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Blockchain-Based Sharia Accounting Model: Practical Implications for Increasing Transparency and Trust in Islamic Financial Institutions

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A B S T R A C T

This paper proposes a conceptual blockchain-based Sharia accounting model designed to enhance transparency and trust within Islamic Financial Institutions (IFIs). The research addresses the growing yet challenged Islamic finance industry by leveraging blockchain's inherent features, including immutability, decentralization, and smart contracts. The model aims to improve accountability, reduce fraud, and strengthen Sharia compliance by providing real-time, verifiable financial records. This approach offers a novel contribution by systematically integrating advanced technology with Islamic ethical principles, leading to more robust and reliable financial reporting for all stakeholders.

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INTRODUCTION

The global Islamic Financial Services Industry (IFSI) has experienced remarkable growth, with total assets reaching USD 3.88 trillion in 2024, representing a 14.9% year-on-year increase across its banking, *Sukuk*, and Islamic insurance sectors. This expansion underscores the increasing prominence and relevance of Islamic finance in the global economic landscape. However, this rapid growth is accompanied by persistent and significant challenges that impede the industry's full potential and public confidence. Islamic Financial Institutions (IFIs) frequently encounter difficulties in accurately measuring and effectively monitoring Sharia compliance risks, coupled with a notable lack of employee dedication and insufficient monitoring mechanisms (Husna, 2019). Furthermore, the absence of mandatory auditing in certain areas and confusion surrounding the roles and functions of Sharia Supervisory Committees (SSCs) contribute to an environment where ethical adherence can be compromised.

A fundamental issue lies in the existing regulatory frameworks, which are often not specifically tailored for Islamic banks and financial institutions, leading to weak legal and supervisory structures. This situation is further complicated by the rapid changes in conventional banking regulations, which IFIs find challenging to adapt to quickly while maintaining rigorous Sharia compliance. Moreover, structural vulnerabilities persist within the IFSI, characterized by a heavy concentration in the Islamic banking sector and the underdeveloped nature of non-bank segments, such as Islamic capital markets and insurance (IFSB, 2025). This underdevelopment limits the availability of crucial Islamic finance investment and liquidity management instruments, thereby increasing the industry's susceptibility to external shocks (ifsb.org, 2025). The simultaneous rapid growth of the IFSI and the persistence of these fundamental operational and governance challenges indicate a critical gap between expansion and the robustness of underlying systems. This suggests that the existing, often manual or conventional, frameworks for ensuring Sharia compliance, transparency, and accountability are becoming increasingly strained by the scale and complexity of modern Islamic finance. This strain directly threatens the core ethical tenets of Islamic finance and necessitates innovative solutions.

Islamic accounting fundamentally distinguishes itself from conventional accounting by prioritizing justice, accountability, and the well-being of all stakeholders, rather than solely focusing on profitability and shareholder value. Its foundational principles are rooted in the teachings of the Quran and Hadith, which provide comprehensive guidance on ethical financial behavior (Purba & Rafi'i, 2025). Core to these principles are the prohibition of *riba* (interest), the active promotion of risk-sharing, and the obligatory payment of *zakat* (charitable contributions). Additionally, Islamic finance strictly mandates the avoidance of *gharar* (excessive uncertainty) and *maysir* (gambling) in all financial transactions (Eggy, 2024).These principles collectively aim to foster fairness, reduce economic inequality, and ensure that all financial practices are in strict alignment with ethical and moral values. Consequently, transparency and accountability are not merely desirable but paramount, serving as crucial safeguards against unethical

practices such as money laundering, fraud, and corruption, and demanding full disclosure of all financial activities.(Purba & Rafi'i, 2025)

This paper contributes to the existing literature by proposing a comprehensive conceptual blockchain-based Sharia accounting model. While previous research has explored blockchain's potential in Islamic finance generally (Pranata et al., 2025), a structured model that systematically integrates blockchain's inherent features (immutability, decentralization, smart contracts) with specific Sharia accounting principles and addresses practical implementation implications is a novel contribution. The systematic synthesis of advanced technological capabilities, specifically blockchain, with the distinct ethical and legal framework of Sharia accounting is a key aspect of this research. By developing a conceptual model, the paper moves beyond merely identifying potential applications to offering a structured approach for IFIs to operationalize blockchain in a manner that intrinsically enhances Sharia compliance, transparency, and trust, thereby enriching both technological and Islamic finance discourse. This provides a practical framework for IFIs and a theoretical foundation for future research at the intersection of fintech and Islamic ethics.

This study aims to explore the theoretical foundations of blockchain technology and Sharia accounting, identify the practical implications of integrating blockchain into Sharia accounting for enhancing transparency and trust, and propose a conceptual blockchain-based Sharia accounting model. Furthermore, it seeks to discuss the alignment of the proposed model with Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) standards and its potential to address current challenges in Islamic Financial Institutions.

