, and technologically constituted value leaves an important theoretical gap. The absence of ontological clarity can produce inconsistent rulings because identical legal concepts are applied to assets whose economic structures differ substantially.

Scholarship on decentralized finance remains even more fragmented within Islamic jurisprudential studies. DeFi protocols introduce practices such as automated liquidity provision, yield farming, algorithmic lending, collateralized borrowing, staking, token governance, and decentralized exchanges. These arrangements do not always correspond directly to conventional financial contracts, even when their economic outcomes resemble lending, partnership, exchange, or fee-based services. A major gap therefore exists in connecting classical fiqh categories with the technical and economic mechanisms of decentralized protocols. The present study addresses this gap by integrating asset ontology, transaction structure, governance, and Islamic financial ethics within a single analytical framework.

The principal novelty of this study lies in developing an ontological-functional classification of cryptocurrency within Islamic jurisprudence. The proposed approach does not assume that all crypto-assets share the same legal status merely because they use blockchain technology. Legal evaluation begins with the economic and juridical nature of the asset: what it represents, how ownership is established, what benefits it produces, how value is generated, and what rights are transferred during exchange. This framework allows different classifications for different digital assets and recognizes that legal status should follow economic substance rather than technological label.

A second element of novelty involves integrating Islamic financial ethics with protocol-level analysis of decentralized finance. The study moves beyond the question of whether a token is permissible and examines how the surrounding financial architecture distributes risk, information, control, and profit. Smart contracts, automated market makers, decentralized governance, collateral mechanisms, and liquidity incentives are assessed as part of the ethical structure of the transaction. This approach makes it possible to identify situations in which technically decentralized systems may still generate concentrated power, speculative instability, or unjust wealth transfer. Ethical evaluation therefore applies to the system as well as the individual asset.

The justification for this research rests on the growing relevance of blockchain-based finance for Muslim consumers, Islamic financial institutions, regulators, and fintech developers. A jurisprudence that responds only with broad approval or prohibition risks becoming disconnected from the rapidly diversifying structure of digital finance. A more precise framework can distinguish innovation that supports transparency, financial inclusion, and productive exchange from practices dominated by speculation, leverage, manipulation, or excessive uncertainty. The study contributes to Islamic jurisprudence, Islamic finance, monetary theory, financial ethics, fintech regulation, and blockchain studies by proposing that the central question is not whether cryptocurrency is intrinsically Islamic or un-Islamic, but under what ontological, contractual, economic, and ethical

conditions decentralized digital assets can become legitimate components of an Islamic financial system.

RESEARCH METHODOLOGY

This study employed a qualitative normative-jurisprudential research design combined with comparative financial analysis to examine the ontological status and economic viability of cryptocurrency within Islamic financial ethics (Alabi & Ishola, 2025; Sahoo & Singh, 2025; Zhao & Park, 2024). The design was selected because the central research problem concerns not only the technical characteristics of digital assets but also their legal classification, economic substance, transactional structure, and ethical consequences. The analysis integrated Islamic jurisprudence, usul al-fiqh, Islamic monetary theory, contemporary financial ethics, and the operational architecture of decentralized finance. Cryptocurrency was therefore approached as a heterogeneous set of digital assets rather than as a single legal or economic category.

The normative-jurisprudential component examined whether selected crypto-assets could satisfy established Islamic legal criteria related to property, ownership, lawful benefit, transferability, valuation, and monetary function. Classical concepts such as mal, mutaqawwam, thaman, ‘ayn, dayn, manfa‘ah, and haqq mali were used as analytical categories rather than mechanically imposed classifications. Particular attention was given to the distinction between the technological form of an asset and its economic substance. A blockchain-based token could therefore receive a different legal assessment depending on whether it functioned primarily as a payment instrument, store of value, utility right, governance mechanism, asset-backed claim, or speculative instrument.

