

Blockchain Technology for Efficient Zakat Management in India: An Exploratory Study

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Received: 06 May 2024; **Revised:** 19 September 2024, 10 November 2024; **Accepted:** 09 December 2024

ABSTRACT This review explores how blockchain technology can revolutionize *Zakāh* management in India, addressing persistent transparency and trust issues. *Zakāh*, a core Islamic practice aimed at reducing socioeconomic inequality, often falls short of its potential due to inefficiencies and a lack of accountability in the current system. By analyzing secondary sources, this study highlights how blockchain and smart contracts can transform *Zakāh* collection and distribution. The proposed model promises greater transparency, trust among donors, and more efficient fund allocation, which could boost formal contributions and significantly reduce poverty in the Indian *Muslim* community. A critical insight is the lack of research on blockchain's role in *Zakāh* distribution and its societal impact in India. Additionally, outdated data on *Zakāh* funds underscores the need for modernization. The study synthesizes existing knowledge through a systematic review while addressing ethical concerns and methodological limitations. Adopting a qualitative approach, it provides a fresh perspective on blockchain's potential to enhance *Zakāh* systems and offers a practical framework for policymakers and religious leaders to implement meaningful changes.

KEYWORDS: *Zakāh*, Indian *Muslim* community, Efficient distribution, poverty, blockchain technology

JEL Classification: D31, I30, I32, L30, L31, O33, O35, P46

KAUJIE Classification: C55, E0, E1, E12, E14, E15, H41, N4, N5

1. Introduction

Zakāh, the third pillar of Islam, has a profound socio-economic impact, requiring an annual 2.5% contribution from an individual's savings (Shaikh, 2019). In India, the largest *Zakāh* contributions occur during Ramadan, a month of fasting and prayer believed to offer greater spiritual rewards. Reflecting societal needs and poverty levels, *Zakāh* collections have seen significant growth. According to Abdul Jabbar Siddiqui, Secretary of *Zakāh* Center India (ZCI), Indian *Muslims* contribute approximately ₹20,000 crores to ₹70,000 crores annually (IndiaTomorrow, 2022). By mandating that a portion of one's assets be donated to charity, *Zakāh* promotes social equity and underscores *Islam's* commitment to social responsibility. The Holy *Qur'ān* emphasizes the importance of *Zakāh* in alleviating poverty, distributing wealth, and contributing to economic management within the *Muslim* community. Given India's substantial *Muslim* population and pressing socio-economic needs, efficient *Zakāh* management is crucial. Non-governmental organizations (NGOs), including numerous *Zakāh* institutions, play a pivotal role in overseeing its administration in India. Globally, the World Bank and the Islamic Development Bank Institute (IsDBI) estimate annual *Zakāh* funds at \$550-\$600 billion, with official institutions managing only \$10-\$15 billion per year (ESCWA, 2021; Widadio, 2019). The Islamic Philanthropy 2021 Annual Report highlights a 12.5% increase in *Zakāh* contributions in 2020, resulting in a 59% rise in recipients (ESCWA, 2021). These statistics underscore the urgent need for efficient *Zakāh* administration and allocation systems to optimize resource utilization.

In India, *Zakāh* collection and distribution reveal notable financial impacts and organizational efforts. *Zakāh* Center India reported collecting ₹2 crores last year, with projections reaching ₹20 crores this year. These funds are directed towards poverty alleviation, skill development, and education (Jamaat-e-Islami Hind, 2023). The All-India Council of *Muslim* Economic Upliftment (AICMEU) reports total *Zakāh* disbursements amounting to ₹14,094.43 crores, with 25%-30% collected by individuals and the remainder by organizations (AICMEU, n.d.). The funds are allocated as follows: ₹4,228.29 crores to individuals in need, ₹7,047.15 crores to madrasas for education and administration, and approximately ₹1,409.43 crores each to religious and social charity organizations (AICMEU, n.d.). AICMEU further recommends allocating 10% of *Zakāh* funds for investment to enhance long-term impact (AICMEU, n.d.). Meanwhile, the Association of *Muslim* Professionals (AMP) reports an 8,210.58% increase in *Zakāh* collection and an 8,335.96% increase in disbursement between 2013 and 2022, reflecting improved fund utilization and strategic management.