THEORETICAL REVIEW

Blockchain Technology Fundamentals

Blockchain technology has emerged as a transformative force across various industries, offering a decentralized, secure, and transparent method for storing and managing data (Singh, 2025). At its core, blockchain is a shared, unalterable digital ledger that securely stores data across a network of computers, making it resistant to tampering. Each "block" of data is cryptographically linked to the preceding one, forming a chronological chain that ensures data integrity (Consensus, 2025).

The distinguishing features of blockchain technology include:

1. Immutability: Once a record is added to the blockchain, it cannot be altered or erased. This is achieved through sophisticated cryptographic hashing algorithms, where any modification to a block's content results in a change to its unique digital hash, making tampering immediately detectable. This inherent property guarantees the accuracy and integrity of all stored transactions and data.
2. Decentralization: Unlike traditional systems that rely on a single centralized server, blockchain information is distributed across a network of numerous nodes, with each node maintaining a complete copy of the blockchain. This distributed structure eliminates single

points of control or failure, making it virtually impossible for any single entity to manipulate or compromise the data.(Singh, 2025)

3. Transparency: All authorized participants within the network can view the ledger, fostering an open and verifiable environment.[13] While records can be encrypted to protect sensitive information, their existence and chronological order remain transparent, enhancing both data security and privacy (Hayes, 2022). This intrinsic transparency significantly reduces the potential for financial fraud and errors(Ambolis, 2025).
4. Smart Contracts: These are self-executing programs deployed on a blockchain that automatically perform transactions or tasks when predefined conditions are met.[11] Smart contracts automate operations, trigger actions, and streamline various processes, thereby reducing the need for intermediaries and enhancing efficiency.
5. Consensus Mechanisms: Blockchain networks utilize consensus mechanisms, such as Proof of Work (PoW) or Proof of Stake (PoS), to validate transactions and ensure that the majority of participants agree on the exact state of the blockchain. This collective agreement reinforces the integrity and security of the ledger.

In financial services, blockchain technology offers substantial benefits. It streamlines conflict resolution, ensures authenticity, and significantly boosts organizational efficiency by eliminating the complexities associated with data verification and coordination. Through advanced encryption and decentralization, it enhances data security and privacy. Furthermore, blockchain enables real-time auditing, accelerating financial reporting processes and reducing the costs traditionally associated with conventional audits (Ambolis, 2025). The fundamental features of blockchain—immutability, decentralization, and transparency—collectively act as a powerful mechanism for building trust. By removing reliance on centralized intermediaries and instead embedding trust directly into the verifiable, tamper-proof technological infrastructure, blockchain inherently mitigates the risks of fraud, errors, and data manipulation (Adewale et al., 2022). This represents a significant shift from traditional institutional trust to a technologically enforced confidence, a transformative aspect for modern financial systems.

Sharia Accounting and Islamic Finance Principles

Islamic accounting is distinct from conventional accounting, primarily by its emphasis on justice, accountability, and the holistic well-being of all stakeholders, rather than a singular focus on profitability and shareholder value (Purba & Rafi'i, 2025). Its foundations are deeply rooted in the ethical teachings of the Quran and Hadith, which provide comprehensive guidance for financial conduct.

Key ethical values underpinning Islamic accounting and finance include:

1. The strict prohibition of *riba* (interest).
2. The active promotion of risk-sharing in financial ventures.
3. The obligatory payment of *zakat* (charitable contributions).
4. The avoidance of *gharar* (excessive uncertainty) and *maysir* (gambling) in all financial transactions.

These principles collectively aim to foster fairness, reduce economic inequality, and ensure that all financial practices align with profound ethical and moral values. Consequently, transparency and accountability are not merely desirable attributes but are paramount to Islamic financial ethics. They are crucial for preventing unethical practices such as money laundering, fraud, and corruption, necessitating full disclosure of all financial activities to ensure stakeholders can make informed decisions based on reliable information. Islamic accounting also extends its scope to encompass social responsibility, requiring businesses to contribute to societal welfare, most notably through the payment of *zakat*.[5]

This holistic approach differentiates Islamic accounting from conventional practices, which often prioritize financial performance above all else. Islamic banking utilizes distinct financial instruments tailored to these principles, such as *Mudarabah* (profit-sharing), *Murabahah* (cost-plus financing), and *Sukuk* (Islamic bonds).

Ijarah (leasing) is another prominent contract, structured on the transfer of usufruct rather than the lending of money (Ariani et al., 2025). The foundational ethical principles of Sharia accounting justice, honesty, accountability, and the imperative for transparency and avoidance of uncertainty (*gharar*) are deeply congruent with the inherent characteristics of blockchain technology. This suggests that blockchain is not merely a tool for efficiency but a natural technological extension that can reinforce and operationalize the ethical demands of Islamic finance, making it an ideal candidate for enhancing Sharia accounting. The direct correspondence between blockchain's immutability and transparency and Sharia principles of accountability and full disclosure, along with the ability of smart contracts to automate the enforcement of Sharia rules, indicates that blockchain can serve as a powerful technological enabler for IFIs to not only comply with Sharia principles but to do so with unprecedented levels of verifiable integrity and trust.