The ethical-economic component evaluated decentralized financial practices through the principles of riba, gharar, maysir, darar, maslahah, justice, transparency, risk sharing, and preservation of wealth. The study also considered whether specific protocols created genuine economic utility, facilitated productive exchange, reduced unnecessary intermediation, or instead generated excessive speculation, leverage, asymmetrical information, and unjustified wealth transfer. Technical decentralization was not treated as equivalent to ethical decentralization because control, information, and financial risk may remain concentrated despite distributed infrastructure.

RESULT AND DISCUSSION

The analytical corpus consisted of 176 sources comprising classical Islamic jurisprudential works, contemporary Islamic finance scholarship, regulatory documents, technical protocol documentation, and academic studies of cryptocurrency and decentralized finance. Thirty-six crypto-assets and DeFi mechanisms were retained for comparative analysis because they represented distinct economic functions, ownership structures, and risk configurations. The coding process identified six dominant ontological-functional categories: decentralized payment assets, stablecoins, utility tokens, governance tokens, asset-backed tokens, and speculative tokens. The most recurrent Shariah concerns were excessive uncertainty, speculative price formation, unclear economic substance, interest-like returns, and weak correspondence between financial return and productive economic activity.

Table 1. Comparative Classification of Crypto-Assets and Dominant Islamic Financial Concerns

Asset Category	Analytical Cases	Primary Economic Function	Dominant Shariah Concern	Preliminary Ethical Viability

Decentralized payment assets	7	Exchange and store of value	Volatility and speculative demand	Conditional
Stablecoins	6	Price-stable settlement	Reserve quality and redemption structure	Moderate–High
Utility tokens	6	Access to digital services	Unclear utility and token speculation	Conditional
Governance tokens	5	Protocol voting and incentives	Speculation and concentrated control	Conditional–Low
Asset-backed tokens	5	Digital claim on identifiable assets	Ownership and custody integrity	High if properly structured
Speculative tokens	7	Market speculation	*Maysir*, manipulation, weak utility	Low

The comparative evidence indicated that technological form alone did not determine Shariah status. Crypto-assets built on similar blockchain infrastructures generated different legal implications depending on what they economically represented. Asset-backed tokens with transparent ownership structures and identifiable underlying value showed substantially stronger compatibility with Islamic financial ethics than tokens whose price depended mainly on speculative momentum. Stablecoins also demonstrated comparatively stronger economic functionality when reserves, redemption mechanisms, and custody arrangements were transparent and legally enforceable.

The stronger ethical viability of asset-backed and functionally transparent digital assets can be explained by their closer relationship to recognizable Islamic concepts of property and exchange. Assets possessing lawful utility, identifiable ownership, transferability, and a clear economic claim were more readily classifiable within concepts such as mal, haqq mali, or digitally represented ownership. The analysis therefore suggests that intangibility does not automatically prevent a digital asset from acquiring legal value in Islamic jurisprudence. The decisive issue is whether the asset represents a legitimate economic interest capable of ownership, transfer, valuation, and lawful benefit.

Speculative tokens generated the weakest ethical profile because their market behavior was often disconnected from durable utility or identifiable underlying value. Rapid price movements, promotional manipulation, concentrated token ownership, and expectation-driven trading increased the relevance of gharar and maysir. Volatility alone did not constitute sufficient evidence of prohibition because many conventional assets also experience price fluctuation. Ethical concern intensified when volatility combined with weak utility, asymmetrical information, deliberate hype, and trading behavior primarily oriented toward short-term wealth transfer.

Analysis of decentralized financial protocols produced four recurring economic structures: exchange-based, liquidity-based, lending-based, and governance-based mechanisms. Decentralized exchanges generally produced fewer intrinsic Shariah concerns when transactions involved clearly owned permissible assets and transparent spot exchange. Lending protocols generated greater concern when returns were predetermined as compensation for the passage of time on fungible assets. Liquidity provision occupied an intermediate position because returns could arise from transaction fees, token incentives, or mechanisms economically resembling interest-bearing lending.

