

ENHANCING TRUST & TRANSPARENCY IN WAQF DONATIONS THROUGH BLOCKCHAIN-BASED SMART CONTRACTS ALIGNED WITH SHARIAH PRINCIPLES

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ABSTRACT: Smart contracts using blockchain technology offer a more convenient and efficient way to execute transactions. Self-executing programs that automate activities independently, utilising the sophisticated features of blockchain to guarantee transparency, efficiency, and security. However, integrating smart contracts that do not adhere to Shariah principles may lead to non-compliance with Islamic ethical and legal standards, potentially resulting in mistrust, rejection by stakeholders, and invalidation of the contract within Shariah-compliant frameworks. Implementing smart contracts for waqf donations can be challenging due to technical, legal, and Shariah compliance issues. But the key advantage lies in enhancing trust and transparency throughout the donation process, ensuring accountability and delivering benefits at every stage of the process. The objective of this research is to explore the role of smart contracts in facilitating waqf donations. Using a descriptive qualitative approach, this study involves conducting a literature review and gathering relevant data to gain deeper insights into how blockchain-based smart contracts can contribute to improving the efficiency, transparency, and trust in the waqf donation process. The findings suggest that smart contracts offer promising opportunities for improving transparency, operational effectiveness, and Shariah compliance in waqf management, ultimately strengthening donor confidence and ensuring better governance of endowment assets.

KEYWORDS: Smart contracts, Blockchain, Waqf donation, Shariah Principles

1. INTRODUCTION

1.1. Smart Contracts in Fintech

The financial industry has been rapidly evolving due to continuous technological advancements, leading to significant growth and transformation over time. One of the most impactful innovations in this context is the introduction of smart contracts through blockchain technology, which has played a crucial role particularly within the fintech sector by enhancing automation, reducing operational costs, and increasing transparency and trust in financial transactions (Erika Rasure, 2024). The concept of smart contracts was first introduced by American computer scientist Nick Szabo in the 1990s (Stellar, 2024) that known as a digital agreements that operate on blockchain technology, enabling automatic execution of processes once predetermined terms and conditions are met. Their implementation facilitates

seamless, efficient, and convenient transactions by eliminating the need for intermediaries to interpret or enforce contractual terms.

According to T.J. de Graaf (2019), smart contracts serve multiple functions in the fintech industry. Deployed on an immutable and transparent blockchain, these contracts allow all participants to view terms and verify transactions, thereby increasing trust and enabling auditability for compliance purposes. Furthermore, the integration of smart contracts eliminates the need for third parties such as brokers or legal advisors, which helps reduce costs, minimize human error, and accelerate processing times. Additionally, smart contracts can trigger automatic actions in response to market conditions such as locking or liquidating collateral when specific thresholds are breached thus mitigating credit and counterparty risks.

1.2. The importance of Shariah compliance

Every aspect of daily activities, including financial sector, must adhere to Shariah principles and guidelines to ensure ethical and compliant conduct for Muslims. In the financial industry, compliance with Shariah principles fosters greater transparency, trust, security, and fairness between users and service providers. Islamic financial practices are grounded in key principles that promote ethical behavior, risk-sharing, and social justice while strictly prohibiting practices such as *riba* (interest), *gharar* (excessive uncertainty), and involvement in *haram* (forbidden) industries like alcohol, gambling, and conventional banking (Rosalia Mazza, 2025). Unlike conventional financial systems, which often rely on interest-based debt structures and speculative transactions, Islamic finance emphasizes asset-backed financing, equitable risk distribution, and socially responsible investments (Rosalia Mazza, 2025).

Incorporating Shariah principles into the smart contract approach requires that automated processes align with Islamic ethical guidelines. This includes automating profit-sharing agreements such as *mudarabah* and *musharakah*, ensuring that transactions are backed by tangible assets, and strictly avoiding activities that contravene Shariah law (Rosalia Mazza, 2025). By leveraging blockchain technology, these requirements can be embedded into the smart contract code, enhancing transparency, traceability, and trustworthiness. Blockchain's decentralized and immutable nature further supports compliance by providing a secure platform for executing contracts in a way that upholds Islamic financial principles (Nasrul, M. A. D et al, 2023).

