Guiding Fiqh Analysis of Crypto Assets: A Proposed Framework

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Abstract

The emergence of cryptocurrencies has brought about revolutionary changes in financial transactions, offering speed, cost-efficiency, and enhanced privacy without the involvement of traditional intermediaries. Despite these advantages, crypto assets pose several challenges from a fiqh perspective. Firstly, there are discrepancies among researchers attempting to define them. Secondly, technological complexities have led to misunderstandings of their concept. Thirdly, there is a general misconception about their similarity to Bitcoin. Fourthly, there is a notable dearth of comprehensive fiqh studies on the topic. Therefore, this study has adopted a qualitative method to address these four research gaps in extant literature. It has critically reviewed the literature to identify the issues and propose a definition of crypto assets and has categorized them into six types. Content analysis research method was used to develop a conceptual framework for the fiqh analysis of crypto assets. The framework is expected to equip Muslim researchers and jurists with processes, risk analysis methods, and benchmarks to objectively evaluate a given crypto asset.

Abstrak

Kemunculan mata uang kripto telah membawa perubahan revolusioner dalam transaksi keuangan, dengan menawarkan kecepatan, efisiensi biaya, dan peningkatan privasi tanpa keterlibatan perantara tradisional. Terlepas dari kelebihan tersebut, aset kripto menimbulkan beberapa tantangan dari sudut pandang fiqh. Pertama, terdapat perbedaan di antara para peneliti yang mencoba mendefinisikannya. Kedua, kompleksitas teknologi telah menyebabkan kesalahpahaman terhadap konsep mereka. Ketiga, terdapat kesalahpahaman umum tentang kemiripannya dengan Bitcoin. Keempat, masih kurangnya kajian fiqih yang komprehensif mengenai topik ini. Karena itu, studi ini mengadopsi metode kualitatif untuk mengatasi empat kesenjangan penelitian dalam literatur yang ada. Studi ini telah meninjau literatur secara kritis untuk mengidentifikasi masalah dan mengusulkan definisi aset kripto dan mengategorikannya menjadi enam jenis. Metode penelitian analisis isi digunakan untuk mengembangkan kerangka konseptual analisis fiqih aset kripto. Kerangka kerja ini diharapkan dapat membekali proses, metode analisis risiko, dan tolok ukur kepada para peneliti dan ahli hukum Muslim untuk mengevaluasi aset kripto tertentu secara objektif.

Introduction

Crypto assets originated as a response to increasing state surveillance and centralized control over financial transactions, reflecting the cypherpunk movement's advocation of privacy and individual autonomy (Beltramini, 2021). The resolution of the double-spending problem in 2009 through Satoshi Nakamoto's introduction of blockchain technology marked a pivotal moment in their development, leading to the creation of the first crypto asset–the Bitcoin cryptocurrency (Nakamoto, 2008). The advent of these cryptocurrencies has a couple of revolutionary implications. Firstly, they have provided people with superior features when performing their financial transactions. They have proven to be capable of making money transfers that are much faster than the transfers made by the traditional systems and at a fraction of the cost. These features are offered without the need for traditional third parties such as banks, and payment gateways (Maghdeed, 2020a). Moreover, they feature the blockchain, which delivers encryption and the capability to tokenize financial securities, creating trading platforms without the need for intermediaries (Maghdeed, 2020b). These blockchains provide an added factor of privacy and secure both transactions and transfers in a way that has surpassed their traditional counterparts. As such, cryptocurrencies can be considered one of the latest FinTech innovations that are disruptive in nature.

Secondly, cryptocurrencies have paved the way for various new crypto innovations that have proliferated over the years. This has given birth to diverse kinds of cryptos like the Non-Fungible Tokens (NFT), security tokens, utility tokens, and smart contracts, just to mention a few. Such digital assets do not necessarily have to provide the functions of money and currencies but could instead perform other functions as well. For instance, a NFT is a crypto that was initially created to provide its holder ownership of a unique digital asset like a piece of music, artwork, or video. These various tasks and functions of the diverse cryptos show that people are encountering crypto assets of which cryptocurrencies represent only a fraction.