Table 2. Shariah-Ethical Assessment of Selected DeFi Mechanisms

DeFi Mechanism	Economic Substance	Principal Return Source	Main Shariah Issue	Ethical Assessment
Spot decentralized exchange	Asset exchange	Transaction spread/fees	Asset permissibility and settlement clarity	Generally viable with conditions
Automated market maker	Liquidity provision	Trading fees and incentives	Impermanent loss, token incentives	Conditional
Crypto lending	Financing/debt	Predetermined lending return	Potential *riba*	Low if interest-based
Collateralized borrowing	Secured financing	Financing charge	Debt structure and liquidation risk	Highly conditional
Proof-of-stake validation	Network security	Protocol reward	Nature of reward and token economics	Context-dependent
Yield farming	Multi-protocol capital allocation	Fees, incentives, leverage	*Gharar*, leverage, speculative layering	Low–Conditional
Governance participation	Protocol decision rights	Token incentives/appreciation	Concentration and speculative governance	Conditional

The data also demonstrated that identical commercial labels frequently concealed different contractual substances. "Staking" could refer to genuine blockchain validation, custodial token locking, exchange-based reward programs, or lending arrangements marketed under a common term. "Yield" could originate from trading fees, protocol inflation, borrowing charges, or speculative token rewards. Jurisprudential classification therefore required reconstruction of the actual flow of assets, rights, obligations, and returns rather than reliance on terminology used by platforms.

Comparative inference indicates that cryptocurrency cannot be classified coherently through a single universal ruling. The analyzed assets differed too substantially in economic function, ownership structure, source of value, and risk profile to justify treating them as one homogeneous category. A more defensible fiqh approach begins by identifying the ontological and economic substance of each asset before evaluating its transactions. This inference supports function-specific rather than technology-specific jurisprudence.

A second inference concerns the distinction between an asset and its use. A crypto-asset may possess sufficient characteristics to qualify as legitimate property while being traded through mechanisms containing prohibited speculation, leverage, or interest-bearing debt. Conversely, technological novelty does not make a transaction impermissible when its underlying structure

corresponds to a recognized lawful exchange. The ethical assessment must therefore operate at two levels: the ontological status of the asset and the contractual or behavioral structure of the transaction.

A clear relationship emerged between economic transparency and Shariah viability. Assets with identifiable utility, transparent issuance, clear ownership, understandable valuation, and limited dependence on speculative promotion received stronger ethical assessments. Assets characterized by opaque tokenomics, unclear governance, concentrated ownership, or artificial scarcity were more likely to produce concerns regarding gharar, manipulation, and unjust enrichment. Transparency therefore functioned as both a technical and ethical variable.

Another relationship appeared between decentralization and accountability. Greater decentralization could reduce dependence on conventional intermediaries, but it did not automatically improve justice or eliminate concentrated power. Several governance models transferred formal decision-making to token holders while allowing large holders, developers, or early investors to exercise disproportionate control. Islamic financial ethics therefore requires attention to substantive rather than nominal decentralization. A system may be technologically distributed while remaining economically concentrated.

The first representative case involved an asset-backed digital token representing a legally identifiable claim over a permissible underlying asset. Ownership records, custody arrangements, redemption rights, and token supply were transparent and externally verifiable. Jurisprudential analysis indicated that such a token could plausibly qualify as a digitally represented financial right when the token holder possessed genuine enforceable ownership or beneficial interest. The primary Shariah risks concerned custody failure, double representation of the same asset, inaccurate reserve claims, and separation between token ownership and legally enforceable rights.

The second case involved a DeFi lending protocol in which users deposited fungible crypto-assets and received a predetermined variable return generated from borrowers paying financing charges. Smart contracts automated collateralization, liquidation, and redistribution of returns without conventional banks. Technical decentralization did not alter the economic substance of the arrangement. The return remained closely connected to the lending of fungible assets and the passage of time, generating a substantial riba concern despite automation and decentralized execution.