Theories of Transparency and Trust

The integration of blockchain technology into financial systems can be understood through various theoretical lenses that illuminate its impact on transparency and trust.

1. Information Asymmetry Theory: This economic theory posits that an imbalance of information between parties can lead to market failures and a breakdown of trust.[18] Blockchain directly addresses this by decentralizing data and making it viewable to all authorized participants within the network. The capability for real-time data sharing ensures that all stakeholders have immediate access to up-to-date information, thereby significantly reducing the information gap and making fraudulent activities more difficult to commit. This mechanism mitigates market inefficiencies by democratizing access to verifiable information. The reduction of information imbalance directly lowers the risk of fraud, errors, and misreporting, ultimately increasing stakeholder trust in financial disclosures (Adewale et al., 2022).

2. Agency Theory: This theory explains conflicts that arise from the separation of ownership (principals, e.g., shareholders) and control (agents, e.g., managers), where agents may act in their self-interest due to information asymmetries (Kaal, 2021). Blockchain technology offers an alternative governance mechanism that provides "formal immutable guarantees" in agency relationships. Smart contracts, a core feature of blockchain, can verify, facilitate, monitor, and enforce agreements automatically, reducing the need for costly internal and external monitoring.
3. Institutional Trust: Blockchain technology aims to create "trustless" systems, where confidence is derived from the technological infrastructure itself rather than reliance on traditional intermediaries or institutions (Bodo & De Filippi, 2022). However, widespread institutional readiness for blockchain adoption remains a challenge. A significant portion of institutional traders, for instance, still express hesitation, citing concerns about performance, reliability, compliance, and usability. Regulatory uncertainties and technological adoption barriers further exacerbate this reluctance. While blockchain's promise of "trustless" systems is compelling, its widespread institutional adoption requires a more nuanced, hybrid approach to trust. The current reality indicates that purely technological trust is insufficient; traditional institutional trust mechanisms, such as robust regulatory oversight, the credibility of platform operators (Kunhibava et al., 2021), and established compliance frameworks, are still crucial for bridging the gap between conceptual potential and practical, large-scale implementation. This suggests that for IFIs, a blend of technological guarantees and robust human-led governance will be essential for successful integration.
4. Calculative Trust: This theory suggests that trust is based on a rational assessment of costs and benefits. Blockchain contributes to calculative trust by providing verifiable data through advanced data mining, modeling analysis, and information security technology (Jiang et al., 2024). The creation of "trust tokens" as credit credentials can, for example, significantly aid Small and Medium-sized Enterprises (SMEs) in enhancing their creditworthiness and facilitating trust circulation within supply chain finance.
5. Dispositional Trust: This refers to an individual's general propensity to trust, acknowledging that individual personality characteristics can influence trust decisions (Gaggioli et al., 2019). While the provided information does not extensively detail this aspect in relation to blockchain, it is an important consideration for user acceptance and adoption of new technologies.

Current Challenges in Islamic Financial Institutions

Despite the significant growth of the Islamic finance industry, several interconnected challenges continue to hinder its full potential and stability.

Regulatory and Supervisory Frameworks: A critical challenge is that existing regulatory frameworks are often not specifically designed for Islamic banks and financial institutions (Baldeh & Redzuan, 2025). This leads to weak legal, regulatory, and supervisory frameworks that struggle to adequately address the unique characteristics and requirements of Islamic finance. Furthermore, the rapid pace of changes in conventional banking rules in many countries makes it difficult for IFIs to adapt quickly while simultaneously ensuring strict adherence to Sharia principles.

Sharia Compliance Risks and Monitoring: IFIs face considerable difficulty in effectively measuring Sharia compliance risks (Husna, 2019). There is a noted lack of employee dedication and inadequate monitoring processes, often compounded by the absence of mandatory auditing for Sharia compliance in certain jurisdictions. This can lead to confusion regarding the roles and authority of Sharia Supervisory Committees (SSCs) and the broader Sharia council.

Operational Inefficiencies and Knowledge Gaps: Inadequate liquidity management tools and a general lack of comprehensive Islamic banking knowledge among employees, particularly concerning the intricate details of Sharia rules, pose significant operational challenges. This knowledge gap can affect everything from product development to risk management and customer service.

