

Designing a Blockchain-Based Model for Zakat Management in Malaysia

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ABSTRACT

Wealth redistributive tax, basically based on the zakat, one of the five pillars of Islam, and a very significant form of social benefit. However, zakat management in Malaysia is still facing wasteful problems that are non-transparent, poor governance, and a lack of technological applications. Therefore, this paper is set to identify the main determining success factors of the blockchain-based zakat management model in Malaysia, which will be focused on several key factors: a sound legal and regulatory environment, efficiency and sustainability, stakeholder involvement supporting the initiative, a techno-savvy culture towards technology adoption, and readiness for implementing blockchain. The study employed cross-sectional quantitative research, with Partial Least Squares Structural Equation Modeling (PLS-SEM) as the framework to analyze and examine the direct, indirect, and mediating effects of the constructs on both zakat practices and blockchain adoption. The results suggest several functional policy implications for regulators, zakat institutions, and Islamic finance actors in the realm of zakat administration modernization, focusing on regulatory certainty, technological preparedness, cooperative advocacy, and shared vision as well as institutional reform. Therefore, this paper furthers the Islamic social finance literature by exploring empirically how the blockchain technology can enhance transparency, efficiency, and trustworthiness within zakat governance. This paper proposes future research that includes cross-border blockchain-based zakat systems, comparative with other Muslim countries, and the effectiveness of long-term sustainability using blockchain for zakat management frameworks.

Keywords: Blockchain Technology, Zakat Practices, Islamic Finance, Financial Technology, Stakeholder Collaboration, Regulatory Frameworks, Transparency, Digital Transformation.

JEL Classification: G23, O33, & Z12.

INTRODUCTION

Zakat is one of the five pillars of Islam, and its primary goal is to alleviate poverty and economic inequality in Islamic communities (Mohammed et al., 2021). In Malaysia, zakat is administered by state Islamic religious councils and other agencies. However, the effectiveness of its collection and distribution is still facing challenges such as inefficiencies, lack of transparency, and governance issues (Hasibuan et al., 2024). The advent of financial technology (FinTech) and blockchain opens up new horizons for digitalization and enhances zakat management, as the transparency, efficiency, and public trust made possible by these technologies are attracting more attention to improve zakat Institutions (Mohd Nor et al.). Nevertheless, the proliferation of blockchain technology does not translate into extensive use of this state-of-the-art tool in managing zakat digitally, mainly due to regulatory issues, path-dependent institutional inertia, and various degrees of technological literacy and readiness among demand-and-supply-side stakeholders (Nazeri & Nor, 2023). Many scientific researchers talked about blockchain as one of the potential tools to improve zakat practices through its security, immutability, and transparency for financial transactions (Ikhsan 2023; Zulfikri et al., 2022). The decentralized ledger of blockchain would enable the real-time tracking of zakat funds, leading to lower levels of fraud and mismanagement as well as increased institutional accountability

(Suhartoyo & Fauzan, 2024). Nevertheless, the realization of effective use of blockchain in zakat management depends on facilitating factors arising from the legal and regulatory framework, collaboration among stakeholders, cultural predisposition towards technology, and operational quality (Juniati & Widiastuti, 2024).

As a result, this research will provide information on the determinants affecting zakat practices and their effect on blockchain-based zakat management acceptance in Malaysia, which is believed to significantly help enrich both the literature and the policy field of Islamic social finance. Nevertheless, it is still a challenge in optimal utilization and equitable distribution of these funds as the governance structures are weak and collection mechanisms are inefficient with a lack of technological integration (Santoso & Nugroho, 2024). Ramadhan & Hayatullah (2025) have noted that zakat institutions in Malaysia and other Muslim-majority countries face a standardized system of management, a weak monitoring system, and limited institutional trust in the management of zakat funds. The same reality that also contributes to research has pointed out that a large section of those who pay zakat prefer to personally distribute their zakat despite the existence of formal institutions because they question the trustworthiness of fund donors, bureaucratic inefficiency, and absence of transparency (Zaini et al., 2024).

A significant hurdle to Syariah-compliant zakat management is the lack of precise regulation and legislation that could ensure the mainstreaming of technologies such as blockchain in Islamic finance (Bin-Nashwan, 2025). However, regardless of the potential for automation of and transparency in zakat collection by using blockchain-based smart contracts (Mukhlisin et al., 2024), widespread adoption is severely hindered by regulatory uncertainty. Another obstacle is probably the cultural resistance and low technological literacy of zakat stakeholders to adopt blockchain (Juniati & Widiastuti, 2024). Moreover, the implementation of blockchain zakat management without effective stakeholder collaboration involving governmental agencies, financial institutions, and religious authorities will probably face institutional pushback and operational challenges (Santoso et al., 2024). In light of this, it can be seen that various elements required as a holistic approach to ensure improved zakat governance span from legal and technological to stakeholder engagement frameworks. In this context, the main research question can be restated as follows: To what extent do zakat practices mediate in blockchain adoption about zakat management, and how are regulatory policies, efficiency, transparency, stakeholder collaboration -STC- and technology adoption culture influence zakat management (Al-Taani et al., 2024; Al-Zaqeba & Basheti, 2024; Al-Zaqeba & Basheti, 2024b; Khairi et al., 2023)—lack of a Clear Legal and Regulatory Framework. One of the key issues that hampers better zakat management is the lack of a clear legal and regulatory framework that facilitates the daily usage of digital solutions like blockchain in Islamic finance (Bin-Nashwan, 2025). For example, blockchain can be used to automate zakat collection, and smart contracts can improve transparency, but regulatory uncertainties are significant barriers to adopting it on a larger scale (Mukhlisin et al., 2024). On the other hand, legacy social and cultural patterns are an issue among zakat stakeholders that cause low technological literacy, which hinders blockchain adoption (Juniati & Widiastuti, 2024). Moreover, the deployment of blockchain in zakat management may confront institutional restraints and operational challenges if implemented independently without proper stakeholder cooperation, among which government agencies, financial institutions, and religious authorities (Santoso et al., 2024). Given these issues, it is clear that an end-to-end approach is needed to govern zakat better, comprising legal, technology, and stakeholder engagement mechanisms. Hence, the research problem emerges relating to: (1) understanding how a mediating channel of zakat practices contributes to facilitating blockchain adoption, and (2) examining the effect of regulatory policies, efficiency, transparency, stakeholder collaboration, and technology adoption culture on zakat management through the mediation mechanism of certain zakat practices (Al-Taani et al., 2024; Al-Zaqeba & Basheti, 2024; Al-Zaqeba & Basheti, 2024b; Khairi et al., 2023).

The purpose of the study is to fill a void in existing literature by offering findings on what drives the adoption of blockchain-based zakat management, moving beyond theory and into application. Despite the extensive literature and discussion on the applicability of blockchain in financial transactions, very few studies have conceptually discussed it from an Islamic social finance perspective, especially in the context of Zakat institutions (Ali et al., 2024). This is an essential study for Malaysia, especially when zakat has seeped into affairs of state in terms of Islamic economic policy, and many feel digital transformation efforts are beginning to converge because the Muslim public sector is difficult to eliminate, as indicated by previous research (Nazeri & Nor, 2023). The research is also inspired by the global trend to digitalization of Islamic finance in

which Indonesia, Turkey, and the UAE have been planning to apply blockchain technology for waqf and zakat management (Amelia et al., 2024; Santoso et al., 2024). As the Islamic finance leader, Malaysia needs to improve its zakat governance framework with the help of financial technology and better regulation support, together with more extensive stakeholder collaboration (Hasibuan et al., 2024). This research also hopes to contribute to both policy and implementation insights by providing recommendations for zakat institutions, policymakers, and fintech developers in deploying blockchain technology for the optimal collection, as well as distribution of zakat. Moreover, the investigation of the interventional role that zakat practices play in blockchain adoption will pave the way to formulate a well-structured digitalized zakat ecology. This paper will contribute to our understanding of how legal frameworks, transparency, stakeholder engagement, and cultural readiness impact SO2 emissions trading and offer recommendations on how to deal with these barriers, to boost confidence, compliance, and to bolster an effective, transparent zakat system with the help of technology. As such, the present study aims to solve this particular problem in Islamic finance; the management of Zakat within a modern approach, while considering and complying with Sharia principles and regulations.

The paper is organized as follows: an existing literature on the efficiency and effectiveness of zakat management, and a direct discussion about the use of this blockchain technology in zakat management are highlighted to figure out the importance of this technology integration within the Islamic social finance sector. And the hypothesis development is given in section 3. Methods This study is divided into six sections, whilst Sections 4 and 5 focus on research methodology. At last, the conclusion and recommendation are discussed in the last section.

LITERATURE REVIEW

In Malaysia, the efficiency and effectiveness of zakat management are strongly determined by legal and regulatory frameworks, transparency, technology implementation, and stakeholder partnership. Zakat practices can be significantly magnified in a blockchain-based model, where the pairing of the technology with this form of charity acts as both a secure and efficient mechanism for distributing funds transparently.