The asset-backed token case demonstrates why blockchain representation can be compatible with Islamic financial ethics when digitalization preserves rather than obscures underlying ownership. Tokenization can improve transferability, auditability, fractional access, and settlement efficiency without necessarily changing the essential nature of the asset. Shariah viability depends on whether the token corresponds to a genuine legal and economic claim rather than merely referencing an asset rhetorically. Digital form therefore functions as a means of representation rather than an independent source of permissibility.

The DeFi lending case demonstrates why smart contracts do not transform prohibited economic substance into permissible finance. Automation changes how agreements are executed but does not necessarily change what the parties economically exchange. A predetermined financial return arising from the loan of fungible wealth remains ethically problematic when it functions as compensation for lending itself. Protocol-level analysis is therefore indispensable because blockchain terminology can obscure structures that resemble conventional interest-bearing finance.

The overall findings indicate that a viable fiqh of decentralized finance must distinguish among the ontology of digital assets, the contractual substance of transactions, and the ethical architecture of financial protocols. Cryptocurrency is not intrinsically permissible or impermissible

as a technological category. Its legal status varies according to ownership, utility, monetary function, economic substance, transparency, risk, and method of exchange. Islamic jurisprudence is therefore better served by differentiated classification than by universal judgments based solely on volatility, decentralization, or digital form.

The findings also suggest that Islamic financial ethics provides a broader evaluative framework than formal contractual compliance alone. A decentralized protocol may avoid conventional institutions while still generating excessive speculation, concentrated governance, opaque risks, or unjust wealth transfer. Economically viable Islamic DeFi requires more than blockchain-based execution; it requires lawful assets, transparent ownership, legitimate value creation, equitable risk distribution, and avoidance of riba, excessive gharar, and maysir. The ontological-functional approach therefore positions decentralization as ethically valuable only when technological innovation contributes to genuine economic utility, accountability, justice, and preservation of wealth.

The findings demonstrate that cryptocurrency cannot be treated as a single juridical or economic category within Islamic finance. Different digital assets perform different functions, represent different economic claims, and generate different forms of risk. Asset-backed tokens, stablecoins, decentralized payment assets, utility tokens, governance tokens, and highly speculative tokens therefore require distinct legal assessments. The strongest pattern emerging from the analysis is that Shariah evaluation should begin with the ontological and functional nature of the asset rather than with the technological fact that it operates on a blockchain.

The analysis also shows that the legal status of a digital asset must be separated from the permissibility of the transaction in which it is used. A crypto-asset may qualify as legitimate property or a transferable financial right while being traded through mechanisms involving excessive speculation, leverage, manipulation, or interest-bearing debt. The reverse is also possible: technological novelty does not make a transaction impermissible when its economic substance corresponds to lawful exchange. Islamic financial evaluation therefore requires a two-level analysis involving both asset ontology and transactional structure.

Protocol-level analysis revealed that decentralization does not automatically produce ethical finance. Distributed governance, smart contracts, and permissionless access can reduce dependence on conventional intermediaries, yet these features may coexist with concentrated token ownership, opaque incentives, asymmetrical information, and speculative behavior. Several DeFi arrangements also reproduce familiar financial structures under new terminology. Lending returns, liquidity incentives, staking rewards, and yield-generation mechanisms must therefore be examined according to their actual economic sources rather than their technological labels.

The findings further indicate that Islamic financial ethics provides a broader evaluative framework than formal contractual compliance alone. Transparency, lawful utility, equitable risk distribution, preservation of wealth, accountability, and avoidance of harmful speculation are essential to the ethical assessment of digital finance. A protocol may satisfy certain technical criteria while still producing economic outcomes inconsistent with justice or maslahah. The viability of Islamic DeFi therefore depends on whether decentralization contributes to real economic value rather than merely relocating conventional speculative practices onto blockchain infrastructure.

The findings partially align with scholarship that recognizes cryptocurrency as a form of property when it possesses scarcity, transferability, market acceptance, and lawful utility. Such approaches reject the assumption that physical form is necessary for legal recognition and emphasize that economic value can arise through accepted digital rights. The present study supports

this reasoning but adds a more differentiated ontological framework. Recognition of cryptocurrency as property does not imply that all tokens possess equal legal value because their economic substance varies considerably.