In spite of the obvious advantages of their features, uses, and pivotal role in financial transactions, crypto assets face both exogenous and endogenous challenges. Among these challenges, the considerable inconsistency in terminology surrounding cryptocurrencies has exacerbated their complexity. Despite their distinct implications, expressions like 'digital currency', 'digital money', and 'electronic money' are often used interchangeably. While these terms generally refer to digital financial tools, cryptocurrencies occupy a unique category within the broader spectrum of crypto assets. Several studies highlight this ambiguity. For instance, researchers such as Abu Layl (2019), O. A. A. Al-Jumayli (2019), Bu Abdaly & Saeed (2019), Dahshan (2019), and Smiran (2019) demonstrate that cryptocurrencies lack a standardized definition, leading to divergent interpretations in both academic and regulatory contexts. Debates persist about the legal representation and characteristics of cryptocurrencies, including whether they qualify as money. In its latest resolution no. 237 (24/8), the International Islamic Fiqh Academy (IIFA) of the Organization of Islamic Cooperation (OIC) has underscored the need for further studies on critical issues affecting Sharīʿah rulings, such as defining cryptocurrencies and understanding their implications (Closing Statement of Digital Crypto-Currencies Symposium, 2021). In contrast, the Malaysian Securities Commission (SC) has outlined specific conditions under which crypto assets may hold value, reflecting varying approaches among jurisdictions and religious bodies (Sharia Advisory Council, 2023; Wahab et al., 2024). However, other Malaysian State Fatwa Committees have yet to issue formal opinions (Wahab et al., 2024). Contrary to the Malaysian SC, the Indonesian Ulama Council (MUI) asserts that cryptocurrencies are impermissible because they fail to meet the conditions for transacting (Hidayat, 2023). One of the latter fatwa's foundations is historically rooted in the adoption of paper money as an independent form of currency, similar to gold and silver, a practice ruled by the Islamic Fiqh Council (Al-Yahya, 2019). The concept

of legal tender was introduced to replace the gold backing of fiat currencies, allowing for their survival without a tangible commodity backing. However, applying this analogy to crypto assets in general, and cryptocurrencies in particular, within contemporary fatwas may be problematic and warrants reconsideration, due to the fundamentally different nature of crypto assets compared to traditional forms of currency.

Disagreements over crypto assets extend beyond jurists to include economists, bankers, and policymakers. In China, for instance, Bitcoin is not recognized as fiat currency due to its decentralized, non-sovereign nature (El Islamy, 2021). Islamic scholars also remain divided. Some argue that cryptocurrencies fail to meet essential monetary criteria, such as serving as a reliable medium of exchange (Al-Jumayli, 2019; Al-Jumayli, 2019; Al-Shummari, 2019; Mabout, 2019; Oudah, 2019; Samai, 2019), while others propose specific criteria for Sharīʿah compliance. These include considerations of volatility, popularity, and the absence of a central issuing authority (Abu Ain, 2019; Al-Samirrai, 2019). Meanwhile al-Yahya (2019) asserts that volatility alone does not preclude cryptocurrencies from functioning as units of accounting, Abu Ghuddah (2018) challenges the suitability of cryptocurrencies as accounting tools altogether.

A significant challenge in the literature arises from technical misunderstandings, which have led to oversimplified or inaccurate representations of cryptocurrencies. Abu-Bakar (2017) highlights the evolving nature of cryptocurrencies and their underlying technology, suggesting that jurists' perspectives are likely to become more refined as these concepts are better understood. However, this development has not yet been adequately realized. Misconceptions, such as equating all cryptocurrencies with Bitcoin or associating them inherently with gambling and speculation, are prevalent (Smiran, 2019). Furthermore, several studies have failed to grasp the mechanisms underlying cryptocurrency transactions. For example, Abu Layl (2019) inaccurately states that cryptocurrencies are issued by anonymous individuals and transacted using pseudonyms. Similarly, terminological errors, such as describing mining puzzles as mere algorithms, appear in the works of O. A. A. Al-Jumayli (2019) and Oudah (2019). Such inaccuracies highlight the need for greater technical rigor and precision in academic discussions.

Despite the extensive focus on Bitcoin, this narrow view has led to generalized conclusions that do not account for the diversity among crypto assets. Studies like those by Al-Shaykh (2019) and Al-Yahya (2019) often evaluate all crypto assets through the lens of Bitcoin, overlooking the unique characteristics outlined in their respective white papers. To enhance understanding, future research must move beyond Bitcoin-centric analysis, emphasizing categorization and individualized assessment of digital currencies.

Another key area of contention in the literature is the perceived risks associated with crypto assets. Regulatory uncertainty, cited frequently as a primary concern, reflects broader apprehensions about the absence of centralized oversight (Abu Layl, 2019; Al-Jumayli, 2019; Al-Shummari, 2019; Samai, 2019). Other cited risks include price volatility, lack of intrinsic value, and susceptibility to Gharar and gambling-like attributes (Al-Jumayli, 2019; Al-Shummari, 2019; Mabout, 2019; Oudah, 2019; Samai, 2019). However, these discussions often lack depth and fail to provide comprehensive analysis. For example, while regulatory concerns dominate the discourse, there is limited exploration of how different regulatory frameworks might mitigate or exacerbate these risks. Similarly, questions regarding asset backing and virtual existence remain under-researched, often relying on speculative arguments rather than empirical evidence.