The Role of Legal and Regulatory Frameworks in Enhancing Zakat Practices

Legal and regulatory environment: The legal and other regulations that govern zakat collection and distribution are of prime importance for regulating this kind of financial system. Strong legal frameworks strengthen governance, can improve compliance, and help gain the public's trust in zakat institutions (Judijanto, 2024). The regulatory model in Malaysia, Indonesia, and Turkey is quite different from one another, leading to a combination of centralized and deregulated models (Mukhlisin et al., 2024). Centralization in Malaysia is to be welcomed as it enhances oversight of religious tax collection, but stakeholder coordination remains a challenge. Regulation was a primary focus surrounding zakat, with complexity and compliance playing key factors. Bin-Nashwan (2025) further maintains that the complexities of zakat laws might encourage avoidance, as too much red tape usually prevents the general public from transacting with permanent dispensing mechanisms. For blockchain-based models to be successful, high zakat participation is a key factor, and less complex legal frameworks together with apparent regulatory oversight might promote (Al Obaidy et al., 2024; Al Obaidy et al., 2024a; Al-Zaqeba & Basheti, 2024a). The corporate zakat integration within Malaysia's CSR framework as a policy-driven effort has also been acknowledged in several previous studies to enhance zakat collection (Zaini et al., 2024). Businesses, through tax incentives and regulation, will help guide zakat funds optimally with sustainable development goals. The application of blockchain solutions to the regulatory domain could normalize zakat transactions, enhance tax reporting, and guarantee Shariah compliance, leading eventually to a better acceptance among society towards digital zakat models.

Efficiency and Transparency as Drivers of Zakat Practices

Transparency and efficiency in zakat management go a long way in generating public confidence and ensuring higher rates of compliance. The digital zakat collection and distribution process is believed to increase transparency, which in turn influences a sense of accountability, growth of zakat itself (Hadi et al., 2024).

However, manual data processing inefficiencies and slow fund distribution are still significant hurdles. Empirical studies showed that both zakat literacy and transparency, accountability of ZCD have an essential effect on Muzakki (zakat payers) trust and participation (Adiwijaya et al., 2024). Even in Indonesia, where institutions such as BAZNAS have already adapted to digital zakat systems, the dominant administrative inefficiencies continue to hamper their efficiency (Fauzi et al., 2024). With a blockchain ledger, it is impossible to delete or amend the information; thus, to address inefficiencies in tracking funds in real-time, distribution, and providing automatic smart contracts through the device itself would bring solutions towards unbalanced regulations. A study by Rizqon et al. (2024) found that the transparency level of zakat management influenced the Muzakki to participate in its submission. The need for technology, especially blockchain, to channel assistance better and improve donor confidence is therefore more pressing than ever. Zakat transactions can be verified immediately with blockchain technology, reducing the risk of fraud and mismanagement. Additionally, Khamis et al. Moreover, (2024) argued that the level of inequalities in zakat distribution reduces its effects on social welfare. Now, for zakat specifically, blockchain-based models remove the room for human error and personal bias in decision-making while ensuring that nobody is missed or given less than they deserve.

Cultural and Technological Adoption in Zakat Practices

The level of cultural, religious, and technological readiness determines the use of FinTech in zakat management. Similarly, Juniati & Widiastuti (2024) analyze the adoption of blockchain-based zakat systems using the UTAUT framework, where they show that social influence and security, as well as accessibility, are principal technology acceptance variables. Mutmainah et al. (2024) further that the division between rural and urban/suburban communities, where the latter exhibit more favorable disposition towards digital zakat payment use, as they are associated with security and ease of use. Institutions that adopt more digital literacy will succeed in blockchain-based zakat. Better trust in FinTech is required, and maintaining Shariah compliance at the level of legality is crucial on the Legality Of Zakat In Modern Indonesia: Research by Robbana et al. Additionally, (2025) in Algeria emphasizes the effect of religious or Islamic factors on zakat FinTech adoption and also reports that economic and behavioral tendencies affect it. As such, the management of zakat on a blockchain will have to be balanced between religious values and regulatory know-how to gain implementation from the essential stakeholders. The rise of cryptocurrencies and digital assets also triggered discussions around the permissibility—or otherwise—of zakat payments where Shariah compliance is concerned (Bin-Nashwan et al. Blockchains can facilitate the creation of a zakat code that would utilize smart contracts to auto-compute applicable zakat amounts by reference to asset value per year.

The Role of Stakeholder Collaboration in Zakat Effectiveness

Zakat management must be optimized using a multi-stakeholder approach. To make the governance of zakat run effectively, Santoso & Nugroho (2024) stated that collaboration between zakat institutions, government agencies, financial institutions, and other relevant stakeholders is necessary. It is with the real-time collaboration enabled by blockchain that funds can be transparently taken, as well as managed and distributed across all stakeholders. It is argued that integrating zakat and waqf (endowments) would offer a helpful strategy to deal with this chronic socio-economic problem (Ramadhan & Hayatullah, 2025). Nevertheless, institutions are decentralized and lack the proper integration to unleash their full potential. Thus, the implementation of blockchain technology to zakat and waqf management systems can foster collaboration between different stakeholders. Professional mechanisms and religious values are two roles that are crucial in building trust of ZP (Santoso et al., 20). The merger of elements of Good Corporate Governance (GCG) with religious motives will strengthen public confidence in zakat institutions. Armed with greater trust and transparency, generic blockchain-based zakat systems can help in implementing stakeholder participation-centric governance models.

The Impact of Zakat Practices on Blockchain-Based Zakat Models

The switch to blockchain-based zakat models is dependent on the maturity of current zakat practices. Erni et al. However, Tarafdar and Ragu-Nathan (2024) suggest that for a digital zakat solution to be successful and

beneficial, the operations at an institutional level must first be Nachaki and Mustofa. Asyifa et al. Top managers (2025) stress the importance of aligning zakat with Sustainable Development Goals (SDGs) for optimal impact. Blockchain-powered Zakat ecosystem will improve information accuracy, transaction efficiency, and mobilize zakat funds globally. Mokodenseho et al. Zakat Management Strategies should be designed for Socio-economic Empowerment (2024). This can be supported by creating Blockchain applications to track the impact of zakat, an efficient way of distributing wealth, as well as whether or not it is compliant with the Maqasid al-Shariah (Islamic principles of social justice). Finally, Samsi et al. (2024) argue that a good supply of zakat institutions is required for the blockchain to be applied. Regulatory frameworks, stakeholder education, and further integration of blockchain into Islamic financial systems are necessary to adopt the technology successfully.

The Role of Blockchain Technology in Modernizing Zakat Management

Several research studies have conveyed how the adoption of blockchain technology can overcome prominent problems, such as transparency, trust, and efficiency, which zakat institutions face (Zulfikri et al., 2022; Ikhsan, 2023)—Zakat automation. This project will open and close its wallets based on real-time transactions that can be traced by anyone who holds an account over a decentralized ledger, which is highly incorruptible compared to today's system, where the donor's trust is lacking due to a lack of traceability. This procedure can be automated through smart contracts built over the blockchain technology for zakat calculation, (Mohd Nor et al., 2021; Mohamed et al., 2023). Evidence of regular disclosure and performance data from BAZNAS in Indonesia demonstrates that blockchain adoption is correlated with increased operational efficiency and transparency (Zulfikri et al., 2021). Furthermore, the blockchain enables the zakat to be paid across national borders, allowing not only Muslims to pay for their zakat but also to prioritize Shariah compliance (Millatina et al., 2022). These advancements demonstrate that blockchain is not just a technical advancement but rather a strategic digital infrastructure to restructure the management of zakat, institutional governance and social — economic welfare.

Hypothesis Development

Employing blockchain technology as a platform for Zakat management in Malaysia: A critical literature review examines the integration of blockchain technology with Zakat Management in various aspects such as legal and regulatory framework, efficiency and transparency; Technology adoption and cultural factors; stakeholder collaboration; Impact of the zakat practices on Blockchain-Based Zakat Management at Universiti Teknologi MARA. Each of the sections below will touch on these factors and how they impact the adoption of blockchain to manage zakat, with a focus on Malaysia.

Halal with Regulations and Zakat Integration

This includes the legal and regulatory frameworks, which are critical to ensuring standardization, governance, and compliance among zakat institutions. An adequately designed regulatory environment promotes transparency, accountability, and trust — all key elements in improving zakat collection and distribution. Malaysia, Indonesia, and Turkey implement a pretty interesting mix of regulatory models, with Malaysia applying the model by central regulation, Turkey—most by decentral models supervised by NGOs—and Indonesia in a hybrid system (Mukhlisin et al., 2024). It is this and many variations in between that underscore the need for robust regulatory oversight to ensure zakat management provides maximum benefits to society.

Zakat compliance is a challenge despite existing formal zakat regulations that are widely imposed, due to legal complications and charity administration inefficiency. Bin-Nashwan (2025) suggests that overly complex zakat laws create a stiff barrier to entry as the procedural overhead is too significant for many individuals and firms to interact with formal credit institutions. It is argued that more simplified regulatory structures with straightforward tax incentives and compliance mechanisms can enhance the sharing of zakat (Zaini et al., 2024). The results imply that adequate legal clarity, together with strong enforcement mechanisms, is essential to make relevant and efficient collection/provision for zakat.

Also, the regulatory frameworks affect corporate Zakat contribution as a part of Islamic Corporate Social Responsibility (ICSR). Zaini et al. (2024) find that CSR corporate policy and tax breaks encourage companies to incorporate zakat into their financial plans with social impact outputs. But to unlock the true potential of corporate zakat, legal measures also ensure accountability and guardrails against misuse. One of the models is zakat model based on blockchain, which addressed how this technology could increase compliance through provable and unchangeable records in terms of all the transactions of zakat (Santoso & Nugroho, 2024). In addition, as a potential long-term economic empowerment strategy, zakat and waqf management within legal frameworks have gained recognition (Ramadhan & Hayatullah, 2025). But fragmented regulations and a lack of coordination among government agencies constrain the impact that zakat can play in reducing poverty. These gaps could be addressed with the help of technology, as digital transformation using blockchain can facilitate automatic compliance checks and real-time monitoring of zakat funds, as required by legal standards and shariah compliance (Mokodenseho et al., 2024).