The results also correspond with studies that identify volatility, speculation, and uncertainty as major concerns in Islamic assessments of cryptocurrency. The present analysis differs from approaches that treat volatility itself as decisive evidence of impermissibility. Price fluctuation is not unique to digital assets and cannot independently establish excessive gharar or maysir. Ethical concern becomes stronger when volatility is combined with unclear utility, manipulative promotion, concentrated ownership, weak price fundamentals, and trading patterns driven primarily by speculative expectations.

The findings extend existing Islamic finance research by shifting attention from token permissibility toward protocol architecture. Much of the early discussion of cryptocurrency focused on whether Bitcoin or similar assets could qualify as money or property. Decentralized finance introduces a more complex environment in which legal evaluation must also consider automated market makers, liquidity pools, governance tokens, collateral systems, staking arrangements, and algorithmic lending. The present analysis therefore moves the debate from the permissibility of digital assets toward the ethical structure of decentralized financial systems.

The results also differ from technologically deterministic interpretations that equate decentralization with fairness, transparency, or financial democratization. Blockchain infrastructure can increase auditability and reduce certain intermediary costs, but technological decentralization does not necessarily prevent economic concentration. Governance power may remain dominated by developers, venture capital holders, or large token owners. Islamic financial ethics therefore requires substantive examination of power distribution rather than assuming that distributed infrastructure automatically satisfies principles of justice.

The findings signify that the emergence of cryptocurrency requires Islamic jurisprudence to reconsider the relationship between form and substance in financial classification (Aslam & Newaz, 2025; Belanes dkk., 2024; Theiri, 2026). Digital assets challenge traditional assumptions about physical possession, state-backed currency, and centralized ownership records, yet they do not necessarily invalidate established concepts of property and exchange. Islamic law possesses conceptual resources capable of recognizing new forms of value when ownership, benefit, transferability, and economic legitimacy are sufficiently established. The challenge lies in applying these concepts without forcing technologically novel assets into unsuitable categories.

The prominence of economic function signifies that monetary and financial value is becoming increasingly programmable (Gong dkk., 2025; Keshavarzfard & Zinati Yazdi, 2025; Yousaf dkk., 2024). A token can simultaneously function as a means of exchange, governance right, claim on an asset, access credential, or speculative instrument. Such multifunctionality complicates fiqh classification because legal status may shift according to how the token is used. Contemporary Islamic financial jurisprudence therefore needs greater sensitivity to dynamic financial functions rather than relying exclusively on static asset categories.

The findings concerning protocol governance signify that the ethics of financial technology cannot be separated from questions of power (Bashari dkk., 2025; Patra & Singh, 2025; Taera dkk., 2023). Decentralized finance often promises to eliminate intermediaries, yet control may simply migrate from banks and regulators to software developers, token holders, validators, or algorithmic systems. This transformation changes the location of authority without necessarily eliminating hierarchy. Islamic finance must therefore ask who controls financial infrastructure, who bears losses, who captures gains, and who remains accountable when automated systems fail.

The relationship between speculation and weak utility signifies that financial innovation can easily become detached from productive economic activity (Ali dkk., 2024; Alqudah dkk., 2026; Izadin dkk., 2025). Digital markets allow rapid circulation of capital and creation of new tokenized assets, but technical novelty does not guarantee genuine value creation. Islamic financial ethics places strong emphasis on lawful gain, transparency, and protection of wealth, making the distinction between productive innovation and speculative extraction particularly important. The future legitimacy of crypto-finance will depend on whether it contributes to economic utility rather than merely accelerating asset-price speculation.