The literature on crypto assets reveals substantial gaps in definition, technical comprehension, and risk analysis, emphasizing the need for deeper and more systematic

investigations. Existing jurisprudential deliberations by jurists often lack a structured research framework for conducting objective and comprehensive analyses. These limitations highlight critical deficiencies in the current Fiqh literature addressing crypto assets. This study aims to address these challenges by proposing a systematic framework. The framework will serve as a guide for Fiqh jurists in analyzing and resolving issues related to crypto assets.

Method

As previously stated above, the primary objective of this research is to develop a conceptual framework that would equip jurists with objective tools for evaluating crypto assets in terms of resilience, risk, and sharia compliance. To achieve this objective, the study has adopted a qualitative research method in the form of literature review and content analysis.

An extensive and systematic literature review was conducted based on secondary sources that focus on Islamic legal perspectives and crypto asset assessment. These sources included peer-reviewed journal articles, textbook chapters, conference proceedings, and policy papers. Major academic databases including ScienceDirect, and Islamic finance-specific repositories, were also consulted to ensure coverage of key themes and recent debates. Meanwhile content analysis techniques were employed to distill insights from the selected literature, focusing on thematic patterns related to definitions, frameworks, and the categorization of crypto assets. This analysis was useful in identifying the existing gaps in the treatment of crypto assets. The content analysis was also used to develop the conceptual framework based on the following structured iterative process:

1. Component Analysis: The technical and financial components of crypto assets were expanded to build a robust foundation.
2. Definition Formulation: A comprehensive definition of crypto assets was constructed, integrating both financial and technical perspectives.
3. Categorization: The main types of crypto assets were identified and classified, delineating their distinct characteristics and implications.
4. Thematization of Issues: Finally, the primary issues associated with crypto assets were categorized and thematized, focusing on resilience, safety, and compliance with sharia principles.

Practical Application of the Framework: The proposed framework provides jurists with a step-by-step evaluation process for crypto assets, beginning with resilience and safety assessments, followed by an evaluation of sharia risk severity, and concluding with an analysis of sharia compliance. This structured approach enhances objectivity and provides jurists with concrete tools to navigate the complexities of crypto asset assessment.

Limitations: This study is limited by potential biases in the literature reviewed, particularly due to regional or ideological focuses in Islamic finance literature. Additionally, the evolving nature of crypto assets means that certain data sources may lack real-time applicability, which could impact the comprehensiveness of our framework. However, efforts were made to minimize such effects by including most recent data. Moreover, the validation of the framework is deferred to future research, as it falls beyond the scope of this study.

The Need for Building the Framework

The literature reveals several gaps and issues. There seems to be a general lack of understanding of the technology underpinning cryptocurrencies and crypto assets among many of the jurists and researchers. The deficiency in grasping all the components of the technology

has created the adoption of a simplistic view of the system that undermines the ability to perform a proper analysis of the issues. This leads to the contention on the definition of crypto assets, and in turn leading to the confusion where different crypto assets are likened to Bitcoin. Therefore, there is a clear need for the categorization of the issues among the different components of the crypto system and investigation of each issue individually. Such categorization requires proper risk management methods to make an objective risk severity analysis of each issue.

Crypto Asset Components

It is important to comprehend that cryptocurrencies are not mere currencies or money. Rather they are more like financial systems that move currencies, rights, ownership, or tokens from an individual or entity to another. These systems have several components: wallet management, nodes, miners (depending on the type of crypto), protocol defining the system, and monetary policy (in case the crypto is a monetary type). Trading platform can also be considered a component, however one that is external to the system. By analogy to a financial system, wallet management is similar to mobile banking where an individual can carry out his transactions: sending money, making payments, exchanging, and receiving. The wallet management will ensure the identity of the individual and secure the transaction with valid signatory (public-private key combination).

Miners, on the other hand, act like financial institutions where they play an important role in verifying that the transacting party has sufficient funds, then once verified they expend the effort to record the transaction in a securely decentralized database-like ledger called the blockchain. However, unlike financial institutions, there are many miners, and a transaction has no preference of one carrying out the recording over another except that it depends on the competition and who solves a given puzzle first, which makes the whole process decentralized. Conversely, the nodes are individual devices (computers, mobiles, etc…) that make the backbone of the system. Their role is to relay valid transactions, helping in the broadcast process. The protocol guides the whole process of the system, while the monetary policy determines how often tokens/coins are created.