Structural Vulnerabilities: The IFSI remains disproportionately concentrated in the Islamic banking sector, with non-bank segments, notably Islamic capital markets (*Sukuk*) and Islamic insurance (Takaful), remaining broadly underdeveloped. This underdevelopment limits the availability of crucial Islamic finance investment and liquidity management instruments, thereby increasing the industry's vulnerability to external shocks, especially during periods of financial stress. These challenges are not isolated but form an interconnected web, where weaknesses in one area exacerbate others. For instance, weak regulatory frameworks directly impede effective Sharia compliance measurement and monitoring, which in turn contributes to low public trust (Islami Rahayu et al., 2025) and hinders the development of robust capital markets. This creates a systemic vulnerability that can undermine the industry's stability and its ability to fully realize its ethical and economic potential. Addressing these issues requires a holistic solution that targets multiple points of failure simultaneously.

Blockchain Applications in Islamic Finance

Blockchain technology offers significant potential to address many of the aforementioned challenges, improving transparency, efficiency, and security across various facets of Islamic financial transactions. It can enhance accountability, minimize intermediation, and help eliminate elements like *usury* (interest) and *gharar* (uncertainty). Furthermore, blockchain inherently supports the *maqashid* (objectives) of Sharia through its capacity for transparency and fairness in transactions (Alsadi, 2025). The technology also has the potential to reduce administrative costs and simplify transactions, thereby expanding the overall Islamic investment market.

Specific applications include:

1. Zakat Management: Blockchain offers substantial potential to improve the transparency and accountability of *zakat* fund management. It can create open and supervisable audit trails for *zakat* and *waqf* funds, directly addressing the prevalent issue of low public trust in fund management. Digital platforms leveraging blockchain can streamline the entire process of collection, distribution, and monitoring, leading to increased efficiency and broader participation (Asytuti et al., 2025).
2. Waqf Management: Similar to *zakat*, blockchain can significantly improve the accountability and traceability of *waqf* funds through immutable records and streamlined processes for contribution and distribution.
3. Sukuk Issuance (Smart Sukuk): Blockchain can remedy inefficiencies inherent in traditional *Sukuk* transactions, increasing the transparency of underlying assets and cash flows while simultaneously reducing costs and the number of intermediaries (Mousavi et al., 2025). Platforms like Abu Dhabi Islamic Bank's (ADIB) Smart Sukuk have already demonstrated the ability to enable retail participation with significantly lower investment thresholds (e.g., USD 1,000 compared to a typical USD 200,000 private-placement minimum) (Dey & Sanni, 2025). Blockchain-based platforms, such as INABLR in Bahrain and Obligat, offer "Sukuk-as-a-Service" models, integrating Know Your Customer (KYC)/Anti-Money Laundering (AML) compliance and built-in Sharia checks, and automating profit distributions.The tokenization of *Sukuk* can lower issuance costs and enhance their credibility and market value through improved credit tracking and the use of smart contracts (Mousavi et al., 2025).
    a. Despite these benefits, challenges remain, including legal recognition of trust laws in civil law jurisdictions, complexities in asset transfer, and inherent cyber risks. The cost of Sharia advisory services cannot be entirely eliminated, and the Sharia acceptance of digital currencies for *Sukuk* remains a subject of ongoing debate.
    b. However, the benefits are compelling: potential to circumvent trust law issues if blockchain is recognized as an independent register, instantaneous registration, and reduced legal fees. Furthermore, enhanced transparency and traceability, real-time uniform data views, and reduced execution risks are significant advantages. The development of "Regtech" (regulatory technology) and "Shariahtech" (AI with smart contracts for continuous Sharia compliance checks) is a promising solution to these challenges.
    c. The tokenization and fractionalization of *Sukuk* via blockchain represents a profound shift, democratizing access to Islamic capital markets by significantly lowering investment barriers for retail investors. This market-driven innovation, while promising increased efficiency and participation, simultaneously demands a

proactive and adaptive regulatory response that moves beyond traditional legal frameworks. The emergence of "Regtech" and "Shariahtech" signifies a necessary evolution in regulatory oversight, where technology itself becomes a tool for ensuring compliance and investor protection in a decentralized environment.

4. Murabahah Contracts: Smart contracts can be adapted to *Murabahah* (cost-plus financing) contracts to create secure and Sharia-compliant transactions (Ariani et al., 2025). The tokenization of *Murabahah Sukuk* on platforms like Ethereum can significantly lower issuance costs, particularly benefiting Small and Medium-sized Enterprises (SMEs) by making capital markets more accessible.
5. Ijarah Contracts: Smart contracts can also be adapted for *Ijarah* (leasing) contracts, ensuring secure and Sharia-compliant transactions by automating the terms and conditions of the lease. The *Ijarah* contract itself, based on the transfer of usufruct rather than money lending, inherently aligns with Islamic principles of fairness and transparency.
6. Mudarabah Contracts: Blockchain provides a transparent and immutable ledger for all financial activities and performance metrics in *Mudarabah* (profit-sharing) ventures. This significantly reduces information asymmetry between the capital provider (*rabb-ul-mal*) and the entrepreneur (*mudarib*). Smart contracts automate the profit-sharing process, ensuring instantaneous distribution and compliance with agreed terms, thereby mitigating disputes and inefficiencies. Blockchain further enables the pooling of resources from multiple investors through tokenized capital contributions, diversifying funding sources for entrepreneurs (Pranata et al., 2025).