The theoretical implication is that Islamic jurisprudence should adopt an ontological-functional approach to digital assets. Classification should begin with what an asset represents, what rights it creates, how value is generated, and how ownership is established. Such an approach reduces the risk of universal judgments that treat all cryptocurrencies as identical. It also allows established concepts of mal, haqq mali, thaman, and related categories to remain relevant without requiring every digital innovation to fit mechanically into classical forms.

The jurisprudential implication is that Shariah scholars should separate asset-level evaluation from transaction-level evaluation. Determining that a token qualifies as permissible property does not automatically validate every form of trading or financing involving that token. Exchanges, lending arrangements, derivatives, staking structures, and yield-generating protocols require separate analysis. This layered method can produce more precise rulings and reduce confusion between objections to cryptocurrency itself and objections to particular market practices.

The regulatory implication is that Islamic financial authorities should develop standards for transparency, reserve verification, custody, governance, smart-contract risk, and token ownership. Stablecoins and asset-backed tokens require reliable evidence that reserves and underlying assets actually exist and correspond to token-holder claims. DeFi protocols require clear disclosure of liquidation rules, fee structures, governance rights, and the sources of financial returns. Shariah governance must therefore expand beyond contract review toward technical and economic due diligence.

The industry implication is that Islamic fintech developers should design decentralized products around real economic utility rather than merely reproducing conventional interest-based structures on blockchain infrastructure. Smart contracts can support transparent exchange, tokenization of permissible assets, cost-efficient settlement, and potentially more inclusive financial services. Their ethical advantage disappears when the same technology is used to automate interest-bearing lending, excessive leverage, or speculative reward systems. Islamic DeFi requires innovation at the level of economic substance, not only technological execution.

The diversity of legal outcomes can be explained by the heterogeneity of cryptocurrency itself. The term “cryptocurrency” covers assets with radically different economic characteristics, from decentralized payment instruments to stablecoins, utility tokens, asset-backed claims, and purely speculative tokens. A universal legal ruling becomes unstable because the factual object being judged is not uniform. Islamic jurisprudence historically differentiates legal consequences according to the nature of property and transaction, making differentiated classification methodologically more consistent.

The stronger ethical profile of transparent asset-backed structures can be explained by their clearer relationship to ownership and real economic value. Islamic finance generally requires that financial claims correspond to recognizable rights, assets, services, or legitimate obligations. Asset-backed tokenization can satisfy these expectations when legal ownership, custody, and redemption are reliable. Uncertainty increases when tokens claim connection to assets without enforceable

rights or transparent reserve arrangements. Ontological clarity therefore reduces both legal and economic ambiguity.

The concerns surrounding DeFi lending arise because technological automation does not change the underlying logic of debt. Smart contracts can execute lending more efficiently, but a return derived primarily from lending fungible wealth for a period of time remains economically distinguishable from profit generated through trade, partnership, or service. The use of blockchain therefore cannot independently transform the nature of the return. This explains why protocol-level analysis repeatedly identified substance over technological form as a decisive principle.

The persistence of speculative behavior can be explained by the incentive structure of many crypto markets. Rapid token issuance, low entry barriers, global access, social-media promotion, and highly liquid trading environments encourage short-term price expectations. Network effects can produce legitimate value, but they can also amplify herd behavior and manipulation. Islamic financial ethics becomes particularly relevant because it evaluates not only voluntary exchange but also whether market structures encourage harmful uncertainty, unjust enrichment, and destruction of wealth.

Future research should develop a more detailed taxonomy of digital assets grounded in both Islamic jurisprudence and contemporary financial engineering. Stablecoins, tokenized securities, real-world-asset tokens, governance tokens, non-transferable digital rights, and programmable money should be analyzed separately. Greater conceptual precision will help scholars avoid treating rapidly evolving digital instruments as variations of the same financial object.

Future empirical studies should test the proposed framework against real transaction data and operational DeFi protocols. Research should examine where protocol returns originate, how losses are distributed, how governance power is concentrated, and whether users understand the risks they assume. Such evidence would allow Islamic financial ethics to move beyond theoretical compatibility toward assessment of actual economic outcomes and user behavior.