Definition of Crypto Assets

With the understanding of the general functionality of each component, a key point to consider is the variety of different cryptos that are currently known. There are many cryptos existing today that have different purposes other than the monetary function. As such, the word cryptocurrency is a misnomer. An appropriate name would be crypto asset. Therefore, it is very important that the definition not only includes the key word 'coin' but should also include 'token' because not all cryptocurrencies serve the purpose of being a payment system. Hence, the word 'token' in the definition handles the situation where the crypto asset serves a purpose other than being for payment. Also, a key aspect that distinctly distinguishes crypto assets from other digital assets is the fact that they are complete systems are intended to be decentralized (being recorded on the blockchain where every node keeps a copy of) as possible, and transfers are done securely between peers without intermediaries. Some crypto assets are less decentralized than others, and therefore the specification that they intend to be as much decentralized as possible in the definition realizes the spectrum of decentralized versus centralized crypto assets. As such the authors suggest the following definition: *Aspiring to be decentralized, a crypto asset is a system that ensures virtual coins or tokens are transferred securely and directly between peers without intermediaries.*

Types of Crypto Assets

In this paper, six main different categories of crypto assets are discussed. The first is the peer-to-peer (P2P) money transaction which basically makes the initial cryptocurrencies that were created to replace the traditional financial system and act as a medium of exchange. Bitcoin and many other alternative coins (altcoins) sharing similar features belong to this class of cryptocurrencies. Although these altcoins fall within the same broad class as Bitcoin, they however differ in their monetary policies and the implementation of the proof-of-work (PoW) hashing techniques. Typical examples of these altcoins include Litecoin, Dogecoin, and Freicoin (Antonopoulos, 2014; Härdle et al., 2020).

The second category is the distributed computation cryptocurrencies. These utilize blockchain ledgers for executing smart contracts across their network nodes, offering their own payment tokens (e.g., Ethereum's ether) (Antonopoulos, 2014). In contrast to traditional cloud computing, these cryptocurrencies distribute computations on every network node. A key distinction from P2P money transaction cryptocurrencies, like Bitcoin, lies in system complexity, account management, and scripting language for verification and operation (Savla, 2023). For instance, Ethereum's architecture prioritizes distributed and trustless computation over computational efficiency, resulting in redundant parallel execution on all network nodes (Savla, 2023). However, this can be costly for resource-intensive executions. Despite these limitations, Ethereum has diverse applications that include creating smart assets such as new tokens and currencies, enabling multisig wallet control, proof-of-existence, title deed ownership, prediction markets, supply chain tracking, smart contract creation, and tokenizing stocks for after-hours trading.

The third category represents the Non-Fungible Tokens (NFTs), which create unique digital signatures of artwork or collectibles, making them non-replicable. They are stored on blockchains, the two most common ones are Ethereum and BNB Chain (How to Create an NFT, 2023). NFTs act more like commodities than money, as they are exchanged for other cryptocurrencies. Their value depends on factors like use cases, aesthetics, community access, and creator reputation, with some platforms using rarity indices to rank NFTs (A Guide to NFT Rarity, 2022). While NFTs may seem redundant for replicable digital assets, they appeal to collectors who value uniqueness and prestige, similar to luxury brands. NFTs also find emerging applications in verifying ḥalāl licenses and tokenizing sensitive customer data.

Utility tokens are the fourth category. These are specific cryptocurrency tokens on smart contract blockchains, designed for their own use cases within Web3 projects. Unlike Bitcoin, they aren't intended as long-term stores of value or hedges against inflation, hence the reason why their definition has been restricted to 'their own use cases'. Instead, they serve purposes defined by the project. These tokens are "pre-mined" by project leaders and distributed to members, investors, and the public (What is a Utility Token?, 2022). Examples include governance tokens for voting on decentralized application upgrades, in-game tokens for blockchain games, reward tokens for cryptocurrency holdings, and tokens for tipping content creators on decentralized social media. Utility tokens don't face the same legal restrictions as security tokens and don't require the US Securities and Exchange Commission's (SEC) approval for exchange listings, provided they have a viable use case beyond speculation (What is a Utility Token?, 2022).

The fifth category is the security token which is a type of crypto asset that represents investment assets like stocks, bonds, options, or futures. These tokens are created through a process called tokenization, where assets are assigned a randomized number (the token) on a blockchain and offered to investors. Ownership records are maintained on the blockchain

(Majaski, 2022). Commonly, ERC-20 tokens on the Ethereum blockchain are used for tokenizing securities (Security Token, n.d.). These tokens are primarily designed for investment purposes, allowing holders to track ownership, value, and dividends through their wallets (Majaski, 2022). It's worth noting that while Bitcoin and Ethereum were initially intended for payment transactions, they've also been used for investment, but the SEC doesn't classify them as securities (Hinman, 2018).