1.3. Overview of Waqf

Waqf is a concept that is widely recognized across communities for its valuable contributions and support to society. The term *waqf* originates from the Arabic language, meaning "to withhold," "to forbid," or "to stop" (Jawhar, 2021). According to the Shafi'i school of thought, *waqf* refers to the permanent dedication of a property, where the benefits or usage of the asset can be utilized for charitable or public purposes, while the ownership rights of the donor are relinquished permanently (Jawhar, 2021). This is to ensure that the property remains intact and continues to generate ongoing benefits for the intended beneficiaries in accordance with Islamic principles. In Malaysia, the concept of *waqf* is recognized and governed

under various state enactments, reflecting both general and specific interpretations aligned with Shariah principles. While the core definition centers on the permanent dedication of property for religious or charitable purposes, variations exist across states in terms of scope and detail. Some states like Johor, Melaka, Selangor, Terengganu, Perak, and Negeri Sembilan provide more comprehensive definitions, including both movable and immovable assets (Jawhar, 2021).

As highlighted by Jawhar (2021), the implementation of waqf must strictly adhere to Shariah principles which includes ensuring that waqf assets are not sold, transferred, or inherited. Once a property is dedicated as waqf, it becomes a perpetual endowment, and its ownership is no longer held by the donor, ensuring its continuous benefit for charitable or public use in accordance with Islamic law. Smart contracts, with their self-executing and immutable nature, can support the enforcement of these principles by automating compliance and safeguarding the integrity of waqf arrangements. Therefore, this paper explores how smart contracts can be used to manage waqf donations, with an emphasis on trust, transparency, and Shariah alignment.

2. LITERATURE REVIEW

The development of blockchain and smart contracts have become increasingly common and widely recognized in the financial sector. These technologies offer significant benefits by enhancing the efficiency, convenience, transparency, and accessibility of financial products and services for users. According to Zulkepli, Mohamad, and Azzuhri (2023), blockchain-based smart contracts are expected to provide even greater advantages in the future, particularly for tech-savvy individuals who rely on digital platforms for their everyday financial needs. These advancements also create opportunities for startup companies to adopt modern technologies, enabling them to compete alongside Islamic financial institutions and conventional financial systems. One of the key features of blockchain is its use of distributed ledger technology, which can significantly improve the transparency of transactions (Zulkepli, Mohamad, and Azzuhri, 2023). Smart contracts built on blockchain automatically execute and record agreements in a secure and transparent manner, allowing data to be accessed by all parties involved without the need for third-party intermediaries. These technologies can also help prevent operational errors or human mistakes that may compromise Shariah compliance. For example, tawarruq-based financing often involves multiple complex steps that carry the risk of Shariah non-compliant events if not executed properly (Zulkepli, Mohamad, and Azzuhri, 2023) which can lead to a lack of trust among users and create uncertainty in the overall process. By automating transactions through blockchain-based smart contracts, the likelihood of these errors is significantly reduced, thereby enhancing user confidence and ensuring greater compliance with Islamic financial principles (Ibrahim et al, 2024).

Despite the advantages offered by blockchain and smart contracts, many waqf institutions still rely on manual processes, which present various operational challenges. Traditional waqf management often suffers from issues such as lack of transparency, inefficient record-keeping, delayed processing times, and difficulties in monitoring the usage and distribution of waqf assets (Wan Ismail, Misba, & Mat