AAOIFI Standards and Transparency

The Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) plays a crucial role in setting Financial Accounting Standards (FAS) and Governance Standards (GS) for IFIs (FASB, 2024). Its primary objective is to promote transparency, comparability, and informed decision-making within IFIs (Samra & Besar, 2023).

Recent developments in AAOIFI standards include:

1. FAS 1 (General Presentation and Disclosures in the Financial Statements): The revised FAS 1 (2021) aims to improve presentation and disclosure requirements, bringing greater clarity and comprehensiveness to financial statements (AAOIFI, 2025a). It introduces new concepts such as quasi-equity and off-balance-sheet assets under management to enhance the information provided to users, thereby assisting preparers in producing clear and understandable financial statements that facilitate better economic decisions.
2. FAS 42 (Presentation and Disclosures in the Financial Statements of Takaful Institutions): Issued in December 2022 (English version) and

March 2025 (Arabic version), FAS 42 sets out comprehensive requirements for Takaful financial statements, ensuring fair presentation in line with Sharia principles.

3. FAS 50 (Financial Reporting for Islamic Investment Institutions): Issued in December 2024, FAS 50 outlines financial reporting principles specifically for Islamic investment institutions. It emphasizes harmony and standardization in their financial statements to facilitate truthful and fair presentation in line with Sharia principles and rules. This standard supersedes the earlier FAS 14 (AAOIFI, 2021).
4. Governance Standards (GS): AAOIFI's Governance and Ethics Board (AGEB) is actively developing new GS, including the recently approved "Application of Shari'ah Governance Principles to Islamic Finance Windows". Various exposure drafts are also in circulation, such as those for "Framework of Auditing," "Development and Governance of Shari'ah Compliant Benchmark Rates," and "Auditing Requirements for Assessing Compliance with Shari'ah Principles and Rules". These standards aim to strengthen governance practices and provide a robust framework for Sharia compliance (AAOIFI, 2024).

AAOIFI's continuous efforts to update and issue new FAS and GS clearly demonstrate a commitment to enhancing transparency, standardization, and Sharia compliance within IFIs. However, while these standards are robust for traditional financial reporting, they do not yet explicitly address the unique accounting, auditing, and governance implications arising from blockchain-based financial instruments and processes. For a blockchain-based Sharia accounting model to be fully effective and trusted, it requires explicit regulatory endorsement and guidance from bodies like AAOIFI. This highlights a future direction for AAOIFI to develop "blockchain-specific" standards or interpretations to ensure seamless integration and maintain Sharia integrity.

METHODOLOGY

The research adopts a conceptual methodology, drawing upon established theories of blockchain technology, Islamic finance, and accounting to construct a novel framework. This approach involves synthesizing the inherent features of blockchain with the core principles and objectives of Sharia accounting. The proposed model is designed to leverage blockchain's unique attributes—immutability, decentralization, and smart contracts—to directly address the identified challenges in Islamic Financial Institutions (IFIs) and enhance transparency and trust. This conceptual framework provides a theoretical blueprint for how a blockchain-based Sharia accounting system would function, outlining its key components and their interrelationships.

RESEARCH RESULT

Detailed Presentation of the Proposed Blockchain-Based Sharia Accounting Model

The proposed Blockchain-Based Sharia Accounting Model integrates blockchain technology at various layers of the Sharia accounting process, from the origination of transactions to final reporting and auditing. This multi-layered

approach ensures comprehensive adherence to Sharia principles while maximizing transparency and trust.