The last category represents stablecoins. These are cryptocurrencies designed to maintain a stable value by pegging them to various assets. They fall into four main sub-categories based on their collateralization. The first sub-category includes those backed by fiat currencies like the US dollar or pound sterling (Härdle et al., 2020), with the reserves kept in a fixed rate through arbitrage (What Is a Stablecoin?, 2023). The second sub-category pegs stablecoins to real assets, such as precious metals or real estate. The third sub-category involves backing stablecoins with reserves of other cryptocurrencies. These are usually over-collateralized due to crypto market volatility (What Is a Stablecoin?, 2023). The fourth sub-category employs algorithms and smart contracts to manage supply, eliminating the need for reserves. However, maintaining the peg can be challenging for stablecoins, and some projects have struggled, leading to potential value loss (What Is a Stablecoin?, 2023). Users should also be cautious due to transparency issues and the centralized control of collateral by issuers, requiring trust in these entities.

Categorizing and Thematizing the Issues

The issues reviewed from the extant literature and discussed in this paper have been structured in a way relating the components (mining process, monetary policy, node routing, protocol development, wallet management, trading platform, and overall crypto system) to their respective crypto asset. This has the advantage of presenting all the issues within a particular theme and system components resulting effectively and objectively in understanding the impact of each issue. Furthermore, these issues can also be classified according to the types of concern raised: regulatory, financial, security, value, or mining operational efficiency.

Table **1** shows the issues that were identified from literature and structured according to the related component and the concern they raise.

Table 1.
The Relationships between the Component, Concerns, and Issues

	Regulatory Concern	**Financial Consideration**	**Security Concern**	**Value Concern**	**Operational Efficiency of Mining**
Mining Process			**15.** Mining pools and farms make the influence in the hands of few		**14.** Lack of proper puzzle randomization
					18. Rise of cartels censoring transactions

Monetary Policy		24. Inability of a stablecoin to maintain its peg	11. Short block times need more blocks to reach the desired security level	8. Not backed by any asset	16. Negative consequences of insufficient mining income
			16. Negative consequences of insufficient mining income	9. Lacking intrinsic value - not legal tenders	
Node Routing			10. Possibility of miner controlling > 50% of network - infant stage		
			17. Racing attack leads to double-spending		
Overall Crypto System	1. Lack of regulations & regulatory bodies	4. Stability and price fluctuations	22. Security concerns of smart contracts	23. Application of NFT is not of value	
	2. Extent to which authorities are concerned or non-supporting	25. The extent an issuer of a stablecoin releases full public audits		26. The extent to which an issuer of a stablecoin can be trusted to have the reserves they claim	
	3. Lacks association with any financial institution				
Protocol Development			19. Lack of a clear process for changing transaction validation rules	19. Lack of a clear process of changing transaction validation rules	
Trading Platform		5. Speculative investments leading to non-			

		sharia compliance			
		12. Offloading transactions from blockchain might be an issue			
		13. Trading platform reward in exchange for a % of returns			
Wallet Management		**6.** Inheritance Issues			
		7. Loss of Password			
		20. A Type-0 non-deterministic wallet raises security concerns			
		21. multi-sig can act as a solution for inheritance			

Each issue in

Table **1** is preceded by a unique number which represents the order in which the issue was extracted from literature, in addition it acts as a label to refer to it later.

The Proposed Framework

As explained previously, the proposed framework developed in this section is aimed at guiding major stakeholders in their analysis of crypto assets. This guiding framework provides a platform for examining a crypto asset using several process filters resulting in a comprehensive understanding of the crypto. Hence, a jurist will be able to distinguish and analyze the resilience of the crypto asset, its strength and weakness and the extent to which such an analysis affect the general sharia ruling.

There are four main processes embedded in the proposed framework in Figure 1 below. Three of these processes examine the crypto asset by scrutinizing its intrinsic components. The remaining one process examines the exogenous components (trading platform and wallet management). Before using the proposed framework to analyze crypto assets from Fiqh perspective, the core business or use of the crypto asset must be sharia compliant without any sharia violations. For instance, crypto assets must not have been intended or used for usury works, gambling, and unlawful services like prostitution. Once the sharia compliance is ensured, the crypto asset is examined for its cyber security maturity. If needed, and provided

that the crypto asset has an issuer, the issuing entity will also be evaluated. The next process will be to evaluate the risk severity of each of the issues listed in