Isa, 2025). In addition to operational inefficiencies, one of the major challenges in waqf management involves legal conflicts between Shariah courts and civil courts. This issue is not only prevalent in Malaysia but also in other Muslim-majority countries which create conflicts create uncertainty in the governance and administration of waqf, zakat, and *baitulmal* funds and properties (Abd Jalil, 2020). These institutions are often subject to various enactments and legislative frameworks under different governing bodies, leading to overlapping jurisdictions, inconsistent interpretations, and delays in decision-making. These issues further contribute to inefficiencies in waqf management. Abas and Raji (2018) identified five key factors that hinder effective waqf administration in Malaysia which are financial constraints, a shortage of qualified waqf managers, numerous waqf lands that remain unregistered, outdated or incomplete data, and complications arising from the involvement of waqif (donor) heirs. Beside that, the lack of trained personnel and technical expertise poses significant difficulties, particularly when dealing with complex waqf property cases. These shortcomings weaken public confidence in the waqf system and reduce the perceived reliability and effectiveness of its services (IBRAHIM et al, 2024).

Given the several challenges that faced regarding waqf management, the need for standardized Shariah compliance frameworks becomes increasingly important. Institutions such as the Accounting and Auditing Organization for Islamic Financial Institutions (AAOIFI) and the Islamic Financial Services Board (IFSB) play a crucial role in providing regulatory standards and guidance for Islamic finance, including waqf practices. As stated by Kasim, Htay, and Salman (2013) there are 7 standards under governance standards for Islamic Financial Institution which issued by AAOIFI which are Shariah Supervisory Board, Shariah Review, Internal Shariah Review, Audit & Governance Committee for Islamic Financial Institutions, Independence of Shariah Supervisory Boards, Statement on Governance Principles for Islamic Financial Institutions and Corporate Social Responsibility Conduct and Disclosure for Islamic Financial Institutions. Although these standards were originally designed for Islamic banks and financial entities, they provide a valuable governance framework that can be adapted to the management of waqf institutions. By implementing similar structures such as an independent Shariah supervisory board and regular Shariah-compliant reviews waqf institutions can ensure their operations are conducted ethically, transparently, and in full compliance with Islamic law. Hence, these standards, waqf institutions can strengthen governance practices, reduce discrepancies, and foster public trust in the waqf system. Building upon these governance standards, various researchers have explored how smart contracts and blockchain-based solutions can enhance Waqf operations. Their perspectives are compared in the table below.

Table 1: Comprehensive Comparison Study

Author	Year	Title	Islamic Perspective	Key Finding
Puteri Aina Megat et al.	2024	Assessing the predictive benefits of Waqftech smart contracts on corporate waqf	Protection of Wealth, Corporate Social Responsibility,	Malaysian SMEs adopt Waqftech for corporate/social value but not for

		crowdfunding among Malaysian enterprises	Maqasid al-Shariah principles	environmental concerns.
Farrukh Habib & Abu Umar Faruq Ahmad	2020	Using Blockchain and Smart Contracts for Waqf Institutions	Protection of Wealth, Usul al-Fiqh: Legal justification for enhancing transparency	Smart contracts and blockchain can revive Waqf by solving compliance, audit, and trust issues.
Siti Zulaikha & Sylva Arif Rusmita	2018	Blockchain for Waqf Management	Protection of Wealth, Encourages transparency & decentralized governance in waqf	Blockchain has strong potential to solve current Waqf management issues by enabling transparent, traceable, and decentralized systems.
Walaa J. Alharthi	2021	Using Blockchain in WAQF, Wills and Inheritance Solutions in the Islamic System	Protection of Wealth, Gharar avoidance in transaction certainty, Legal structure of Waqf (founder, asset, permanence)	Blockchain and smart contracts can enhance transparency, record reliability, and trust in Waqf management, ensuring long-term fulfillment of donor intent
Cory Vidiati, Endang Hendra, Selamat Santoso, & Izzul Faturrizky	2021	What Blockchain Technology Can Do to Contribute to Waqf	Protection of Wealth, Importance of Trust and Welfare, Potential for decentralized Waqf	Blockchain and smart contracts can optimize Waqf distribution and trust, especially in emergencies; government support and regulation are essential.
Seyedeh Hamideh Mousavi , Abolghasem Tohidinia, Seyed Mohamad Mousavi	2024	Transforming Islamic Finance: The Impact of Blockchain and Smart Sukuk	Protection of Wealth, Poverty Alleviation, Islamic contract validity, Transparency	Blockchain and smart contracts (via smart Sukuk) streamline Islamic financing, enhance social impact, and promote financial access while upholding Shariah values.
Bilal Khan et al.	2023	Proposing a Waqf-Based Ijarah Smart Sukuk Model for Development of Waqf Properties	Protection of Wealth & Welfare; Ijarah contract compliance; Shariah issues in	Proposed a Waqf-based Ijarah Smart Sukuk model to develop idle Waqf assets, solve transparency issues,