The legal and regulatory frameworks driving zakat management are essential prerequisites for a system that embraces compliance, transparency, and trust in zakat institutions. State Islamic religious councils (MAINs) in Malaysia are tasked with the administration of zakat, resulting in fragmented governance and differing policies across states (Nazeri et al. 2013). The complexity in adopting blockchain technology stems from a lack of a single regulatory body overseeing the outworkings of each state (Abdul-Rahman et al., 2023).

One of the main problems in realizing a blockchain-based Zakat transaction system is Shariah compliance, especially towards smart contracts and digital transactions (Zulfikri et al., 2023). Blockchain is a unique technology that has a decentralized nature, which eliminates some intermediaries and the traditional zakat governance model (Mohamed, 2012). Nevertheless, the Indonesian case proved that legal frameworks can be tweaked to accommodate the digitalization of zakat and could serve as a valuable point of reference for blockchain-implemented zakat in BAZNAS (Zulfikri et al. 2021). In addition, a government-supported blockchain can create trust in cryptos and also precise regulation. This action would prevent zakat institutions from both Islamic laws and financial regulations (Juniati & Widiastuti, 2024). Thus, legal frameworks are needed to standardize blockchain implementation in zakat institutions, improve compliance control capability, and ensure clarity of transaction execution that runs using a smart contract (Ikhsan, 2023). Therefore, the implementation of law and regulations are a fundamental issue, it indicates to how effective these mechanisms can make zakat collection rates, compliance, distribution efficiency and stakeholder trust. According to Judijanto (2024), among other consequences, the country-with comprehensive-zakat-regulations will generally have a higher compliance and social impacts as well as eradicating poverty, while those countries-with-fragmented policies only get inefficiency and lack public trust. Based on the importance of these factors, we offer our hypothesis:

H1: Legal and regulatory frameworks positively effect Zakat Practices.

Efficiency with Transparency and Zakat Practices

Efficiency and transparency are essential as this directly contributes to trust, participation, and the overall impact of zakat on socio-economic development. A zakat management system should be well-structured to achieve an effective collection, administration, and payment/distribution to increase the power of compliance among payers/muzakki (Hadi et al., 2024). In other cases, ineffective governance frameworks have resulted in poor fund management practices and delays in giving or distributing funds, highlighting the need for innovative solutions based on blockchain.

Transparency is one of the most significant influencing factors to facilitate muzakki in giving a fund traditional zakat. Adiwijaya et al. (2024) is more likely to pay zakat through formal institutions if there is high transparency and accountability in fund utilization. Similarly, Fauzi et al. (2024) fund distribution is more inefficient, leading to the undermining of the impact of zakat distributions to the mustahik (zakat beneficiaries) and weakening zakat's intended role in poverty alleviation. The economic disparities are widened when the zakat funds are not properly distributed, which prevents them from leveraging their maximum social impact.

Digital Zakat management has become the most impactful innovation in terms of efficiency and transparency.

Hadi et al. While others, such as Abas (2024), argue that digital reporting of zakat creates a robust accountability mechanism where every individual can track their payment and ensure that the funds disbursed are distributed. Nevertheless, despite these strides towards promoting best practice, a fundamental challenge remains about the overarching methodologies within much of the zakat industry, characterised by inconsistent reporting practices, non-standardized data collection, and administrative inefficiencies. The use of blockchain technology is a potential solution that offers solutions because it allows for automated record-keeping, smart contracts to disburse funds, and instant verification of records, thereby minimizing management. The second key to economic justice is efficiency in zakat distribution. According to Khamis et al. (2024), inefficient addition of zakat on wealth disparity degrades the Islamic function as a redistribution agent along with an economic means.

Researchers analyzing zakat distribution in Muslim-majority countries — including Malaysia, Indonesia, and others — discovered that systematic delays, misallocation of funds, and administrative bottlenecks at zakat institutions hinder the effectiveness of zakat distribution. In line with Maqasid al-Shariah (Erni et al., 2024), automated financial technologies like blockchain would not only automate the process of ensuring real-time processing, transparent record-keeping, and seamless distribution, ultimately also be implemented in zakat management. Muzakki trust in zakat institutions, on the other hand, is significantly driven by the fund management transparency. One of the reasons for this is the definitions of zakat itself, which, according to Rizqon et al. (2024), is another reason many big actualized organizations or individuals do not pay via an existing zakat institution. However, transparency mechanisms that provide public zakat reporting dashboards, blockchain verification systems, and AI-based audit processes can greatly enhance confidence and engagement in traditional zakat institutions, ultimately boosting overall zakat collection as well as distribution efficiency.

Efficiency is needed to improve the trust and compliance of all stakeholders involved in zakat management through increased transparency. Among which include inefficiency, lack of transparency, and delay in fund distribution, which have led to mistrust among zakat payers (Muzakki) (Omar & Khairi 2021). These issues can be overcome using blockchain technology enabled with a decentralized public ledger to track Zakat funds from collection to distribution (Nazeri et al., 2023). Employment of smart contracts, a critical component of blockchain technology, can help in automating zakat disbursement, which guarantees swift distribution of funds to the proper beneficiaries (Asnaf) without human discretion (Zulfikri et al., 2022). Such automation allows lower administrative expenses while reducing the chances of fraud and improving transparency (Mohd Nor et al., 2021). As an illustration, Essa et al. (2021) attempted to implement blockchain technology in zakat using BAZNAS Indonesia as a benchmark (Zulfikri et al., 2021). Despite this, there are still significant obstacles hindering the blockchain adoption in zakat institutions, such as high costs of implementation, technical complexity, and change resistance. However, these challenges do not diminish the potential benefits of blockchain, including improved transparency, fraud prevention, and operational efficiency for zakat management in Malaysia. The enormous potential for zakat to improve through more efficient and transparent practices will not only increase compliance but also make such religiously prescribed forms of wealth accessible to their intended socio-economic impact.

H2: Efficiency and transparency positively effect Zakat Practices.

Technology Adoption Cultural and Zakat Practices

A key pillar in the overall modernization of zakat practices is the adoption of efficient and effective technology for collecting, distributing, and monitoring compliance with it. On the other hand, while there is significant potential to modernize zakat management through technology, the adoption of technological innovations in managing zakat could be limited by socio-cultural factors, attitudes, and digital literacy levels. A technology-ready culture will create trust in using digital platforms, which will affect zakat payment and distribution (Juniati & Widiastuti, 2024). On the other hand, resistance to technological change (especially in traditional communities) can slow down the adoption of fintech-based zakat models, limiting social returns.

The speed at which zakat institutions adopt blockchain-based systems affects the effectiveness of zakat management. Juniati & Widiastuti (2024). Performance Expectancy, Social Influence, and Facilitating

Conditions also have a mutually distinct significant influence on the adoption of blockchain technology in Zakat management, with positive signs. However, their study also points to a fundamental challenge with maintaining this in practice. Even the theoretically advantageous blockchain is not for everyone, and both practitioners and academics are anything but ready for it. Such cultural and educational interventions are needed to ensure seamless technology adoption in zakat institutions. Not all socio-economic and cultural groups perceive fintech or, more broadly, the role of technology in zakat payment in the same way. Mutmainah et al. Urban areas are more prone to becoming adopters of digital zakat payment methods due to high availability of fintech solutions, a higher level of digital literacy, and stronger security perceptions (2024). However, suburban and rural areas may have lower adoption rates because of cybersecurity fears, a limited experience with digital platforms, and a tendency to choose traditional methods of paying zakat. These discrepancies can only be eradicated if there are targeted digital literacy programmes and the availability of digital zakat payment solutions that cross the cultural divide, ensuring no one is left behind. The third factor that affects the willingness to integrate technology into zakat practices is religious and cultural beliefs. Ali et al. Perceived Shariah compliance was also found to be one of the core predictors in the adoption of digital zakat systems [14]. Since fintech does not comply totally with the principles of mixing, there are many Muslims who still choose traditional ways for paying their zakat. Similar to other Islamic financial services, the response to this is that the zakat institutions should insert their Islamic legal (fiqh) perspectives in these technological advancements, which makes the digital-based management of zakat in line with Zakat determination. For example, blockchain-based smart contracts can be programmed according to zakat distribution rules as provided in Islamic teachings themselves, which will be appealing for the religiously concerned zakat payer (Bin-Nashwan et al., 2024). Institutional capabilities and governance structures also play a key role in promoting technology adoption within zakat management. Razak et al. (2024) highlight the importance of regulatory guidance and good governance policies in support of a sound instant compliance programme and digital transformation strategy that will foster faith and weight loss. Widespread acceptance cannot arrive without institutional investment, no matter how careful and polished the technology solution may be. Muda & Thalib (2024) emphasize that new zakat management approaches, such as AI-based fund allocation and blockchain tracing systems, can further increase efficiency and accountability.

When it comes to zakat management, the use of blockchain is determined by cultural norms, digital literacy, and public acceptance. In Malaysia, the urban and younger segments of the population have been more receptive to the use of a digitally driven zakat platform. However, there is some tardiness in acceptance by rural communities and traditional Islamic scholars (Shuriye 2024). The cultural resistance among these entrepreneurs led to reluctance to implement the technology due to Shariah compliance concerns and its complexity (Juniati & Widiastuti, 2024). To do so, not only do we need to have an educational campaign out there, but also Shariah-compliant blockchain solutions that will minimize the cultural barriers. Meanwhile, Indonesia and Saudi Arabia have encouraged the implementation of digital zakat platforms by raising public awareness and involving religious endorsements as well (Zulfikri et al., 2023). At the same time, Malaysia could speed up blockchain adoption by rolling out digital literacy programs and an easy-to-navigate portal that complies with Islamic principles (Fatima P. et al, 2024). In addition, the COVID-19 pandemic has quickened the transition to digital financial transactions as it prompted contactless and convenient ways of zakat payment (Mohd Nor et al., 2021). Greater acceptance of blockchain-based zakat systems can be achieved in Malaysia by addressing the cultural resistance and improving digital literacy. This area is all about the significance of being culturally accepted, digitally literate, or receiving institutional encouragement to have an impact on technology adoption for zakat management. Our Research Question and hypothesis are as follows:

H3: Technology adoption Cultural positively effect Zakat Practices.