Table **1**. The third process then evaluates the compliance to sharia for each of the individual issues. Finally, the last process evaluates the exogenous components.
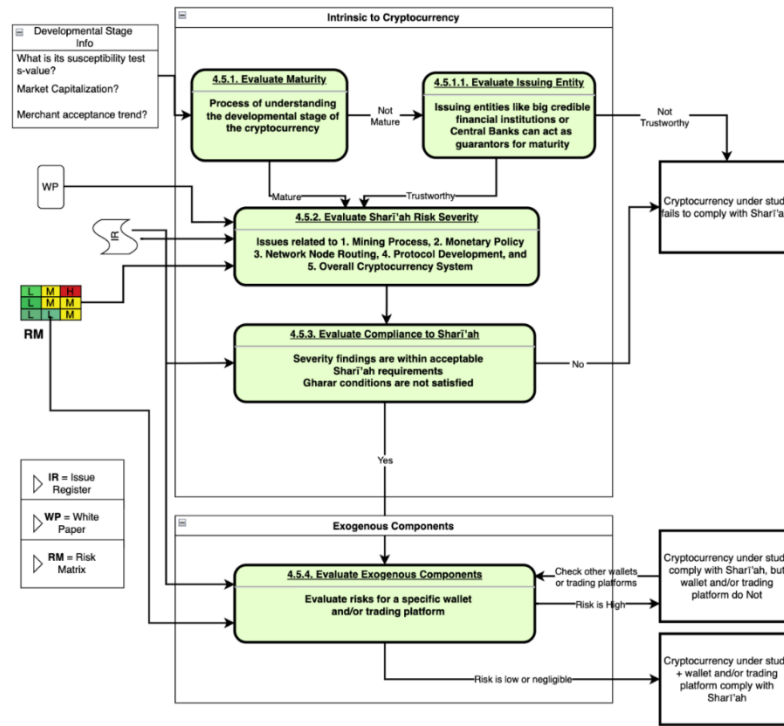

Figure 1.
Proposed Framework

Evaluating the Developmental Maturity (Process 4.5.1)

In assessing the maturity process of cryptocurrencies, it is crucial to understand their developmental stages. Cryptocurrencies typically evolve through three phases: infancy, gaining momentum, and advanced development. During the initial phase (infancy), vulnerabilities to technical attacks are evident, making them high-risk and not aligned with the goal of preserving wealth as enshrined in Maqasid al-sharia or the Objectives of sharia. Consequently, these cryptocurrencies do not require further scrutiny for sharia compliance.

Table 2.
Criteria for Maturity

		Mature	Further Scrutiny	Rejected
PoW	Market Cap	≥ $10 b	≥ $1 b and < $10 b	< $1 b
	s-value *	< 0.532	≥ 0.532 and < 0.826	≥ 0.826
	Merchant Acceptance Trend	Increasing	Increase is not obvious	Acceptance not established
PoS	Market Cap	≥ $10 b	≥ $1 b and < $10 b	< $1 b
	Largest Stake	≪ 50 %	≈< 50 %	≥ 50 %
	Merchant Acceptance Trend	Increasing	Increase is not obvious	Acceptance not established
Smart Contracts	PoS Criteria Satisfied	Yes	See PoS	None is Satisfied
	Access Controls	Recommended	Satisfied	
	require(), assert(), revert()**	Recommended	Satisfied	
	Formal Verification	Recommended	Maybe	
	External Audit	Must	Not Satisfied	
Stablecoin	Market Cap	≥ $10 b	≥ $1 b and < $10 b	< $1 b
	Full Public Audits	Satisfied	Partial	No
	Track-record of peg stability	Yes	No	No
	Reserves are established	Yes	Not clear	No
	Merchant Acceptance Trend	Increasing	Increase is not obvious	Acceptance not established

* s-value = susceptibility test value – a mathematical formula supported by statistical rigor to test PoW resilience against attacks: Bakr (2023) – https://www.researchsquare.com/article/rs-3013756/v1

** These are code specifics that ensure security of smart contracts

The evaluation of maturity considers several indicators, such as market capitalization, s-value (susceptibility test value), merchant acceptance trends, largest stake, access control, formal verification, code specifics, external audits, peg stability, and established reserves. The relevance of these indicators varies depending on the cryptocurrency type, whether it operates on Proof of Work (PoW), Proof of Stake (PoS), or is a stablecoin.

Table **2**, above, summarizes the author's criteria for assessing cryptocurrency maturity, consolidating insights from market and technical experts. The table categorizes cryptocurrencies as mature, requiring further scrutiny, or rejected based on specific criteria within PoW, PoS, smart contracts, and stablecoin categories. This comprehensive evaluation aids in determining whether a cryptocurrency has achieved maturity and is suitable for sharia compliance.

Evaluating the Issuing Entity (Process 4.5.1.1)

In the event that a more comprehensive evaluation of cryptocurrency maturity is warranted, a critical examination of the issuing entity's attributes becomes imperative. To align with sharia principles and safeguard property, the issuing entity must exhibit a firm commitment to preventing negligence and fraudulent activities, coupled with a steadfast dedication to maintaining transparency to mitigate potential jahālah concerns. The criteria for evaluating the issuing entity encompass its status as a central bank, governmental body, or reputable financial institution recognized for its trustworthiness. Alternatively, the issuing entity should possess traits of truthfulness, trustworthiness, and a well-established history of diligence and transparency. The outcome of this assessment will determine the cryptocurrency's trustworthiness in accordance with sharia principles.