Estimating India's total annual *Zakāh* collection presents challenges due to its decentralized and informal nature. Estimates range from ₹20,000 crores to ₹70,000 crores annually (India Tomorrow, 2022), with some projections suggesting systematic collection could yield up to ₹25,000 crores (ICIF, 2021). Individual estimates exceed ₹150 crores (Javed, 2022). The lack of a centralized authority for *Zakāh* collection and distribution leads to variability in these figures. Nonetheless, data consistently indicate that significant *Zakāh* funds are collected and distributed annually, highlighting

their importance in India's charitable and social development. However, the distribution of *Zakāh* in India faces obstacles due to the absence of a centralized system, raising concerns about fund utilization. Many individuals prefer direct donations to relatives or local communities rather than through formal organizations, creating a discrepancy between actual and potential collections (Shaikh, 2019). Inefficiencies and transparency issues further widen this gap. Limited awareness and education about *Zakāh*'s obligatory nature and the implications of not paying *Zakāh* also contribute to low collection rates and inefficient fund utilization (Alam & Uddin Ahmed, 2020). Additionally, without a centralized system, ensuring that *Zakāh* funds reach the truly needy remains a challenge (Ashiq & Mushtaq, 2020).

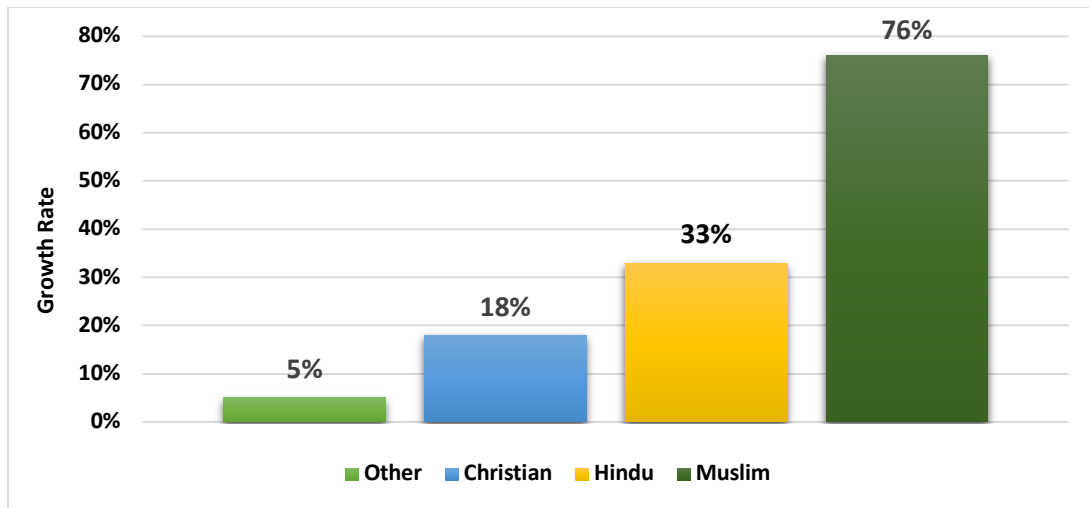
The Sachar Committee Report reveals that a significant portion of Indian *Muslims* face economic hardship, with 31% living below the poverty line. Recent data show a rise in unemployment among Indian *Muslims*, increasing from 2.4% in 2022-23 to 3.2% in 2023-24 (Wani & Dhasmana, 2024). Blockchain technology presents a potential solution for enhancing *Zakāh* management by providing a secure, decentralized, and transparent system for fund collection and distribution. This approach could significantly improve socio-economic outcomes. According to the National *Zakāh* Survey Report by the Association of *Muslim* Professionals, 38% of Indian *Muslims* prefer

giving *Zakāh* to less fortunate relatives, while only 16% contribute to NGOs or community organizations (AMP, 2020). Encouragingly, 77% of respondents believe that collective donations could significantly benefit India's *Muslim* community (AMP, 2020). This highlights the need for organized *Zakāh* administration. To achieve efficient management, the implementation of Standard Operating Procedures, ISO certifications, and monthly work plans with achievable targets and realistic timeframes is essential (PUSKAS BAZNAS, 2021). Inefficiencies in *Zakāh* distribution are attributed to unreliable factors and flawed methods (Zainal et al., 2016), suggesting that adopting these approaches would improve management efficiency in India.