Stakeholder Collaboration and Zakat Practices

Stakeholder collaboration is also an essential ingredient in strengthening zakat practices and for effective zakat collection, distribution, and governance. Stakeholders in Zakat management include Government bodies, ZIS corporations, Financial Institutions, Religious Scholars, and the general public. Collaboration among all stakeholders means creating trust and sharing trusted mechanisms, transparent with a fruitful zakat socio-economic impact (Santoso & Nugroho, 2024). But weak governance, insufficient coordination, and

inconsistent policies can prevent zakat institutions from making the best contributions to eradicating poverty and promoting development. Role of Government: Clear government and regulatory support is seen as an enabler for an effective and transparent zakat system. Santoso et al. (2024) also confirmed that the good corporate governance (GCG) principles combined with religious values significantly increase the trust and credibility of zakat payers in an institution. Nevertheless, there are regulatory inconsistencies and ambiguities in zakat provisions, which vary from one state to another, leading to difficulties in optimizing Zakat practices. Integrating blockchain technology with digital governance mechanisms will harmonize zakat regulations, which are also tied to real-time transparency and accountability. In addition to that, the formal institution of Zakat and Waqf management, through institutional synergies, holds great promise for contributing towards the SDGs. According to Ramadhan & Hayatullah (2025), combining zakat and waqf funding mechanisms could be a viable solution for the urgent social sectors like food security, well-being services, or education, as well as long-term economic projects. On the other hand, low technology adoption and public understanding of productive waqf are obstacles. Digital platforms, fintech interventions, and community engagement initiatives not only build effective collaboration among stakeholders but also provide opportunities for these stakeholders to align their strategies and collaborate more effectively while optimizing the socio-economic impact of zakat in an undisputed manner.

Corporations' involvement is also essential to improve the zakat practices, which can be done through Islamic Corporate Social Responsibility (ICSR). Amelia et al. Alkatiri et al. (2024) have posited that corporate zakat contributions enhance financial sustainability performance, with ICSR being the moderator. Nonetheless, a more optimal solution exists in the form of stronger cooperation between businesses and zakat institutions to enable companies to imbue zakat into their financial frameworks. Corporate trust and compliance can also be pushed a step further with digital transparency tools, for example, blockchain-based zakat tracking systems. Zakat distribution is also community-driven. Suhartoyo and Fauzan (2024) have compared the management of zakat among the regions and discovered that a community-driven zakat approach with local government support provides more economic empowerment results. Zakat programs can fail if institutions do not connect to the mustahik (zakat receivers) in local communities and provide timely and sufficient help.

In addition, technology stakeholders need to be involved in the more effective and accessible zakat. Mokodenseho et al. (2024) highlight the role of blockchain and AI-driven fund allocation in zakat management, a fintech solution for more transparent, faster, and efficient zakat distribution. But for the technology adoption to succeed, financial institutions needed to work with software developers and Islamic scholars so that digital Zakat solutions are practical and observe all Islamic principles. While zakat is a powerful instrument for poverty eradication and economic upliftment, there are still significant gaps that can be bridged only through coordinated efforts among stakeholders. Sarib et al. (2024) note that zakat, sadaqah, and infaq (ZSI) initiatives can make an essential contribution to the welfare of society, especially in Indonesia. We recognise that zakat is not a silver bullet solution for poverty alleviation and economic development, as governance issues, logistical constraints, and institutional coordination also have the unintended consequence of hurting the poorest and most vulnerable populations. However, adopting collaborative approaches such as multisector partnerships, joint financing mechanisms, and integrated development initiatives can optimize zakat for socio-economic development.

Effective leadership not only catalyzes collaboration, but it also opens the doors for zakat distribution to open wide. Samsi et al. (2024) found that the commitment of BAZNAS leadership to an innovative zakat program significantly affects economic empowerment as well as public trust. But there are remaining challenges, such as a low level of public participation and a digital literacy gap, as well as disparities in zakat distribution. Governance, awareness of the public based on information disclosure, technology integration, and strategic partnerships between zakat institutions with corporations and with governments produce an improvement in the efficiency and effectiveness of zakat.

Successful blockchain zakat management requires cooperation between a variety of parties, from government actors to fintech developers to Islamic finance organisations and religious scholars (Nazeri & Nor, 2023). Based on the study of Juniati & Widiastuti (2024), in Malaysia, a fragmented governance model of zakat institutions poses a challenge to enabling blockchain technology for nationwide purposes. Islamic banks and

fintech companies must collaborate to develop blockchain infrastructure to facilitate integration with the current financial systems (Mohamed et al., 2023). Furthermore, partnerships with Shariah scholars and regulatory bodies are vital to ensure conformity with Islamic financial law (Zulfikri et al., 2023). Fatima (2024) also explained that insufficient technical know-how of blockchain in zakat institutions is a prominent impediment to encouraging stakeholder cooperation, as it constrains their capability to execute blockchain solutions optimally. This problem can be resolved with the help of public-private partnerships, which will offer technical training, financial support, and blockchain infrastructure (Millatina et al., 2022). In addition, collaborating with zakat organizations outside the UK can provide an international umbrella, grant cross-border zakat, and contribute to more efficient fund distribution by reducing transaction costs (Ikazimana, 2021). Given the apparent importance of multi-stakeholder collaboration in enhancing zakat collection, distribution, compliance, and governance capabilities, this collaboration can significantly improve the socio-economic impact of zakat. Our hypothesis guided by this evidence, is:

H4: Stakeholder collaboration positively effect Zakat Practices.

Zakat Practices as mediator

There has been a significant interest in the integration of blockchain technology in zakat management as a possible solution to enhance efficiency, transparency, accountability, and trustworthiness within the zakat ecosystem. Nevertheless, the effectiveness of a zakat model that is based on blockchain relies heavily on the current practices of zakat and their compatibility with digital transformation efforts (Omar & Khairi, 2021). In this matter, zakat practices could be a key mediating factor to increase the efficiency of blockchain technology used and deployed in zakat institutions. Zakat practices – refer to the institutional mechanisms, policies, and operational strategies used in zakat collection, management, and distribution of zakat funds. Mohd Nor et al., 2021 suggest that effective zakat practices can result in higher confidence of the muzakki (zakat payers) to comply with their obligations and ensure fair distribution to the mustahik, meanwhile protecting the credibility of zakat institutions. Soundly managed, these practices create a basic infrastructure upon which to build the adoption of blockchain technology for documenting zakat transactions digitally and executing automated smart contracts in disbursement tasks and real-time tracking of funds (Nazeri et al., 2023).

To a certain extent, the various studies converge and demonstrate how greater zakat governance makes it easier for blockchain to be embraced. Mohamed et al. They contend that the presence of efficient zakat management systems, along with regulatory compliance, would hasten the transition to digital platforms and, at the same time, improve transparency and minimize potential risks in fund mismanagement (2023). Furthermore, Zulfikri et al. Smart contracts in Disbursing Zakat. (2021) utilise smart contracts to automate zakat disbursement, making the process more efficient, ensuring zais are disbursed to individuals who are entitled to them, on time and transparently. Traditional zakat management faces a challenge of limited transparency and inefficiencies in the distribution of funds, thus undermining confidence in institutionalized zakat collection systems (Zulfikri et al., 2022). Blockchain makes the entire process transparent as all transactions are registered in a public ledger, thus providing audibility for every zakat contribution and disbursement. But at the end of the day, before we can start using blockchain for zakat collection, they have to prove their transparency in existing operations first. The research of Nazeri & Nor (2023) suggests that zakat institutions that are capable of adopting blockchain technology would have gone through a sound governance structure and a transparent reporting system in place. The lack of real accountability is reflected in the lack of trust these institutions face, dampening the potential impact that blockchain can have. This implies that zakat practices offer a vital connection from the traditional method of zakat management to blockchain applications to ensure that the principles and values on which Islamic finance (social justice, fairness, and social wellbeing) is built remain constant. Zakat practices would also facilitate governance and compliance. Therefore, zakat practices have a strong role to play in mediating blockchain adoption. Mohamed et al. According to (2023), the incorporation of blockchain technology offers zakat institutions an option to execute decentralized governance models that reduce reliance on intermediaries and increase donor-beneficiary interaction. In addition, the research of Ikhsan (2023) shows that institutions implementing zakat with blockchain models increase trust and contributions, as well as distribute funds efficiently. Nevertheless, there is a possibility that the adoption of blockchain may be challenged by shariah compliance, data security, and institutional control concerns if robust

zakat practices and regulatory frameworks are not in place (Millatina et al., 2022).

Even though the practice of zakat itself is a key application field for blockchain-based zakat management, there are several obstacles to be dealt with. There is no common implementation standard for the adoption of blockchain technology due to zakat institutions operating within different legal jurisdictions (Bin-Nashwan et al., 2024). To implement and use the digital zakat system properly, institutional administrators as well as its payers must have an understanding of blockchain technology (Juniati & Widiastuti, 2024). Not all of the zakat infrastructure, however, is suitable for blockchain integration, and most Islamic charities may lack technology literacy currently to do so (Mohd Nor et al., 2021).