Evaluating Risk Severity (Process 4.5.2)

This evaluation phase delves into the intricate components of cryptocurrency systems, encompassing aspects like mining operations, network node functionalities, and monetary policies, each presenting its unique set of challenges. This evaluation seeks to quantify the severity of risks associated with these issues, aiming to provide an unbiased assessment of their potential impact on sharia rulings. At the input stage, the cryptocurrency's maturity or trustworthiness, its whitepaper, issue register from

Table **1**, and a risk matrix form the foundational elements. A systematic procedure for evaluation unfolds, commencing with the compilation of all identified issues sourced from the whitepaper and the issue register.

Table 3.
Interpretation of Issues, their Impacts and Probability Levels

Impact		
Level	**Weight**	**Interpretation**
Negligible	1	No real effects on the transacting user.
Minor	2	Causes minor frustration for the user due to the temporary inability to access or transact.
Marginal	3	Causes minor loss of wealth for the user and/or difficulty of transacting causes inconvenience.
Significant	4	The transacting user faces considerable loss of wealth and/or barely is able to transact.
Critical	5	The transacting user faces significant loss of wealth and/or significant loss of access and transacting.
Probability		
Level	**Weight**	**Interpretation**
Highly	1	Probability of the issue's occurrence is significantly negligible, impossible, or highly unlikely.
Improbable	2	The occurrence of the issue is unlikely but may happen occasionally.
Possible	3	50-50 chance for the issue to occur. Can sometimes happen.
Probable	4	The issue is very likely to occur. Occurs frequently.
Certain	5	The issue is highly likely to occur. Almost always occurs.

For each issue, an assessment of its impact level on transacting users is conducted, with an assigned weight reflecting the magnitude of impact or likelihood as shown in Table 3 above. This weight, rated from 1 to 5, elucidates the scale of the issue's effect, ranging from minimal impact to the highest significance. Subsequently, the probability levels for these issues are determined, using a similar 1 to 5 rating system. This step is executed impartially after evaluating the impacts of all issues. The severity of risk for each issue is calculated by multiplying the weight of the impact level by the weight of the probability level.

Table 4.
Severity Range for Each Level

Level	Severity Range
Low	Level < 6
Medium	$6 \leq$ level < 12
High	$12 \leq$ level < 18
Very High	Level ≥ 18

The outcome, as shown in Table 4, yields the risk severity level, categorized as low, medium, high, or very high, using predefined thresholds as given in Table 4. The output provides a comprehensive list of all issues categorized with their respective risk levels.

Evaluating Sharia Compliance (Process 4.5.3)

The input for this evaluation phase involves the issues categorized with risk levels obtained from the preceding process. To assess these issues, a set of considerations is applied, with color-coding (acquired from the preceding process 4.5.2) indicating the level of risk. Green-colored issues signify minimal risk, suggesting no violation of the associated sharia principles. Yellow-colored issues, on the other hand, represent a moderate level of risk in relation to their corresponding sharia rules. The impact of yellow risk can vary. For example, in cases involving the issuance of money—linked to issue: '**2**. Extent to which authorities are concerned or non-supportive'—differing opinions about the sovereign's rights may influence the sharia ruling, depending on the interpretation. Issues shaded in orange and red colors carry higher risk and significantly impact sharia rulings.

It is important to note that all listed issues have undergone screening for *ribā* and gambling (*maysir*). In other words, the issues listed in this paper are generally devoid of *ribā* and *maysir*. Hence, these issues were principally accepted and evaluated on a risk scale ranging from low (green) to very high (red). However, as the list is non-exhaustive, any additional issue subjected to the framework that contains elements of *maysir* or *ribā* should be immediately classified as high (orange) to very high risk (red) respectively. For instance, consider a crypto asset project that offers services where the generated coins can only be utilized in zero-sum investments. These investments violate sharia principles, as zero-sum transactions and investments are inherently associated with *maysir*. Another example involves a crypto asset whereby its core team lends the coins to participants for specific transactions, under a contract that stipulates a fixed percentage of any profits as a return to the lenders. This practice clearly constitutes *ribā* and should be immediately classified red – high risk, as it explicitly violates sharia principles.

Conversely, since 50 percent of the issues listed in literature concern *gharar*, an important consideration would be to understand the conditions of the prohibited *gharar*.

Gharar should be prohibited only if the situation satisfies four conditions. Firstly, *gharar* should be large to the extent that it predominates the contract. Secondly, avoiding *gharar* should not lead to inflictions and hardship. Thirdly, what is causing *gharar* should not be a general/public need. Fourthly, the prohibited *gharar* should be confined to exchange-based contracts or anything that offsets exchange.