India's growing digital innovation and expanding e-commerce landscape underscore its active role in global technological advancements. With increasing internet usage, India is becoming more virtually engaged in this dynamic sphere. As globalization advances, aligning *Zakāh* practices with modern technologies is essential (Jayaswal, 2023). Blockchain, a revolutionary technology, enhances security and transparency by preventing unauthorized data manipulation. Using Distributed Ledger Technology (DLT) based on cryptography, distributed ledgers, and peer-to-peer mechanisms, blockchain ensures secure data and transaction storage for future reference.

1.1 Growing *Islamic* Population and Poverty Rates

Figure 1: Population growth in India by religion



Source: Statista, 2023a

Zakāh-related issues are closely linked to India's expanding *Muslim* population and persistent poverty levels. *Muslims* currently constitute 14.2 percent (approximately 200 million) of India's total population (ICIF, 2021; Statista, 2023b). Data presented in Figure 1 suggests that the *Muslim* population in India could grow by approximately 76% by 2050 (Statista, 2023a). However, persistent poverty within the *Muslim* community remains a significant concern. According to the National Sample Survey's 55th round and the 2006 India Social Development Report, about 35% of urban *Muslims* and 31% of rural *Muslims* live below the poverty line, compared to just 10.1% of urban *Hindus* and 11.7% of rural *Hindus* (Alam & Ahmed, 2020). The 2006 Sachar Committee Report further highlights the limited access of India's *Muslim* population to bank credit, which exacerbates their financial exclusion and hinders socio-economic progress. As India continues to grapple with rising poverty, developing an

effective *Zakāh* Management Mechanism is critical to addressing the challenges faced by the growing *Muslim* population (Rajinder Sachar, 2006).

This review study aims to explore the potential integration of blockchain technology into *Zakāh* management and distribution. Blockchain technology could play a crucial role in addressing public trust issues that often arise from the mismanagement of *Zakāh* funds (Ikhsan, 2023). Integrating blockchain technology with *Zakāh* management systems in digital India could help prevent fund misappropriation or misuse, given the country's increasing reliance on internet-based financial transactions. This review also examines how such integration could facilitate the financing of microbusinesses through *Zakāh* funds, thereby addressing the socio-economic challenges facing India's *Muslim* population. The growing *Muslim* population and escalating poverty rates

in India underscore the urgent need for an efficient *Zakāh* Management System. However, current challenges related to transparency and effectiveness have created skepticism among *Zakāh* contributors (Obaidullah & Shirazi, 2017). *Zakāh* institutions in India face several issues, including financial mismanagement, neglect of *Zakāh* payers in fund allocation, and the use of outdated systems that limit accountability (Alam & Ahmed, 2020; Sabahuddin, 2014). The absence of accurate data on disadvantaged community members further hampers fair distribution, while the misdirection of funds to madrasas rather than intended beneficiaries erodes public trust (Alam & Uddin Ahmed, 2020; Shaikh, 2019; Sabahuddin, 2014).

These issues significantly impact *Zakāh* contributions, leading to non-compliance among payers and a preference for direct fund distribution (Ghani et al., 2018; Alam & Uddin Ahmed, 2020). The resulting mistrust undermines the long-term viability and effectiveness of *Zakāh* institutions in addressing poverty and socio-economic challenges (Muhammad et al., 2016). Nevertheless, blockchain technology offers a potential solution by enhancing transparency, traceability, and security. Evidence from studies conducted in Malaysia and during the Covid-19 pandemic

suggests that blockchain-based systems can rebuild trust and improve *Zakāh* administration (Nur et al., 2023; Rangone & Busolli, 2021).