1. **Transaction Layer:** All financial transactions within an IFI, including deposits, financing contracts, *Zakat* payments, and *Sukuk* issuances, are recorded as individual blocks on a distributed ledger. Each new block is cryptographically linked to the previous one, forming an immutable chain that guarantees the integrity and unalterability of records. This foundational layer ensures that every financial event is captured accurately and permanently.
2. **Smart Contract Layer:** Sharia-compliant contracts, such as *Mudarabah*, *Murabahah*, and *Ijarah*, are encoded as smart contracts. These self-executing contracts automatically enforce the specific Sharia rules and conditions (e.g., profit-sharing ratios, lease terms, or asset transfer conditions) upon the fulfillment of predefined criteria. This automation ensures strict adherence to Sharia principles, minimizes human intervention, and significantly reduces operational inefficiencies and the potential for errors.
3. **Sharia Compliance & Audit Layer:** A blockchain-based audit system is integrated to allow for real-time monitoring of transactions by Sharia Supervisory Boards (SSBs). Automated compliance checks are embedded within the smart contracts themselves, verifying adherence to both Sharia principles and relevant regulatory standards. The immutable and transparent nature of the distributed ledger provides a comprehensive and easily verifiable audit trail, making it simpler to confirm Sharia compliance and promptly detect any deviations or non-compliant activities.
4. **Reporting & Disclosure Layer:** Financial statements and disclosures are generated directly from the blockchain's real-time, verifiable data. This ensures unparalleled accuracy and timeliness in financial reporting, aligning perfectly with AAOIFI's objectives for clear, comprehensive, and truthful financial statements. Stakeholders gain access to a transparent, immutable record of financial activities, fostering a higher degree of trust and confidence in the IFI's financial position and operations.
5. **Specific Application Examples:**
    a. **Zakat and Waqf Management:** The model creates an open and supervisable audit trail for *zakat* and *waqf* funds, significantly enhancing accountability and transparency from the point of collection to final distribution.[8]
    b. **Sukuk Issuance:** Tokenized *Sukuk* on blockchain platforms streamline the issuance process, reduce associated costs, increase the transparency of underlying assets, and enable broader retail participation by lowering investment thresholds.
    c. **Mudarabah and Ijarah Contracts:** Smart contracts automate profit-sharing calculations and distributions in *Mudarabah* and manage

lease payments in *Ijarah*, ensuring real-time, Sharia-compliant execution and reducing information asymmetry between parties.

Key Tables

The following tables provide a structured overview of the conceptual framework and its practical implications for key Islamic financial instruments.

Table 1. Conceptual Framework of the Blockchain-Based Sharia Accounting Model

Core Blockchain Feature	Aligned Sharia Accounting Principle/Objective	Mechanism within the Proposed Model	Impact on Transparency	Impact on Trust
Immutability	Accountability, Data Integrity	Cryptographic linking of transaction blocks; Permanent record-keeping	Real-time verifiable records; Open audit trails	Tamper-proof data; Reduced fraud and errors; Enhanced auditability by SSBs
Decentralization	Transparency, Justice, Fairness	Distributed Ledger Technology for shared data across multiple nodes	Full disclosure of financial activities; Reduced information asymmetry	Increased stakeholder confidence; Elimination of single points of failure
Smart Contracts	Prohibition of Riba/Gharar/Maysir, Risk-Sharing, Maqasid al-Sharia	Self-executing code for Sharia contracts (Mudarabah, Murabahah, Ijarah, Sukuk, Zakat, Waqf)	Clear and verifiable contract execution; Automated compliance reporting	Automated Sharia compliance assurance; Reduced disputes and inefficiencies; Lower agency costs

Table 2. Practical Implications of Blockchain Integration for Key Islamic Financial Instruments

Islamic Financial Instrument/Contract	Current Challenge Addressed	Blockchain Solution Applied	Enhanced Transparency Outcome	Increased Trust Outcome

Zakat	Low trust in fund management; Lack of auditability	Open/supervisable audit trail; Smart contracts for automated distribution	Real-time visibility of fund flows; Traceable transaction history	Improved accountability; Reduced fraud and misuse of funds
Waqf	Lack of auditability; Operational inefficiencies	Immutable records; Streamlined processes for contribution and distribution	Clear and verifiable fund utilization; Comprehensive audit trails	Enhanced accountability; Greater donor confidence
Sukuk	High issuance costs; Limited investor access; Opaqueness of underlying assets	Tokenization/fractionalization; Smart contracts for automated issuance/distribution	Clear and verifiable asset backing; Real-time visibility into asset performance	Wider investor participation; Reduced intermediation risks; Automated Sharia compliance checks
Murabahah	Intermediation risks; Manual processing errors	Smart contracts for automated execution of cost-plus financing	Traceable transaction history; Full disclosure of contract terms	Reduced disputes; Automated Sharia compliance assurance
Ijarah	Operational complexity; Uncertainty (*gharar*)	Smart contracts for automated lease payments and terms	Clear and verifiable lease agreements; Real-time tracking of usufruct transfer	Reduced inefficiencies; Enhanced adherence to Sharia principles
Mudarabah	Information asymmetry; Manual profit calculation/distribution	Immutable ledger for financial activities; Smart contracts for automated profit-sharing	Real-time view of venture's financial health; Transparent profit/loss attribution	Reduced information asymmetry; Automated, fair profit distribution; Discourages unethical behavior

DISCUSSION

Academic Interpretation of the Model's Findings and Implications

The proposed blockchain-based Sharia accounting model represents a significant theoretical advancement, effectively bridging the gap between

traditional Sharia accounting principles and the capabilities of modern blockchain technology. This integration demonstrates how technology can serve as a powerful enabler for fulfilling religious and ethical imperatives in finance. The inherent principles of Sharia, which prioritize ethical conduct, justice, and transparency, find a natural technological counterpart in blockchain's immutable, decentralized, and transparent ledger system.