			Awqaf governance	and align smart contracts with Shariah principles.
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The objective of this paper is to explore the implementation of blockchain-based smart contracts in enhancing trust and transparency in Waqf management from the perspective of Islamic finance, particularly Maqasid al-Shariah. Based on the comparative analysis in Table 1, most of the scholars agree that blockchain and smart contracts offer strong potential to address the challenges of traditional Waqf administration, such as lack of transparency, idle assets, weak governance, and inefficiency. Studies by Farrukh Habib and Ahmad, as well as Siti Zulaikha and Rusmita, emphasize blockchain's ability to improve auditability, public trust, and perpetual fund tracking. Similarly, Khan et al. (2023) and Mousavi et al. (2024) demonstrate how Shariah-compliant smart contract models such as Ijarah-based Sukuk can revitalize Waqf properties and ensure sustainable development. The majority of findings suggest that when properly structured according to Islamic principles, smart contracts do not conflict with Shariah and can in fact support the goals of Maqasid al-Shariah by promoting wealth circulation, reducing misuse, and ensuring donor intent is preserved. However, the literature also stresses the need for continuous Shariah oversight and standardization to ensure the legal and ethical soundness of these digital solutions.

3. METHODOLOGY

This research aims to understand and explore the implementation of smart contracts through blockchain technology in waqf donations, ensuring alignment with Shariah principles and compliance. To achieve this, a qualitative research methodology is adopted, focusing on an in-depth exploration of relevant literature, documents, and existing frameworks related to both smart contracts and Islamic finance. This approach involves collecting and analysing secondary data from academic journals, institutional reports, and credible online sources. By examining various case studies and interpretations, the research seeks to identify the opportunities, challenges, and potential solutions for implementing Shariah compliant smart contracts in the context of waqf management. The study applies the Maqasid al-Shariah as an evaluative framework, with particular emphasis on the protection of wealth (hifz al-mal) and transparency, to assess whether blockchain-based smart contracts can improve the governance, trust, and sustainability of waqf systems. By analysing selected case studies and scholarly interpretations, the research seeks to identify opportunities, challenges, and practical considerations for implementing Shariah compliant smart contracts in the management of waqf. This combined methodological approach offers both technical insight and Islamic legal grounding, ensuring the findings are relevant to both technological innovation and religious compliance.