2. Literature Review

2.1 AMP's *Zakāh* Fund: Empowering Indian Muslims through Education and Self-Employment

Zakāh is an annual obligation for *Muslims* to donate a portion of their wealth to charity. Eligible individuals are required to have wealth exceeding the equivalent of 75 grams of gold, after accounting for liabilities. In India, *Muslims* contribute 2.5% of their income or assets as *Zakāh* (Shaikh, 2019). The Indian government does not provide a centralized system for *Zakāh* distribution, as it is considered a personal duty of the *Muslim* community. Instead, various NGOs and organizations manage the distribution of *Zakāh* within these communities (Alam & Uddin Ahmed, 2020). One such organization is AMP, a national-level institution that allocates *Zakāh* funds to several initiatives, prioritizing higher education, followed by support for self-employment and entrepreneurship, as well as the care and upbringing of orphans. Table 1 below illustrates AMP's performance across India over the past nine years.

Table 1: Performance of “Association of Muslim Professionals” in *Zakāh* collection and utilization

Figures/Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fund Collected	2,06,000	7,99,000	20,65,040	38,79,750	43,25,776	69,62,803	89,96,082	94,89,394	1,17,70,670	1,7,099,800
Fund Distributed	2,00,000	7,75,773	20,60,000	38,66,000	43,07,150	69,42,300	89,69,695	94,67,308	1,17,73,512	1,70,71,914
Balance	6,000	23,227	5,040	13,750	18,626	20,503	26,387	22,086	2,842	27,886
Higher Education	1,00,000	4,00,773	10,60,000	10,30,000	15,57,150	2383500	31,87,897	56,86,543	71,46,672	88,90,166
Self Employment	1,00,000	3,75,000	10,00,000	12,65,000	14,25,000	2500000	30,04,500	26,39,492	27,41,900	36,51,097
Orphans Scholarship	-	-	-	5,73,000	10,25,000	2018800	9,32,298	11,14,210	45,84,940	32,02,152
Feed the Poor and Needy	-	-	-	-	-	-	-	20,81,521	14,98,600	2,98,057
Specific Donations	-	-	-	9,98,000	3,00,000	40000	18,45,000	27,063	-	10,30,442
Higher Education	10	41	106	103	112	167	255	570	685	1,262
Self-Employment	5	18	42	50	71	89	150	117	106	257
Orphans Scholarship	-	-	-	120	174	324	246	163	382	495
Feed the Poor and Needy	-	-	-	-	-	-	-	2,082	14,899	299
Specific Donations	-	-	-	11	1	1	108	7	-	10
Total Beneficiaries	15	59	152	284	358	581	759	857	1,173	2,024

Source: AMP, 2023

An analysis of *Zakāh* collection and distribution by the Association of *Muslim* Professionals (AMP) in India reveals a significant upward trend and substantial benefits for the social progress of the *Muslim* community. AMP's *Zakāh* collection grew considerably between 2016 and 2018, with affluent *Muslim* groups contributing generously to social development programs. A significant portion of the funds was allocated to higher education and self-employment initiatives, reflecting a focus on long-term community empowerment. AMP also expanded its *Zakāh* distribution strategy to include support for orphans, IIT scholarships, and targeted donations, demonstrating a comprehensive approach to community welfare (Muneeza & Nadwi, 2019).

From 2013 to 2022, the AMP *Zakāh* Fund (AZF) experienced remarkable growth, enabling support for advanced education, orphan schooling, small business ventures, and skills training for disadvantaged women. During the COVID-19 pandemic, the fund was crucial in providing medical assistance. AMP's 2023 strategic plan aims to expand its national outreach, emphasizing higher education grants, self-employment support, and holistic educational aid for orphans (AMP, 2023). This continued dedication to transforming *Zakāh* recipients into contributors underscores AMP's commitment to sustainable community

development and uplifting underprivileged *Muslims* across India.