But a blockchain-based zakat management can only work if the current traditional process of distributing and collecting Zakat is ineffective, lacks transparency, and is less efficient. If zakat institutions are inefficient, mismanaged, and suspicions arise, blockchain will be a tool that could transform these weaknesses (Nazeri & Nor, 2023). Nevertheless, blockchain adoption may be opposed by stakeholders when zakat institutions are working effectively and there is a perceived larger refurbishment cost (Mohamed et al., 2023). There are several other countries where Islamic Zakat is regularly collected either by the state or by voluntarily registered entities. Still, Malaysia has a structured system, and it can serve as a strong foundation for blockchain integration. By contrast, decentralization of the verification process in blockchain can improve digital trust in zakat institutions, making the distribution of funds more just and transparent (Zulfikri et al., 2021). Moreover, the zakat platforms based on blockchain may also facilitate global donation by providing cross-country Eskimo payments while ensuring Shariah adherence (Millatina et al., 2022). The effectiveness of blockchain for zakat management places a heavy focus on how well the existing zakat practices, particularly in dealing with matters related to transparency, efficiency, governance, and compliance, are implemented. Proper zakat practices act as a mediator between the traditional method of collection and its journey towards digitalization, paving the way for hassle-free incorporation of blockchain solutions. So, here is the hypothesis we offer:

H5: Zakat Practices positively effect Blockchain-based model zakat management.

Research Model

The current study model aims to incorporate blockchain in zakat management and focus on the mediating role of zakat practices. The framework constructed in this model depends on four main antecedents: legal and regulatory frameworks, efficiency and transparency, technology adoption culture, and stakeholder collaboration. These factors influence zakat practices, which in turn affect the effectiveness of a blockchain-based course once users are modularized. The current study seeks a conceptual framework to enhance the efficiency of zakat collection, distribution, and implementation for ensuring transparency, trust, and compliance (Al-Zaqeba & Basheti 2024; Al-Taani et al. 2024; Ababneh et al. 2024). A well-defined legal and regulatory framework is essential to govern zakat because it allows compliance, governance, and structured institutional mechanisms (Mukhlisin et al., 2024). Yet, this may lower compliance and efficiency according to Bin-Nashwan (2025). Shuriye (2024) believed that well-structured and modernized zakat rules improve confidence, besides their capacity to reform the zakat collection and distribution, thus making legal frameworks an important decisive factor for effective zakat administration.

A guide for transparent and efficient implementation is essential to optimize zakat efficiency. The problems of fund misappropriation and loss of public confidence make it difficult for many zakat organizations to collect zakat (Hadi et al., 2024). This problem is partially addressed by the capabilities of blockchain to have unchangeable and auditable records, so that every transaction has a recording and may be validated (Rizqon et al., 2024). Transparent because research conducted by Amalia et al. (2024) on the use of a digital zakat management system in institutions can increase levels of compliance and fund utilization. Different aspects that have an impact on the management of zakat are also technology adoption culture, which includes the extent to which both zakat institutions and contributors are ready to welcome the blockchain technology (Juniati & Widiastuti, 2024). Institutions with excellent digital literacy and a positive attitude towards technology may lead to the horizon of FinTech adoption in zakat management (Robbana et al., 2025). Despite

this, both were predicted to significantly resist and suspect that it is not in compliance with Sharia (Mutmainah et al., 2024). The importance of working with stakeholders to improve practice cannot be overstated, especially in the case of zakat. Therefore, the synchronization of zakat from the government to transfer it to financial institutions for social fund management is essential and regulated by a religious organization (Santoso & Nugroho, 2024). The studies have revealed that fragmented zakat systems are inefficient and such fragmentation limits the socio-economic impact (Ramadhan & Hayatullah, 2025).

In addition, the integration of zakat works with waqf initiatives and government programs has proved to be very effective in enhancing resource mobilization and financial inclusion (Amelia et al., 2024). There is a need to implement institutional collaborations that contribute positively towards zakat governance and fund utilisation. The most crucial chain link in our model of studies is that the zakat practices are asserted to be mediated by the blockchain-based zakat management. The transformative potential offered by blockchain technology may only be realized through existing cemented zakat governance, coupled with transparency and regulatory support (Mohd Nor et al., 2021). Contrary to that, research indicates that institutions with feeble frameworks of zakat may find it challenging to successfully leverage blockchain solutions in a positive manner (Ikhsan, 2023). When the zakat management system is sound and transparent, blockchain eventually brings compliance, trust, and fund distribution (Nazeri & Nor, 2023). Nonetheless, the model (Figure 1) frames the design for legal, operational, cultural, and collaborative issues in the context of digitalizing zakat management using blockchain technology. When we improve these determinants, it may bring higher efficiency, greater transparency, and greater institutional trust in the zakat management, which can pave the way for sustainable Islamic financial practices.

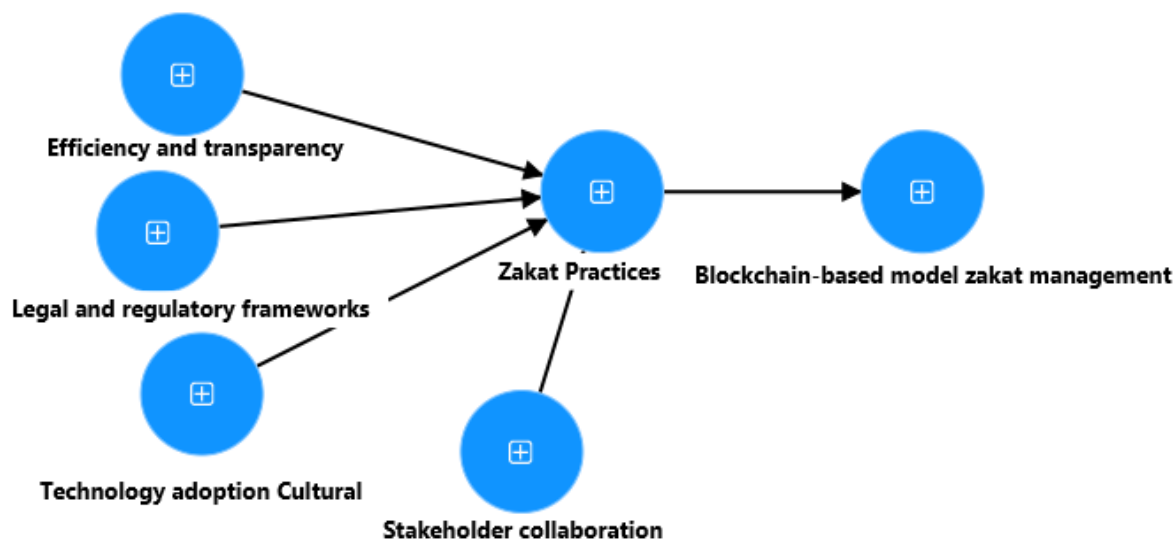


Figure 1: Proposed Research Model

Source: Authors

Therefore, the research model to be established in this study is primarily developed to explore and determine if institutional, technological, and person-to-person factors influence zakat practices that ultimately support a successful implementation of a blockchain-based zakat management system. In this particular line of defense, the adoption of blockchain is not seen as an independent leading indicator but as a result of effective zakat practices guided by four primary drivers: legal and regulatory framework, efficiency and transparency, stakeholder engagement, and, more importantly, technology acceptance culture. This finding is in line with previous studies that argue the improvement of supporting elements like firm governance maturity, cultural fit, regulatory conditions, and stakeholder readiness is crucial for the successful implementation of blockchain technology (Mohd Nor et al., 2021; Ikhsan, 2023; Nazeri & Nor, 2023). The construct “Blockchain-Based Zakat Management” in the model also explicitly denotes the direct application of blockchain in the zakat ecosystem. This model is based on the assumption that efficient, transparent, technology-equipped, and collaboratively governed zakat practices can, for now or in the future, be supported by blockchain technology. Therefore, the model correctly situates blockchain implementation as an integrated deliverable rather than a

separate object.

This reflects the real-world reality where blockchain cannot be implemented in isolation but must be embedded within institutional reforms and enhanced zakat governance frameworks. Thus, the model aligns with the conceptual understanding that blockchain implementation is a by-product of improved zakat practices, which are themselves influenced by institutional, technological, and cultural readiness factors.

METHODOLOGY

This study adopts a quantitative research approach. The choice of a survey-based method aligns with the study's objective of understanding stakeholder perceptions across five key constructs which are legal and regulatory frameworks, efficiency and transparency, technology adoption and cultural factors, stakeholder collaboration and zakat practices. The research design is structured to gather empirical evidence from a diverse relevant population in ensuring that the insights obtained are both generalizable and contextually meaningful. A purposive sampling method is employed to ensure that the participants have direct involvement in zakat management or blockchain applications in Islamic finance. Given that blockchain is a relatively new innovation in zakat administration, randomly selecting participants from the general Muslim population could dilute the study's focus. Instead, by targeting zakat authorities, scholars, fintech experts and Shariah compliance officers, the study ensures that responses are based on expert knowledge and practical experience. However, while purposive sampling enhances the relevance of the data, it may also introduce selection bias that could be a limitation that should be acknowledged when interpreting the findings (Ababneh et al., 2024; Al Rousan, 2024; Aloqaily & Al-Zaqeba, 2024). The sample selected is justified through Partial Least Squares Structural Equation Modeling (PLS-SEM), an algorithm based on a well-established statistical method and optimal to carry out complex models with multiple reflective constructs. Following the recommendations of Hair et al. (2017), a minimum sample of 150–300 respondents is considered appropriate. This range provides sufficient statistical power to validate the proposed model while mitigating issues related to small sample sizes, such as weak path coefficients and low R^2 values (Falaha, 2024; Issaa, 2024). Nevertheless, one potential limitation of this approach is the challenge of obtaining responses from specialized stakeholders, particularly given the technical nature of blockchain and its limited adoption in the zakat sector. Data collection is conducted through online surveys, email invitations and targeted in-person distribution at Islamic finance seminars. The questionnaire is structured into three sections which are demographic information, construct measurement items and additional open-ended questions to capture qualitative insights. A 5-point Likert scale is used to measure stakeholder perceptions, allowing for a standardized assessment of attitudes toward blockchain integration. The study also employs pre-testing and pilot studies to refine the questionnaire in ensuring clarity, reliability and validity before full-scale distribution.