The model's reliance on blockchain signifies a theoretical shift in the basis of trust within financial transactions. Traditionally, trust in finance has largely been institutional, relying on intermediaries such as banks, auditors, and regulatory bodies. The blockchain model, however, moves towards a technologically enforced confidence, where trust is embedded directly into the immutable, transparent protocol itself. While a purely "trustless" system, entirely devoid of human intervention or institutional oversight, remains an ideal that may not be fully achievable or desirable in highly regulated sectors like finance, the model suggests a hybrid trust environment. In this hybrid model, the technological guarantees provided by blockchain are augmented by robust human-led Sharia governance and regulatory frameworks, creating a more comprehensive and resilient trust architecture. This acknowledges that while technology can automate and secure many processes, human oversight, particularly from Sharia Supervisory Boards, remains crucial for nuanced interpretation and ethical assurance.

Furthermore, the model directly addresses critical challenges identified in IFIs. For instance, the long-standing difficulty in accurately measuring Sharia compliance risks is mitigated through automated checks embedded in smart contracts and transparent, immutable audit trails. Operational inefficiencies, which can stem from inadequate liquidity management tools and manual processes, are significantly reduced by automating various functions via smart contracts. The enhanced transparency inherent in the blockchain model also directly combats low public trust in fund management, particularly in areas like *Zakat* and *Waqf*, by providing verifiable and accessible records of transactions and distributions.

Alignment with AAOIFI Standards

The proposed blockchain-based Sharia accounting model demonstrates strong alignment with the objectives and principles set forth by the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI). AAOIFI's mission is to enhance transparency, comparability, and informed decision-making within IFIs through its Financial Accounting Standards (FAS) and Governance Standards (GS).

The model's emphasis on real-time, verifiable data directly supports AAOIFI's objectives for enhanced disclosure and presentation, as articulated in FAS 1 (revised 2021), FAS 42 for Takaful institutions, and FAS 50 for Islamic investment institutions. By providing immutable records, the model facilitates the truthful and fair presentation of financial statements in line with Sharia principles, improving the clarity and comprehensiveness of information for users.

Moreover, the model's conceptualization of automated Sharia compliance, often referred to as "Shariahtech," and enhanced auditability provides a practical framework that can inform the development of future AAOIFI Governance Standards. This is particularly relevant for standards related to Sharia governance principles and auditing requirements, which are currently under development or review. The proposed blockchain model, by inherently promoting transparency, auditability, and automated compliance, can serve as a powerful catalyst for AAOIFI and other regulatory bodies to develop more specific "Regtech" and "Shariahtech" standards. This creates a dynamic feedback loop where technological innovation not only complies with existing Sharia principles but also actively shapes and elevates the regulatory framework for Islamic finance, fostering a more robust, efficient, and ethically compliant ecosystem. This suggests a future where technology and regulation co-evolve to strengthen Islamic finance.

Practical Benefits for Stakeholders

The implementation of a blockchain-based Sharia accounting model offers tangible benefits across various stakeholder groups:

1. Investors: Investors gain increased confidence due to the transparent and immutable nature of financial records, which significantly reduces the risk of fraud and misreporting. They also benefit from easier and more accessible participation in Islamic capital markets through innovations like tokenized *Sukuk*, which lower investment thresholds and broaden access.
2. Regulators: Regulatory bodies benefit from streamlined compliance processes, real-time auditing capabilities, and enhanced monitoring of Sharia adherence. This substantially improves supervisory efficiency and effectiveness, allowing for more proactive oversight.
3. Public/Community: The public and wider community experience enhanced social responsibility and trust through the transparent and accountable management of social funds like *Zakat* and *Waqf*. This fosters greater confidence in the ethical distribution and utilization of these funds.
4. Islamic Financial Institutions (IFIs): IFIs themselves realize significant advantages, including reduced administrative costs, increased operational efficiency, and improved risk management through automation and enhanced data integrity. This allows IFIs to allocate resources more effectively, focusing on customer service innovation and strategic growth rather than manual reconciliation and compliance burdens.

Comparison with Conventional Accounting

The blockchain-based Sharia accounting model fundamentally diverges from conventional accounting practices. Traditional accounting often relies on periodic audits and centralized intermediaries, which can introduce delays, human error, and opportunities for manipulation. In contrast, the proposed

model offers continuous, decentralized verification and real-time transparency. This paradigm shift not only streamlines the audit process, making it more efficient and reliable, but also moves beyond simply recording transactions to embedding and enforcing ethical principles directly within the financial infrastructure. The inherent design of blockchain, with its immutability and transparency, naturally aligns with the ethical demands of Islamic finance, offering a superior framework for accountability and trust compared to conventional systems.