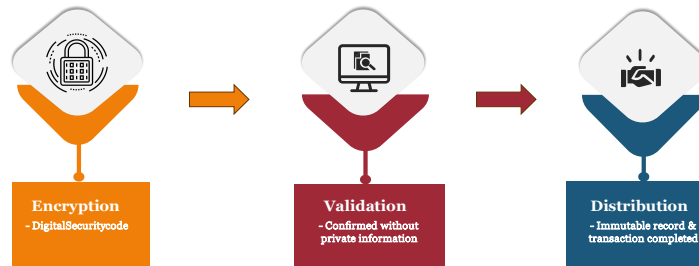
2.2 The Importance of *Zakāh* for Social Development

In *Muslim* societies, *Zakāh* is a community-driven initiative to enhance social welfare. With a *Muslim* population of approximately 200 million in India (ICIF, 2021; Statista, 2023b), the distribution of *Zakāh* poses significant challenges but remains essential for fostering social development. *Zakāh* plays a vital role in supporting higher education, self-employment, and small businesses within impoverished *Muslim* communities. It also provides critical assistance to orphans, improving their access to education and employability.

Moreover, *Zakāh* addresses low employment rates among economically disadvantaged *Muslims* by enabling income generation through self-employment and small business ventures. As an act of "purity" attained through wealth donation, *Zakāh* reduces the disparity between rich and poor, mitigates social conflicts, and enhances societal security (Mirza, 2021). Its impact on India's social progress is evident in various domains, including employability, education, and economic empowerment. Numerous NGOs across India are actively working to ensure the equitable distribution of *Zakāh*, fostering the well-being of *Muslim* communities nationwide.

2.3 Role of blockchain in transactions

Figure 2: Steps in blockchain transactions



Source: Rejeb, 2020

Blockchain technology is a groundbreaking innovation that ensures the security of personal data for Internet users. As modern transaction technologies continue to advance, the prevalence of cybercrime has also grown. Blockchain helps safeguard data against cyberattacks through a three-step process: encryption, validation, and distribution. First, a digital security code is generated to maintain

user data privacy. This code is then validated anonymously within the blockchain network. Once the validation is complete, funds are distributed, and transactions are securely recorded (Rejeb, 2020). By implementing this process, blockchain technology significantly reduces the risk of cybercrime and data breaches, thereby fostering greater trust among users.

Figure 3: Significant role of blockchain in transactions

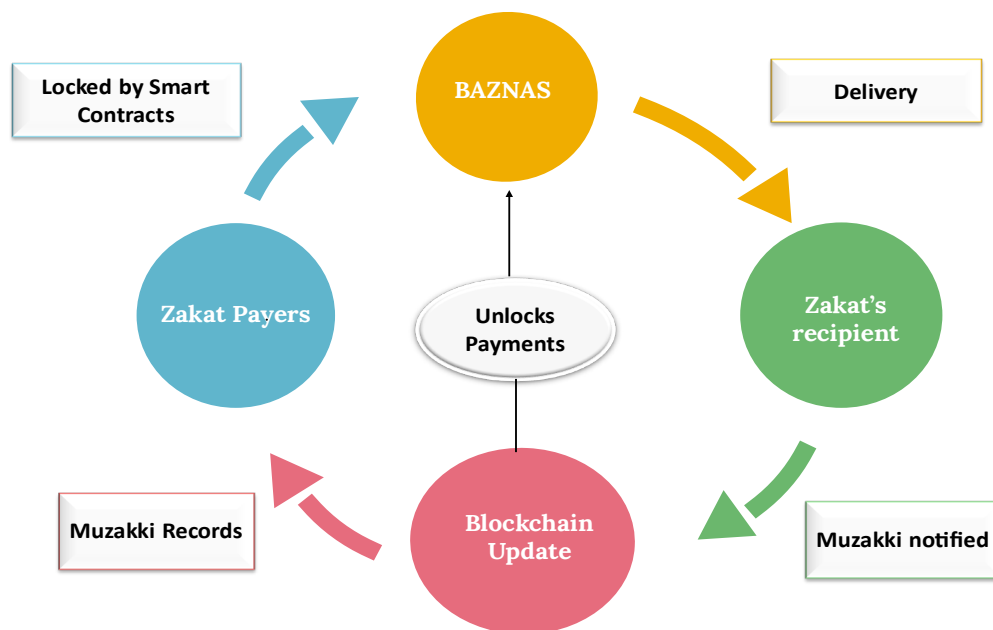


Source: Hamdani, 2020

Beyond enhancing security, blockchain technology plays a pivotal role in online transactions by tracking debits and credits, facilitating messaging, and maintaining distributed ledger records (Hamdani, 2020). It accurately monitors account transactions, provides real-time updates to all parties, and ensures error-free processing. Distributed ledger technology records transactions in a way that makes hacking attempts ineffective. Moreover, using blockchain technology in transactions