The descriptive analysis indicates that the majority of respondents (45%) were between 30-45 years old, followed by 25% aged 46-60 years, while younger participants (20-29 years) accounted for 20% of the sample. This implies that the study provides insights from both historically trained professionals and well-versed younger participants, thereby offering a comprehensive representation of Tech Adoption trends concerning Blockchain adoption. There was a fair balance between gender representation (56% male versus 44% female), indicating the inclusion of all genders in both zakat governance and fintech sectors. 56% of the respondents had a degree in Applied Linguistics, 24% had completed their master's degree studies, and 8% held a Ph.D. This means that the majority of participants were well educated, which is essential for understanding complicated technological and financial concepts such as blockchain. Occupationally, the sample consisted of zakat institution officers (35%), fintech professionals (20%), Shariah scholars (15%), government regulators (10%), corporate zakat payers (10%), and individual zakat payers (10%). The distribution of this confirms the holistic viewpoint received from multiple stakeholders, resulting in a multi-category level analysis on blockchain adoption challenges and opportunities. 68% knew what it was, and 25% were even trying to get real work done on blockchain projects. Understand the theoretical knowledge and practical application of zakat management among respondents to help identify this potential gap, which can suggest the need for more training and educational efforts to promote wider adoption of zakat-based practice. And at the construct measurement level, there were five main key variables, namely: egalitarian and regulatory frameworks, efficiency and transparency, technology adoption and cultural factors, stakeholder collaboration, and zakat

practices. The responses indicated strong agreement that blockchain could make a meaningful difference in transparency and efficiency, with an average score of 4.2 out of 5. Nonetheless, the concerns of regulatory compliance and Shariah compatibility were also present as underscored by legal and regulatory frameworks that received the lowest mean score (3.5/5). Stakeholder collaboration was also indicated as a moderate challenge (mean 3.7/5), suggesting a role for public-private partnerships to provide implementation support.

FINDINGS/RESULTS

The data were collected using a survey, it is analyzed using Smart PLS 4, following a two-step process. First, the measurement model is assessed for construct reliability, convergent validity and discriminant validity. This step ensures that the survey items accurately measure the underlying constructs. Second, the structural model is evaluated using path coefficients, R^2 values, effect size (f^2) and bootstrapping analysis to test the proposed hypotheses. While PLS-SEM is particularly effective for exploratory research and complex models. The figure represents the Partial Least Squares Structural Equation Modeling (PLS-SEM) results for the study on blockchain-based zakat management in Malaysia.

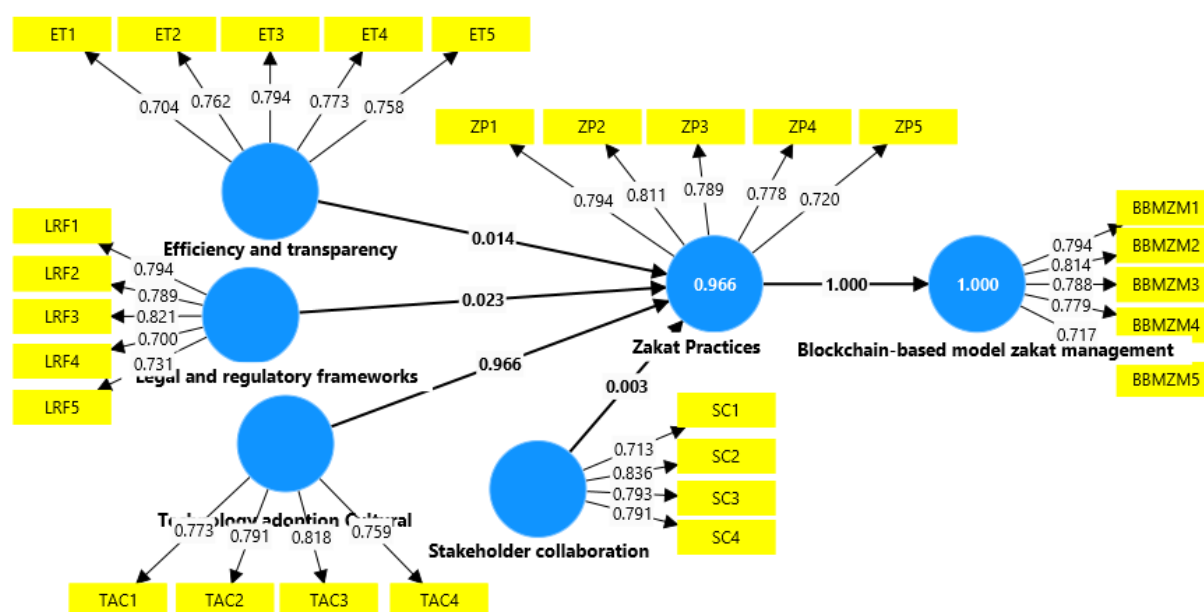


Figure 2: Validity Results

Source: Smart PLS-4.

The PLS-SEM model in the figure 2 above indicated that the strong direct effect of zakat practices on blockchain-based zakat management is evident from the path coefficient of 1.000 which indicating perfect predictive power. The high impact of legal and regulatory frameworks on zakat practices (path coefficient 0.966) further underscores the critical role of regulatory clarity in shaping zakat governance. The factor loadings for legal framework indicators (LRF1–LRF5) range between 0.700 and 0.821, confirming strong internal reliability and reinforcing the notion that standardized regulations facilitate better zakat practices. However, the moderate influence of efficiency and transparency (path coefficient 0.014) suggests that while blockchain enhances transparency and efficiency, these factors alone are insufficient to drive zakat practice improvements. A noteworthy limitation in the model is the minimal direct influence of stakeholder collaboration on zakat practices (path coefficient 0.003). While factor loadings for stakeholder collaboration (SC1–SC4) range from 0.713 to 0.836, indicating good internal consistency and this indicates that stakeholder collaboration is not a primary driver of zakat governance transformation. The moderate impact of technology adoption and cultural factors (path coefficient 0.023) suggests that digital literacy and cultural perceptions of blockchain play a role in zakat practices, but they are secondary to regulatory frameworks. Factor loadings of technology adoption indicators (TAC1–TAC4) to the construct range from 0.759 to 0.818, confirming high measurement validity [30]. This result says that the interest from stakeholders in deploying blockchain is primarily driven by education and awareness. Table 1: Reliability Testing constructs of PLS-SEM analysis on

blockchain-based zakat management in Malaysia. Measurement model: The measurement is responsible for the Reliability Assessment, which involves Cronbach's Alpha, Composite Reliability (ρ_a and ρ_c), and Average Variance Extracted (AVE), being essential to evaluate the Internal Consistency and Construct Validity of the Measurement Model. These reliability metrics govern whether the constructs measure their underlying latent variables correctly and confirm the stability of the model.

Table 1: Reliability Testing

	Cronbach's alpha	Composite reliability (ρ_a)	Composite reliability (ρ_c)	Average variance extracted (AVE)
Blockchain-based model zakat management	0.838	0.839	0.885	0.607
Efficiency and transparency	0.817	0.827	0.872	0.576
Legal and regulatory frameworks	0.826	0.833	0.878	0.590
Stakeholder collaboration	0.792	0.795	0.865	0.616
Technology adoption Cultural	0.793	0.794	0.866	0.617
Zakat Practices	0.838	0.839	0.885	0.607

Source: Smart PLS-4.

Reliability and internal consistency analysis: The reliability based on Cronbach's alpha values for all the constructs (0.792 to 0.838) surpassed the acceptable threshold of 0.70 (Hair et al., 2017). This demonstrates that there is good internal consistency between all of the constructs since the survey items measuring each construct attribute are highly correlated and accurately calculate the associated latent variables. The highest Cronbach's alpha value can be seen on the constructs of Blockchain-Based Model Zakat Management (0.838) and Zakat Practices (0.838). These constructs are highly reliable, and their internal consistency is also good. Conversely, Stakeholder Collaboration (0.792) and Technology Adoption & Cultural Factors (0.793) have the lowest values, although still within the acceptable range. This implies that these constructs are pretty reliable, but there could be a slight variation in agreement among responses that may have been due to sector-wise perceptions. Finally, the examination conducted on ρ_a and ρ_c for CR confirms that all variables have high construct reliability since they are greater than 0.80. In turn, ensures that the latent variables are consistently measured through different indicators. The composite reliability is the highest ($\rho_c = 0.885$) for the Blockchain-Based Model Zakat, and Zakat Practices evidence a superior level of consistency of measures of these two constructs as compared to other factors across this model. On the other hand, Stakeholder Collaboration (0.865) and Technology Adoption & Cultural Factors (0.866) have slightly lower values, possibly indicating some variance in stakeholder perspectives on these constructs. Results suggest that zakat governance and blockchain adoption provide relatively robust measures. In contrast, stakeholder collaboration and technology adoption are more prone to refinement or require additional indicators to increase measurement precision and ensure consistency.