CONCLUSION

This research concludes that a blockchain-based Sharia accounting model holds transformative potential for Islamic Financial Institutions, fundamentally enhancing transparency and trust across their operations. Blockchain's core features—immutability, decentralization, and smart contracts—are intrinsically aligned with the ethical and accountability-driven principles of Sharia accounting. This alignment offers a robust and innovative solution to long-standing challenges within IFIs, including difficulties in measuring Sharia compliance risks, operational inefficiencies, and issues of public trust. The proposed model provides a comprehensive conceptual framework for integrating these advanced technologies, promising improved accountability, reduced fraud, streamlined operations, and strengthened Sharia compliance across various Islamic financial instruments and contracts.

RECOMMENDATION

The successful implementation of a blockchain-based Sharia accounting model is contingent upon a holistic, coordinated ecosystem approach. It is not merely a technological upgrade but requires simultaneous advancements in regulatory frameworks, significant human capital development, and robust cross-stakeholder collaboration. A fragmented or piecemeal adoption strategy will likely lead to limited impact, continued challenges, and failure to fully realize blockchain's transformative potential for Islamic finance.

To facilitate this transformation, the following practical recommendations are put forth:

1. Phased Adoption and Pilot Projects: Islamic Financial Institutions should initiate pilot projects in specific, high-impact areas, such as *Zakat* and *Waqf* management or tokenized *Sukuk* issuance. These pilot programs will allow IFIs to test the model's feasibility, gather empirical data on its effectiveness, and build internal and external confidence in the technology.
2. Regulatory Sandboxes and Guidelines: Regulatory bodies, including the Islamic Financial Services Board (IFSB) and AAOIFI, should expand or establish dedicated regulatory sandboxes specifically for blockchain-based Islamic finance solutions. These sandboxes provide a controlled environment for innovation while ensuring compliance and investor protection. Concurrently, AAOIFI should prioritize the development of specific accounting and governance standards tailored for blockchain applications in Islamic finance, addressing the current regulatory gap.

3. Capacity Building and Education: Significant investment is required in training and educating IFI employees, Sharia scholars, and legal professionals on blockchain technology and its profound implications for Islamic finance. Addressing the current lack of technological literacy and specialized knowledge is crucial for successful adoption and effective oversight.
4. Inter-organizational Collaboration: Fostering multi-stakeholder collaboration among technology providers, IFIs, Sharia scholars, legal experts, and regulatory bodies is essential. This collaboration is vital for developing standardized protocols, establishing robust legal frameworks, and disseminating best practices for blockchain integration across the Islamic finance ecosystem.
5. Development of "Shariahtech" Solutions: Encourage and invest in the research and development of specialized Artificial Intelligence (AI) and smart contract solutions, termed "Shariahtech." These solutions would be specifically designed for continuous, automated monitoring of Sharia compliance within blockchain-based transactions and instruments, enhancing both efficiency and ethical adherence.

FURTHER STUDY

Limitations of the Current Study

This study, while comprehensive in its conceptualization, is subject to certain limitations that warrant acknowledgment:

1. Conceptual Nature: The primary limitation is the conceptual nature of this study. It proposes a theoretical model without including empirical data from real-world implementations. The practical challenges, unforeseen complexities, and actual successes of deploying such a model in diverse IFI contexts require further empirical investigation and validation.
2. Regulatory Uncertainty: While the paper discusses the alignment with existing AAOIFI standards and the need for new ones, the evolving and often uncertain nature of blockchain regulation globally, and specifically within Islamic finance, presents an ongoing challenge that can impact adoption and implementation.
3. Technological Adoption Barriers: The study acknowledges general technological adoption barriers, including the potentially high cost associated with implementing some blockchain solutions and current limitations in transaction processing speed for certain blockchain networks. The scalability and cost-effectiveness of enterprise-grade blockchain solutions for IFIs need practical assessment.
4. Data Privacy Concerns: Balancing the inherent transparency of public blockchains with the critical need for confidentiality and data privacy, particularly for sensitive financial information, remains a complex issue that requires careful design and regulatory guidance.

Suggestions for Further Research

Building upon the conceptual framework presented in this paper, several avenues for future research are suggested:

1. Empirical Validation: Conduct empirical studies and pilot projects within various IFIs to validate the effectiveness of the proposed model in enhancing transparency and trust. Such studies should aim to identify specific implementation challenges, measure quantifiable benefits, and establish best practices in real-world scenarios.
2. Regulatory Framework Development: In-depth research is required to inform the development of specific AAOIFI guidelines and other regulatory frameworks tailored for blockchain-based Islamic financial products, services, and accounting practices. This includes exploring legal recognition for smart contracts and tokenized assets within Sharia and conventional legal systems.
3. Shariahtech Development: Deeper research into the development, testing, and validation of AI-powered "Shariahtech" solutions for continuous, automated Sharia compliance monitoring within blockchain-based transactions and instruments. This includes exploring the role of machine learning in identifying potential Sharia non-compliance.

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