offers additional advantages, such as reducing processing time. This enables faster transaction processing compared to traditional methods, which can be particularly valuable during times of crisis, such as a pandemic. It can be argued that blockchain technology is crucial in modern transaction processes. Relying on other technologies for transactions can be insecure, whereas the adoption of blockchain technology significantly enhances the security of credits and debits.

Figure 4: Framework of blockchain-based *Zakāh* distribution



Source: Zulfikri et al., 2021

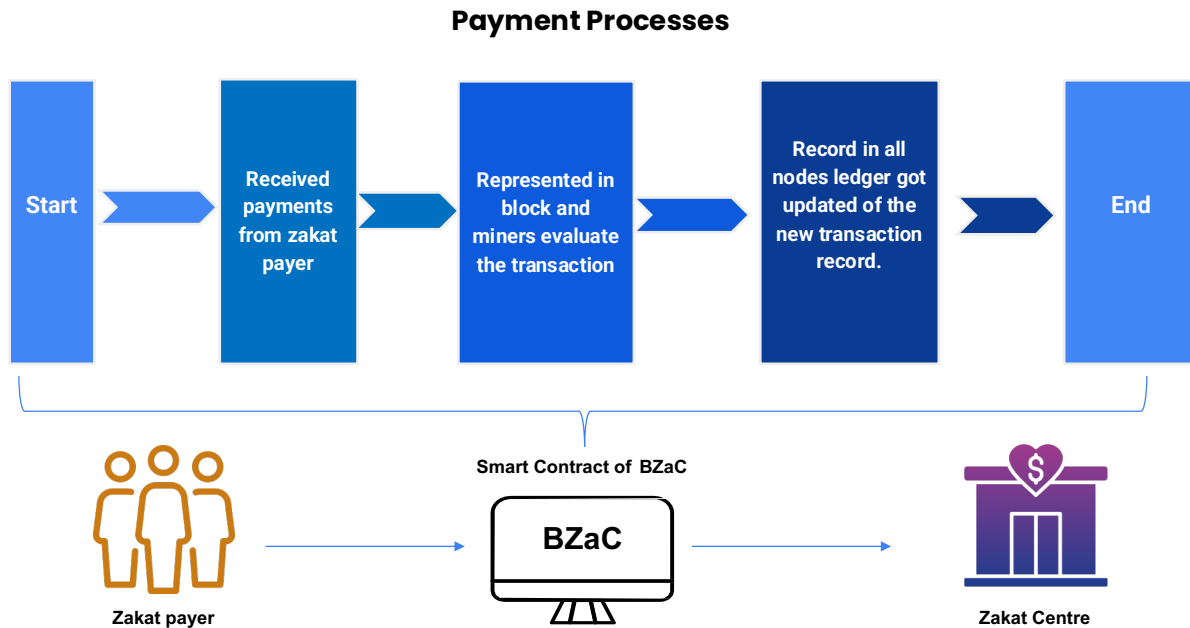
Artificial Intelligence (AI), Machine Learning (ML), and big data have revolutionized *Zakāh* distribution, replacing traditional human-operated systems with advanced automation. However, these technologies also introduce cybersecurity risks, making it essential to prioritize secure mechanisms for *Zakāh* transactions. Blockchain technology emerges as the most reliable solution for mitigating these risks.