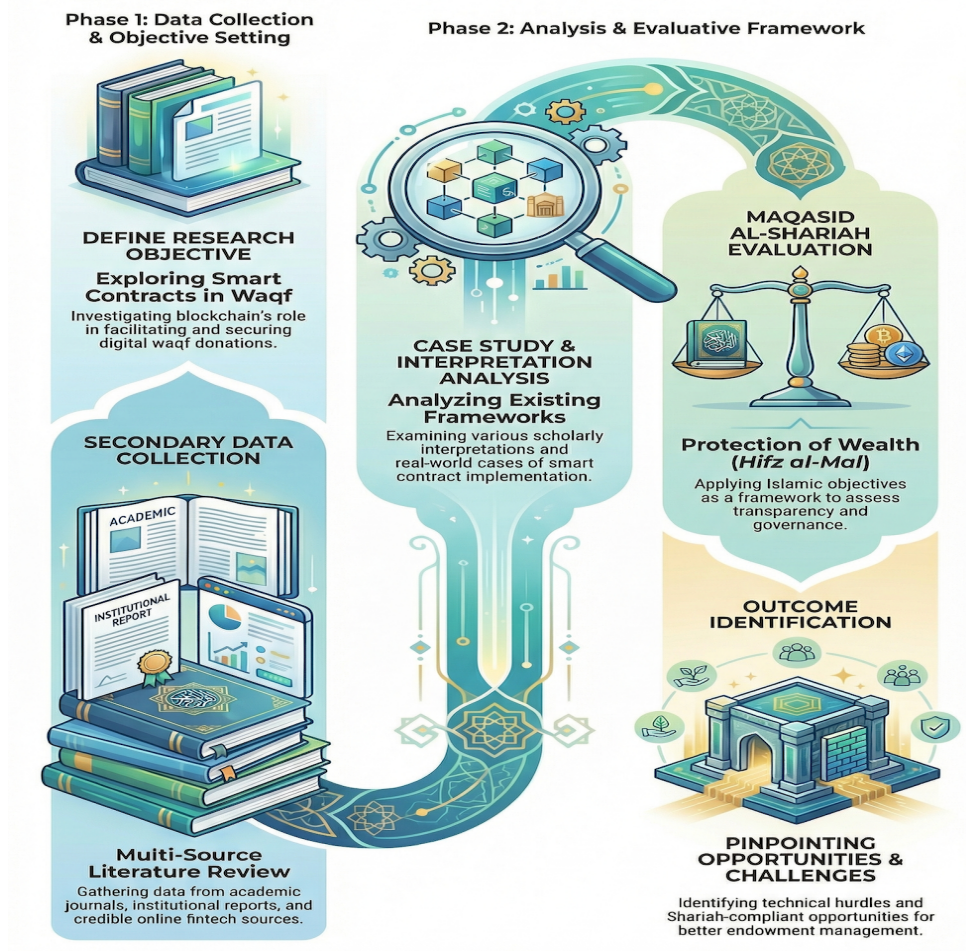


Fig.1. Research Roadmap: Evaluating Blockchain for Shariah-Compliant Waqf

Figure 1 showing how traditional Islamic charitable giving (Waqf) and contemporary blockchain technology can coexist harmoniously. The image's digital smart contract and networked, glowing blockchain nodes represent the automated, transparent, and safe execution of transactions without the need for middlemen. The constant and socially responsible flow of permanent endowments is demonstrated by these technical networks that channel into a depiction of a Waqf asset, such as a community building, agricultural land, or outstretched palms receiving charity. As a visual representation of how technology can protect a donor's original purpose (niyyah) and guarantee transparent fund distribution, the overall composition and lighting exude trust, security, and strict adherence to Shariah rules.

4. FINDINGS AND DISCUSSION

4.1. Shariah Framework & Principles

The prohibition of *riba* (interest), *gharar* (excessive uncertainty), and *maysir* (gambling) must be strictly observed in the financial industry, as these elements contradict the fundamental teachings of Islamic law. Engaging in such practices can lead to unethical financial transactions, exploitation, and injustice, which are not in

line with the principles of fairness, transparency, and social equity promoted in Islam. While *riba* and *maisir* are generally not applicable in *waqf*, it is important to ensure that blockchain-based smart contracts do not include such elements unintentionally. The primary concern is *gharar*, which could arise if smart contracts are coded unclearly, lack Shariah review, or allow for ambiguous execution. For example, if a donor establishes a *waqf* contract through a smart contract but fails to clearly define how the funds will be allocated, it can result in confusion and uncertainty. If a smart contract does not clearly identify key factors including beneficiary identities, the time and conditionality of distributions, and the intended use of funds, it may show shortcomings in transparency, governance, and operational clarity. The lack of such specifications could lead to unexpected consequences, disagreements, or inefficiencies that compromise the contract's dependability and credibility because blockchain-based execution is autonomous and unchangeable. This ambiguity not only undermines the effectiveness of the *waqf* but may also lead to mismanagement or disputes, ultimately compromising compliance with both Shariah principles and the donor's original intent.