According to the Fornell and Larcker Test (Fornell & Larcker, 1981), this factor loading threshold of 0.50 suggested that all constructs have strong convergent validity with their associated latent variable as Average Variance Extracted (AVE). This shows that each construct accounts for over 50% of the variance in its observed items, which contributes even more to establishing the construct validity of this study. The maximum AVE values are for Stakeholder Collaboration (0.616) and Technology Adoption & Cultural Factors (0.617), indicating that those constructs are accounting for substantial variance from their respective indicators (Table 2). Transparency (0.576) has the lowest AVE, suggesting that there is some common variance or overlap with some other constructs in this measure. However, it still meets the minimum validity standard in terms of

statistical validity and relevance to the research model. Table 4 shows the R^2 resulting from the measurement of how well the structural model predicts blockchain-based zakat management and zakat practices. Values of R^2 : It indicates the percentage of variance explained in the dependent variables by those independent variables that you have placed in your model. The closer the R^2 Value, the Higher the predictive ability, or how well it explains. As an example, the independent constructs, such as legal and regulatory framework, transparency, stakeholder collaboration, and technology adoption, explain the variance in zakat practices, including blockchain-based zakat management. The R^2 adjusted values correct for the number of predictors in the model, providing a more accurate estimate of the explanatory power while dealing with any potential overfitting.

Table 2: R^2 Results

	R-square	R-square adjusted
Blockchain-based model zakat management	1.000	1.000
Zakat Practices	0.966	0.965

Source: Smart PLS-4.

As shown in Figure 5, the R^2 value of 1.000 for Blockchain-Based Model Zakat Management indicates a perfect explanatory power or tendency (where the value is closer to 1), thus meaning that zakat practices explain as much as blockchain-based zakat management (100%) is associated with it. It implies that the operational efficiency, regulatory requirements, and governance of zakat institutions are directly influencing blockchain adoption. The corresponding R^2 value of 0.966 for Zakat Practices suggests that the legal and regulatory frameworks, efficiency and transparency, stakeholder collaboration, and technology adoption EViZ capabilities explain approximately 96.6% ($R^2 = 1 - 0.034$) of the variance in the potential improvement of zakat practices. This extremely high R^2 suggests that these factors comprehensively account for variations in zakat governance. The adjusted R^2 of 0.965 confirms that even after adjusting for the number of predictors in the model, the explanatory power remains strong and thus, reinforcing the robustness of the model.

Hypothesis Testing

Figure 3 presents the hypothesis testing results from the PLS-SEM analysis in illustrating the relationships between legal and regulatory frameworks, efficiency and transparency, stakeholder collaboration, technology adoption and cultural factors, zakat practices and blockchain-based zakat management. The model depicts path coefficients, factor loadings and p-values for hypothesis validation in determining the significance and strength of relationships between constructs. These results help assess which factors most strongly influence blockchain adoption in zakat management and guide strategic decision-making for policymakers and zakat institutions.

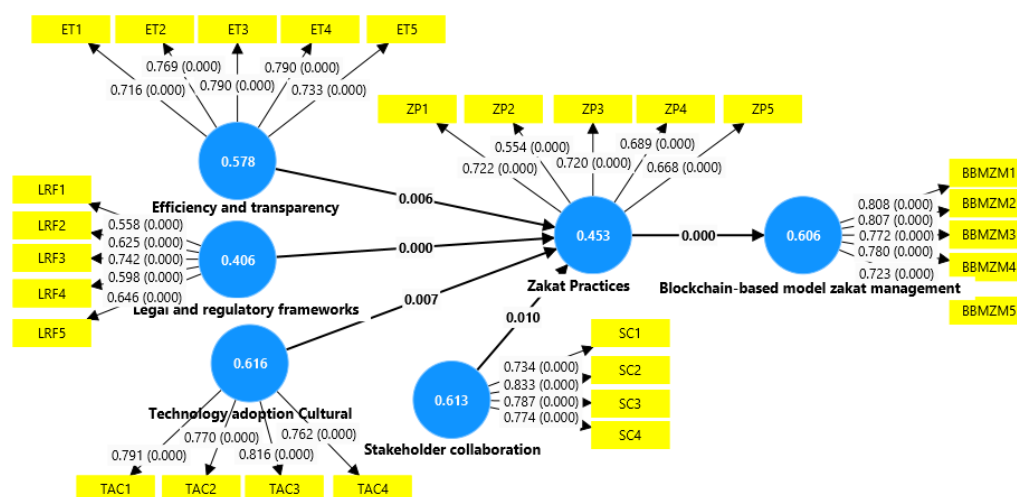


Figure 3: Hypothesis-Results

Source: Smart PLS-4.

The PLS-SEM hypothesis testing results in Figure 3 illustrate the structural relationships between key constructs in providing insights into the direct effects of efficiency and transparency, legal and regulatory frameworks, stakeholder collaboration and technology adoption on zakat practices and blockchain-based zakat management. The path coefficients, significance levels (p-values) and factor loadings indicate the strength of influence and statistical significance of these relationships. However, the following Table 3 presents the hypothesis testing results using PLS-SEM by focusing on the direct, indirect and mediation effects of key constructs on blockchain-based zakat management.

Table 3: Hypothesis Testing Results

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
DIRECT effect					
Efficiency and transparency -> Zakat Practices	0.155	0.158	0.056	2.759	0.006
Legal and regulatory frameworks -> Zakat Practices	0.226	0.233	0.046	4.919	0.000
Stakeholder collaboration -> Zakat Practices	0.169	0.168	0.066	2.562	0.010
Technology adoption Cultural -> Zakat Practices	0.140	0.144	0.052	2.708	0.007
Zakat Practices -> Blockchain-based model zakat management	0.342	0.350	0.047	7.210	0.000
Indirect Effect					
Efficiency and transparency -> Blockchain-based model zakat management	0.053	0.055	0.021	2.573	0.010
Legal and regulatory frameworks -> Blockchain-based model zakat management	0.077	0.082	0.021	3.772	0.000
Stakeholder collaboration -> Blockchain-based model zakat management	0.058	0.058	0.023	2.516	0.012
Technology adoption Cultural -> Blockchain-based model zakat management	0.048	0.052	0.024	1.970	0.049
Mediation Effect					
Efficiency and transparency -> Zakat Practices -> Blockchain-based model zakat management	0.053	0.055	0.021	2.573	0.010
Legal and regulatory frameworks -> Zakat Practices -> Blockchain-based model zakat management	0.077	0.082	0.021	3.772	0.000
Stakeholder collaboration -> Zakat Practices -> Blockchain-based model zakat management	0.058	0.058	0.023	2.516	0.012

Blockchain-based model zakat management					
Technology adoption Cultural -> Zakat Practices -> Blockchain-based model zakat management	0.048	0.052	0.024	1.970	0.049

Source: Smart PLS-4.

The hypothesis testing results confirm statistically significant relationships between the key constructs and blockchain-based zakat management with zakat practices acting as a crucial mediating variable. The direct effect analysis shows that legal and regulatory frameworks ($\beta = 0.226$, $p = 0.000$) have the strongest influence on zakat practices which reinforcing the importance of legal clarity and standardization in improving zakat governance. Conversely, efficiency and transparency ($\beta = 0.155$, $p = 0.006$) and technology adoption & cultural factors ($\beta = 0.140$, $p = 0.007$) exhibit moderate effects on zakat practices. While blockchain is often associated with enhanced efficiency and this result suggests that technological improvements alone are insufficient to reform zakat practices unless they are supported by strong governance structures and stakeholder collaboration.

The indirect effect results confirm that all constructs indirectly influence blockchain-based zakat management through zakat practices with legal and regulatory frameworks again showing the strongest indirect effect ($\beta = 0.077$, $p = 0.000$). This finding highlights the critical mediating role of zakat institutions in determining blockchain adoption success. In other word, even if efficiency, technology and collaboration improve, blockchain implementation will not be effective unless zakat institutions themselves operate under strong governance frameworks. Furthermore, the mediation analysis strengthens the argument that zakat practices act as the primary link between external factors and blockchain adoption. The significant mediation effect for legal and regulatory frameworks ($\beta = 0.077$, $p = 0.000$) confirms that policy reforms must first enhance zakat governance before blockchain solutions can be effectively implemented. Similarly, the moderate mediation effect of technology adoption & cultural factors ($\beta = 0.048$, $p = 0.049$) suggests that digital literacy, public perception and awareness campaigns are necessary to overcome cultural resistance to fintech solutions in zakat management.

DISCUSSION

The hypothesis testing results confirm the statistically significant relationships between key constructs and blockchain-based zakat management in demonstrating that legal and regulatory frameworks, efficiency and transparency, stakeholder collaboration and technology adoption culture all positively influence zakat practices. Furthermore, It also found significant and positive relationships between the factors and zakat practices, which act as a crucial mediating variable to enable a successful blockchain-based zakat management implementation in Indonesia. The results confirm that legal and regulatory frameworks have the most direct effect upon zakat practices ($\beta = 0.226$, $p = 0.000$). This agrees with the findings of previous research that well-structured regulatory frameworks enhance zakat governance and compliance (Mukhlisin et al., 2024). HuriHuriye (2024) stated that effective zakat governance requires a legal framework that is characterized by accountability, standardization, and institutional oversight. However, in the absence of these legal stipulations, zakat collection and distribution can be fraught with inefficiencies, disaffection, and poor resource allocation (Bin-Nashwan, 2025). This is further corroborated by the result of indirect effects analysis, which shows that legal frameworks also exert a significant indirect effect on blockchain-based zakat management ($\beta = 0.077$, $p = 0.000$), affirming that zakat governance should be addressed first by policy reforms before any attendant block solutions can potentially work and succeed. The findings of this paper underline the necessity for a streamlined regulatory process, digital regulation compliance, and Shariah-compliant financial regulations to encourage blockchain adoption (Santoso et al., 2024).