Future Shariah governance should incorporate multidisciplinary expertise involving jurists, economists, software engineers, cybersecurity specialists, and blockchain analysts. Smart-contract systems can contain financial relationships that are difficult to identify through legal documentation alone. Technical audits and economic reconstruction should therefore become part of Shariah review where automated financial systems are involved. Multidisciplinary governance would reduce the risk of approving products whose formal descriptions conceal problematic economic structures.

Future development of Islamic decentralized finance should prioritize asset-backed tokenization, transparent settlement, risk-sharing mechanisms, socially productive investment, and financial inclusion. Protocol design should minimize leverage, speculative layering, opaque incentives, and returns disconnected from genuine economic activity. The most constructive path is not to determine whether blockchain is inherently Islamic or un-Islamic, but to build financial architectures in which decentralization supports accountability, lawful ownership, fair risk distribution, real value creation, and preservation of wealth. A mature fiqh of decentralized finance must therefore evolve alongside technology while remaining anchored in the ethical purposes that distinguish Islamic finance from purely market-driven innovation.

CONCLUSION

The most important finding of this study is that cryptocurrency cannot be evaluated within Islamic jurisprudence as a single and uniform financial category. Its Shariah status depends on the ontological nature of the asset, the economic function it performs, the structure of ownership, the

source of value, and the contractual mechanisms through which it is exchanged or financed. Asset-backed tokens and functionally transparent digital assets demonstrated stronger ethical viability, while highly speculative tokens and interest-like DeFi arrangements generated greater concerns regarding riba, excessive gharar, maysir, manipulation, and unjust wealth transfer. The analysis also shows that technological decentralization does not automatically produce ethical decentralization. A protocol may operate without conventional intermediaries while still concentrating governance, obscuring risk, or reproducing economically problematic structures. Islamic financial evaluation therefore requires simultaneous attention to asset ontology, transaction substance, and protocol-level consequences.

The principal contribution of this research is conceptual, supported by a normative-jurisprudential and comparative financial methodology. The study develops an ontological-functional fiqh framework that evaluates digital assets according to what they economically represent and decentralized protocols according to what they actually do rather than how they are technologically branded. This approach distinguishes asset-level permissibility from transaction-level and system-level ethical assessment, thereby moving beyond the conventional binary question of whether cryptocurrency is simply halal or haram. The methodological contribution lies in combining classical jurisprudential concepts, Islamic financial ethics, economic analysis, and protocol-level reconstruction within a single evaluative model. Such integration provides a more precise basis for applying riba, gharar, maysir, maslahah, justice, transparency, and preservation of wealth to emerging financial technologies while preserving the principle that economic substance should take precedence over technological form.

The study is limited by its reliance on secondary literature, documented protocol structures, and normative interpretation rather than longitudinal transaction data or direct observation of user behavior across decentralized financial markets. Rapid technological innovation may also change token functions, governance mechanisms, smart-contract architecture, and regulatory environments faster than jurisprudential classifications can be stabilized. Future research should therefore test the proposed framework against real-time DeFi protocols, transaction flows, governance distributions, reserve structures, and user risk exposure. Further studies should also examine stablecoins, tokenized real-world assets, decentralized autonomous organizations, Islamic smart contracts, staking models, and cross-chain financial systems through collaboration among jurists, economists, blockchain engineers, and regulators. Such research would strengthen the development of an adaptive fiqh of decentralized finance capable of distinguishing ethically viable financial innovation from technologically sophisticated forms of speculation and prohibited economic conduct.

DECLARATION OF AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

During the preparation of this work, the authors used ChatGPT (OpenAI) to assist with English language refinement, grammatical correction, academic writing structure, and improving the clarity and coherence of the manuscript. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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AUTHORS' CONTRIBUTION

Author 1: Conceptualization; Project administration; Validation; Writing - review and editing.

Author 2: Conceptualization; Data curation; In-vestigation.

Author 3: Data curation; Investigation.

DECLARATION OF COMPETING INTEREST

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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