According to Mohamed Fisol, Wan Nazjmi, and Muhammad Aizat Saad (2019), the adoption of advanced technology, when viewed through the lens of *Maqasid al-Shariah*, can be classified under necessities (*daruriyyah*) and needs (*hajiyyah*) as it upholds the five essential objectives: religion (*al-din*), life (*al-nafs*), intellect (*al-'aql*), progeny (*al-nasl*), and wealth (*al-mal*). Under the category of necessities, implementing transparent technologies is crucial to ensure *Waqf* governance adheres to Shariah principles by avoiding prohibited elements such as *riba* (interest), *gharar* (uncertainty), and *maysir* (gambling), thereby safeguarding both faith and financial integrity. From a Shariah perspective, such systems can reduce *gharar* (uncertainty) by making the terms of donation, disbursement, and use clear, traceable, and tamper-proof. While *riba* (interest) and *maisir* (gambling) are not central to *Waqf*, ensuring that smart contract models remain free from such elements is essential for full Shariah compliance.

Integrating smart contracts into *Waqf* administration should reflect key Islamic principles such as *amanah* (trust), *tahqiq* (transparency), and accountability. According to St John Robilliard et al (2019), *Waqf* has historically involved charitable or family endowments managed by trustees under the supervision of a local judge, ensuring the donor's intentions were fulfilled. In the modern context, blockchain-based smart contracts can reinforce these ethical foundations by automating execution, recording transactions immutably, and enhancing public trust. Additionally, smart contracts facilitate automated, Shariah-compliant execution of transactions, minimizing human error and ensuring the donor's intention (*niyyah*) is fulfilled with accuracy and transparency (*tahqiq*). This contributes directly to the preservation of wealth (*al-mal*) by guaranteeing that donations are managed and distributed effectively to rightful recipients. Integrating blockchain-based smart contracts into *Waqf* administration not only enhances the structure of Islamic social finance but also reinforces the ethical and legal soundness of donation management. This reflects a forward-thinking application of Shariah and *Maqasid*-based principles in addressing modern challenges.

4.2. Technical Overview of Smart Contracts

Smart contracts are automated programs that run on blockchain platforms such as Ethereum. These contracts are written using programming languages like Solidity and follow a basic rule: “if/when this happens, then do that” (IBM, 2024). This means once specific conditions are met, the contract will automatically execute the agreed action without needing any third party. In the context of Waqf management, for instance, a smart contract could be designed to automatically release funds to designated beneficiaries only after a certain date has passed or once a particular project milestone is verified. The implementation of smart contracts can significantly lower transaction costs, minimize human errors, and save both time and financial resources. It also helps to eliminate unnecessary third-party involvement, allowing processes to be carried out more efficiently. Furthermore, smart contracts enhance transparency, as all contract activities and payment records are stored on a public blockchain ledger, making transactions openly accessible and verifiable by anyone.

However, despite their advantages, smart contracts also present certain limitations. One key challenge is the technical complexity involved in coding them accurately (Erika Rasure, 2024). Since smart contracts are immutable once deployed on the blockchain, any coding error or oversight whether technical or related to Shariah compliance cannot be modified or reversed. This poses a significant risk, especially in Waqf applications where legal, ethical, and religious requirements must be precisely upheld. Therefore, it is essential that smart contracts for Waqf purposes undergo thorough validation, involving both technical developers and Shariah scholars, to ensure that they are not only functionally correct but also fully aligned with Islamic legal and ethical principles prior to deployment.