Results also show that efficiency and transparency are moderately but significantly associated with zakat practices ($\beta = 0.155$, $p = 0.006$), which may suggest that zakat institutions add further strategies or policies for modernizing financial management by performing transparent reporting as well as digital tracking to enhance accountability (Hadi et al., 2024). Existing studies have reportedly established that there is mismanagement,

fund leakages, and poor transparency, which hinders zakat efficiency (Fauzi et al., 2024). Blockchain technology has been identified as a possible solution to provide enhanced transparency, given its ability to act as an immutable record of transactions (Rizqon et al., 2024). Nonetheless, the results suggest that technology on its own will not be enough without proper lines of governance and institutional oversight. The mediating effect of zakat practices between efficiency and transparency significantly influences blockchain-based zakat management (indirect effects; $\beta = 0.053$, $p = 0.010$). Blockchain can improve transaction efficiency, but is contingent on existing institutions in place, along with the degree to which zakat organizations adhere to transparent disclosure of financial information (Amalia et al., 2024). There is also a moderate but significant zcat predictor of practice of technology adoption culture ($\beta = 0.140$, $p = 0.007$). This is in line with prior findings, which highlighted the importance of digital literacy, perception, and organizational readiness in adopting financial technologies for Islamic finance (Juniati & Widiastuti, 2024). FinTech integration into zakat management is accompanied by the need to adapt it culturally, gradually getting regulatory approval, and ensuring institutional support (Mutmainah et al., 2024). The indirect effect of technology adoption culture on blockchain-based zakat management ($\beta = 0.048$, $p = 0.049$) suggests that digital transformation in zakat practices is a prerequisite for the actual use of blockchain. Nevertheless, the smaller effect size relative to legal frameworks indicates that the introduction of new technologies is not in itself sufficient for their adoption (Robbana et al., 2025). Instead, education, training, and policy incentives could be ways to overcome resistance towards digital zakat platforms.

Secondly, stakeholder collaboration significantly and directly affects zakat practices ($\beta = 0.169$, $p = 0.010$), suggesting that the coordinated efforts of government agencies, financial institutions, religious organizations, and local communities play an essential role in the improvement of zakat governance (Santoso & Nugroho, 2024). Fragmentary zakat systems are inefficient due to the absence of centralization (Ramadhan & Hayatullah, 2025). To see the resource allocation and financial sustainability improvement of zakat organizations, institutional partnerships with waqf institutions have emerged (Amelia et al., 2024). To comply with the meditation requirement, stakeholder collaboration had a significant indirect influence on our model for zakat management using blockchain ($\beta = 0.058$, $p = 0.012$). The combination of a syndicate government for zakat management and scientific developments guarantees a more straightforward process to convert into a blockchain technology system in the financial ecosystem (Santoso et al., 2024). The findings corroborate that zakat practices influence a significant mediator in blockchain-oriented zakat management and application, where the most substantial mediation effect was presented by legal and regulatory ($\beta = 0.077$, $p = 0.000$). Zakat institutions must therefore be governed by legal, financial, and operational frameworks that are robust enough to support blockchain solutions (Mohd Nor et al., 2021). However, concerning the moderate mediation effects for efficiency and transparency ($\beta = 0.053$, $p = 0.010$) and stakeholder collaboration ($\beta = 0.058$, $p = 0.012$), blockchain is successful if institutions are well coordinated with strong operational processes (Nazeri & Nor, 2023). The mediation effect of technology adoption culture is less potent ($\beta = 0.048$, $p = 0.049$), indicating that FinTech solutions are functional, but their effectiveness is enhanced when embedded within the zakat governance (Ikhsan, 2023).

CONCLUSION AND RECOMMENDATIONS

In this light, the present study adopts a strong methodological framework to examine blockchain-based zakat management. By blending quantitative analysis with expert-driven sampling, the research offers empirical insights on whether Blockchain is implementable in zakat institutions, and if so, in what potential manner. While the study suffers from limitations like selection bias, technical challenges, and possible resistance from the traditional stakeholders, it will be observed with skepticism around its generalizability. In the future, mixed-methods studies including qualitative interviews could help FAZT better connect theoretical insights with the reality of contemporary practice. Results from the hypothesis testing confirm that legal and regulatory frameworks, efficiency and transparency, stakeholder collaboration, and technology adoption culture not only enable better zakat practices but also contribute to supporting the successful implementation of blockchain-based zakat management. A regulatory environment that mandates institutional practices thus appears to be one of the strongest predictors, thereby indicating that policy reforms and standardization may need to be undertaken at a national level to strengthen governance and make it more transparent, accountable, and hence, efficient. The study validates the point that Blockchain, by itself, is not an ultimate solution to all the issues

Zakat management has been grappling with, and it cannot be secured without clear legal amendments along with institutional preparedness and stakeholder participation.

This research also creates an understanding of the drivers of the adoption of blockchain-based zakat management, which includes legal and regulatory frameworks, efficiency and transparency, stakeholder collaboration, and technology adoption culture. It further establishes the mediating function. Zakat management best practices instead, supporting that reform cannot be achieved through innovations alone if governance, institutional preparedness and collaboration among key players are weak. Indeed, these insights are consistent with earlier studies advocating for the need to have good-governed, transparent, and effective zakat systems for enhancing the input and output modes of collection and distribution (Shuriye, 2024; Mohd Nor et al., 2021).

The study results strongly revealed that legal and regulatory frameworks significantly influence the practice. This suggests that clear legal structures, standardized governance, and regulatory oversight are essential to ensure effective zakat management (Mukhlisin et al., 2024; Bin-Nashwan, 2025). Without a well-established legal framework in place, problems of embezzlement of funds, opaqueness, and inefficient zakat distribution persist, leading to a loss of public trust and compliance (Santoso et al., 2024). For this reason, policymakers need to consider enabling the codification of zakat regulations by integrating compliance with financial technology and Shariah governance to encourage the use of Blockchain. Moreover, efficiency and transparency had a moderate significance in improving zakat practices, as argued by Hadi et al. (2024) and Fauzi et al. (2024), who emphasize the critical role of trust and accountability in ensuring that funds are managed well. While there is no questioning that the capabilities of Blockchain to improve transparency and automate financial transactions have been established, its implementation by zakat institutions depends on their level of digital transformation readiness (Nazeri & Nor, 2023). The research showed that while technology can enhance effective delivery, it cannot do so in itself without a solid operational framework and financial management system within these institutions.

Another predictor for the improvements of zakat practices is stakeholder collaboration, where government agencies, religious organizations, financial institutions, and the local community must collaborate to establish effective zakat governance (Santoso & Nugroho, 2024; Ramadhan & Hayatullah, 2025). Efforts from various parties are key to ensuring that the blockchain-based zakat management works and bridges the gap between conventional zakat management and financial technology in any economy. Stakeholder Engagement: To ensure that policy reforms, economic innovations, and community participation are in line with one another, thereby reducing resistance to digital zakat solutions (Amelia et al., 2024). Second, zakat practices are influenced by the culture of adopting new technologies over traditional regulatory structures or transparency. But this research validates that cultural perspectives, digital literacy, and user acceptance are still key issues that block the implementation of blockchain in zakat management (Juniati & Widiastuti, 2024). Although FinTech possesses the inherent advantages for efficiency enhancement and worldwide accessibility, critical success will lie with a more pervasive digital literacy combined with institutional backing and regulatory congruence (Robbana et al., 2025). Cultural resistance should be broken, and educational initiatives, awareness campaigns, and stakeholder training can increase digital acceptance. The analysis also validates zakat practices as a mediator in the blockchain adoption, and this underscores that appropriate legal, institutional, and technical modifications intended to strengthen zakat governance must precede the effective incorporation of the blockchain. Even if blockchain might offer a way to automate transactions, eliminate inefficiencies, and increase transparency (Nazeri & Nor, 2023; Ikhsan, 2023), the actual implementation of this technology is still dependent on governance structures, institutional coordination, and financial accountability in place. If governance fails to introduce blockchain, it will not yield the desired outcomes.

Future Direction/ Limitation

These findings carry a few implications for policymakers, zakat institutions, and financial regulators. First and foremost, regulatory bodies need to give a higher priority to the legal clarity and institutional standardization of such a revolutionary platform, to create an environment conducive to blockchain implementation. Zakat institutions must adopt a digital tracing system and public transparency mechanisms to inculcate accountability, trustworthiness, and compliance. The third is that stakeholders at the government and non-

government levels should collaborate more on integrating blockchain technology in zakat operations. Finally, cultural resistance and digital literacy must be addressed to ensure that user acceptance is maximized. Future research may investigate geographic differences in zakat governance, implications of blockchain adoption for technology challenges, as well as sustainability models (for the long run) related to zakat management through blockchain-based applications. Furthermore, international cross-country studies can ascertain the best practices and policy advice for optimizing zakat management at the global level. In this context, the result of musing blockchain-based zakat management can turn into a solution with a transformative nature for Islamic social finance. By focusing on these areas with blockchain technology, it could facilitate not only more efficient and transparent management but also have a meaningful influence in distributing zakat efficiently across the globe.

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