Consider, for instance, issue '**16**. Consequences of insufficient mining income'. For Bitcoin, this issue is futuristic and currently causes no significant effects, aside from minor inconvenience for transacting users, as it barely impacts their transactions. Table 3 assigns a maximum impact weight of 2 to this issue. However, this scenario might occur in the distant future—around the year 2140 for Bitcoin. Table 3 assigns a probability weight of 3 for such an occurrence. With this example, the highest possible risk severity level for Bitcoin regarding issue '**16**. Consequences of insufficient mining income' would be calculated as 2×3=6. According to Table 4, this falls within the lowest range of medium yellow risk. Since this issue pertains to the end of coin/token supply and is based on future anticipation, at least three prohibited *gharar* conditions are not met. Thus, a jurist might consider this risk acceptable from a sharia perspective.

Similarly, consider issue '**17**. Racing attack causing double-spending'. For Bitcoin, this issue is highly improbable due to the use of a few blocks confirmation method, which significantly reduces the likelihood of such an attack. As a result, Table 3 assigns a probability weight of 1 to this issue. However, if such an attack were to occur, it could have a marginal impact on the reliability of transactions causing a minor loss of wealth. Accordingly, Table 3 assigns an impact weight of 3 to this scenario. The highest possible risk severity level for Bitcoin regarding issue '**17**. Racing attack causing double-spending' would therefore be calculated as 3×1=3. Table 4 indicates that this level is within the range of low green risk. As the likelihood of such an attack is extremely low due to Bitcoin's robust security mechanisms, a jurist might deem this risk negligible and acceptable from a sharia perspective.

The output of this phase provides a comprehensive overview of all issues, categorized by their risk levels, revealing which sharia rules they may breach. Furthermore, it equips the evaluation process to issue a comprehensive ruling regarding the entire crypto asset system.

Evaluating Exogenous Components (Process 4.5.4)
In this evaluation phase, the input comprises the issue register, only the parts that provides detail about the trading platform and wallet management. The input also comprises information regarding the crypto's maturity or trustworthiness. To facilitate the evaluation process, certain considerations are taken into account. Firstly, trading platforms should avoid making platform usage a prerequisite for receiving rewards or should discontinue providing rewards altogether. Secondly, contracts should not involve short-selling or forex-type speculations. Thirdly, trading organizations should refrain from consolidating loans and exchanges within a single contract. Fourthly, contracts must be free from *Ribā al-Nasī'ah*, which arises from the absence of actual or constructive reception of either compensation. Fifthly, clear contractual provisions should govern transaction offloading, ensuring the recording of offloads as credit liabilities on the platform's accounting and databases. Sixthly, Non-Type-0 wallets are preferred due to their easier management. Seventhly, the use of multi-signature wallets should be mandated as a potential temporary solution for inheritance issues. The output of this evaluation process offers a comprehensive overview of all the identified issues, including their respective risk levels, in relation to the trading platform and wallet under examination.

Conclusion

As of 22nd February 2023, the number of crypto assets has increased to 22,644 with a total market capitalization of roughly $1.085 trillion (CoinMarketCap, 2023). The significance of these innovations cannot be overlooked as they feature faster and more secured transactions with endless applications and solutions to today's needs. However, the issues that these crypto assets introduced warrant further examination especially from a sharia perspective.

The complexity of the system underpinning the crypto assets caused a state of confusion, not only among Muslim jurists, but also among researchers and mainstream economists. Particularly, Muslim jurists and researchers have to observe several sharia restrictions on money and need to clearly determine its exchange, zakāh, blood money, and inheritance rules. The fact that they were faced with unprecedented technological and terminological aspects led in most cases to an inadequate understanding of the system and therefore various unsound reasoning and rulings on the topic.

This paper identified key issues and gaps in crypto asset literature, underscoring the need for a guiding framework to aid Muslim jurists in understanding these assets more reliably. The study has provided a clear definition of crypto assets, categorized them into six types with implications for their classification as money or commodities, and developed a conceptual framework. This framework offers researchers structured processes, risk analysis methods, and benchmarks to aid in the assessment of specific crypto assets.

The suggested conceptual framework is anticipated to give Muslim researchers and jurists a more objective Fiqh analysis of crypto assets. It is designed to assist regulators, investors, and scholars. Regulators can apply it to create policies that align with sharia principles, investors can use it to evaluate the compliance of crypto assets with Islamic guidelines, and scholars can rely on it to conduct systematic Fiqh analysis. By equipping jurists with objective assessment tools, this framework lays the foundation for further research and understanding of crypto assets within an Islamic context. Validation of this framework with qualitative research involving experts is recommended for future studies, as it was beyond the scope of this paper.

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