4.3. Compliance Analysis

To assess the alignment of smart contracts with Islamic principles in Waqf, several critical aspects must be examined. One of these is the concept of trusteeship (*amanah*), which can be partially embedded within the logic of smart contracts. Through programmable rules, smart contracts can automate certain trustee responsibilities such as the disbursement of funds or the monitoring of project milestones thereby reducing dependence on human intermediaries. As noted by Robert Herian (2017), this introduces a new model of distributed trusteeship, supported by two key elements: cryptographic and computational validation of transaction sequences and the decentralized operation of the blockchain network, both of which can be utilized in Waqf administration. Nevertheless, oversight by Shariah scholars remains essential to ensure that the contract logic genuinely upholds the ethical and legal obligations of trustees as mandated by Islamic law.

In addition, smart contracts can help preserve a donor's intention (*niyyah*) by executing transactions only when specific conditions are met. For example, a Waqf donor might require that funds be disbursed monthly to an orphanage, and a smart contract can ensure that this condition is fulfilled precisely, without delay or

unauthorized modification. As highlighted by Warren Mille (2024), smart contracts introduce a new level of transparency in charitable giving by enabling real-time tracking of donations. This direct, automated process eliminates traditional delays in reporting and ensures a transparent chain of custody, with every transaction publicly recorded on a tamper-proof blockchain ledger. As a result, donors can verify their contributions instantly and trace how every portion of their funds is allocated.

However, several challenges remain, one of which is that smart contracts are generally not designed with Shariah compliance in mind. These technologies often overlook the requirements of Islamic legal frameworks, including the proper formation of contracts and the resolution of disputes in accordance with Fiqh principles. To overcome these limitations, there is a growing need to develop Shariah-compliant smart contract templates that are specifically tailored to the legal and ethical requirements of Waqf governance. These play a crucial role in ensuring that the technology remains both functionally effective and religiously appropriate.

A qualitative analysis of secondary data gathered from scholarly publications, institutional reports, and case studies pertaining to blockchain, smart contracts, waqf management, and Islamic financial principles was used to arrive at the study's conclusions. In order to determine the possible advantages and restrictions of blockchain-based smart contracts in waqf donations, the study combined data on technological implementation, Shariah compliance, and governance issues using the Maqasid al-Shariah framework as an evaluation lens. The findings show that by automating fund disbursement, guaranteeing record immutability, and lowering human error, smart contracts can greatly improve trust, transparency, and operational efficiency. Crucially, incorporating Shariah rules into smart contract logic reduces gharar (uncertainty) and maintains donor intent, which is consistent with Islamic finance's moral objectives. To address legal and technological issues, the report also emphasises the need for continuous Shariah oversight and the creation of standardised, Shariah-compliant templates. Overall, the results show that although smart contracts present promising enhancements to waqf governance, their effective implementation necessitates the fusion of cutting-edge technology with strong religious and legal frameworks.

5. CONCLUSIONS

This study explores the integration of blockchain-based smart contracts in enhancing trust and transparency within Waqf donations, particularly through the lens of Shariah principles and Maqasid al-Shariah. The use of blockchain in Islamic finance, especially in Waqf, presents an innovative solution that supports accountability, minimizes human error, and ensures the preservation of donor intent (niyyah). Smart contracts offer automation and real-time tracking of donations, reducing the need for intermediaries while maintaining a transparent and immutable record of transactions. This aligns with key Islamic objectives such as the protection of religion (din), wealth (mal), and social welfare. However, the study also highlights challenges, including the absence of smart contracts specifically designed with Shariah compliance in mind and the need for oversight by Shariah scholars. There is a necessity for Shariah-compliant templates and the involvement of trusted

Shariah oracles to ensure alignment with Islamic legal frameworks. Despite these limitations, blockchain technology holds great promise for improving Waqf governance by offering a system that is transparent, efficient, and aligned with Islamic ethical standards. As Islamic financial technology continues to evolve, such innovations must be further researched, refined, and regulated to ensure their full compatibility with Fiqh and long-term sustainability.

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