Figure 4 illustrates a blockchain-based framework for *Zakāh* distribution, comprising four key stages: the *Zakāh* payer, the recipient, Baznas (Badan Amil *Zakāh* Nasional), and the transaction update process facilitated by blockchain (Zulfikri et al., 2021). In this system, *Zakāh* payers initiate payments secured by smart contracts managed by Baznas. The collected *Zakāh* is then distributed to recipients, with *Muzakee* serving as a notification platform to

inform payers of completed transactions. Each transaction is securely recorded on the blockchain, ensuring transparency and

accountability. Additionally, all transactions are encrypted to safeguard sensitive information and enhance trust among stakeholders.

Figure 5: Payment process of *Zakāh* through blockchain technology



Source: Khatiman et al., 2021

Figure 5 illustrates the payment process involving *Zakāh* payers, smart contracts, and the subsequent collection by *Zakāh* centers, which constitute the foundational steps of the entire system. The smart contract process includes receiving payments from *Zakāh* payers, representing transactions in blocks, performing minor evaluations, and updating all ledgers to record the transactions (Khatiman et al., 2021). Dr. Ziyaad Mahomed, Associate Dean of Executive Education and E-Learning at The International Center for Education in Islamic Finance (INCEIF), alongside his team, is developing an Islamic social financing app

leveraging blockchain technology. According to Dr. Ziyaad (Noordin, 2018), the app enables users to select between *ṣadaqah* or *Zakāh*, specify their preferred Islamic school of thought, choose a project to support, and securely complete their payment. Once the *Zakāh* payment is recorded on a blockchain node, payers receive confirmation and updates on fund utilization. This level of transparency ensures confidence that their *Zakāh* contributions reach the intended beneficiaries. Developed in collaboration with Aid Tech and the International Federation of Red Cross and Red Crescent Societies, the app significantly

enhances transparency and instills confidence among contributors (Muneeza & Nadwi, 2019).

While Artificial Intelligence (AI) and big data are promising tools for improving *Zakāh* distribution, the integration of blockchain technology alongside these innovations is essential to ensure the security of sensitive information.

2.4 India's National Strategy on Blockchain: A Vision for a Transparent and Secure Digital Future

India's "National Strategy on Blockchain," updated in December 2021 by the Ministry of Electronics and Information Technology (MeitY), outlines a comprehensive vision to establish India as a global leader in blockchain technology. The strategy emphasizes the development of a shared blockchain infrastructure aimed at delivering secure and transparent digital services, with a focus on e-governance applications. The document addresses key technological aspects, such as interoperability and security, while advocating for legal and policy studies on blockchain regulation. It includes Strengths, Weaknesses, Opportunities, and Challenges (SWOC) analysis, an adoption roadmap, and detailed discussions on both international and national blockchain scenarios. Based on public consultations, the strategy highlights the need for research, security, standardization, and legal frameworks. A major initiative under this strategy is the India Chain project, which aims to establish a national blockchain infrastructure for deployment across various sectors. Pilot projects by the National Institution for Transforming India (NITI Aayog) have already been conducted in areas such as pharmaceutical supply chain management, fertilizer subsidy disbursement, university certificate verification,

and land record management. These efforts demonstrate India's commitment to leveraging blockchain technology to enhance efficiency and transparency across diverse economic sectors (Kumar et al., 2020; MeitY, 2021).

2.5 Technological Tools for *Zakāh* Distribution in India

A variety of modern technologies have been employed to streamline *Zakāh* distribution in India, including mobile applications, vending machines, web-based payment systems, telecommunication services, blockchain applications, artificial intelligence, and big data analytics. One notable innovation is the Rice ATM, which functions like a traditional bank ATM but dispenses rice for underprivileged *Muslims*. These machines can store up to 1,000 kg of rice and serve approximately 1,000 recipients in India (Muneeza & Nadwi, 2019). Additionally, mobile devices have enabled users to access applications and websites for seamless *Zakāh* transactions, while tech-savvy individuals can utilize official *Zakāh* organization websites to make contributions. This diverse technological landscape offers innovative and efficient methods to improve *Zakāh* distribution systems in India.

2.6 Literature Gap

While numerous studies have explored the use of blockchain technology in global *Zakāh* institutions, its impact on *Zakāh* distribution and social development in India remains largely unexamined, highlighting a significant research gap. Furthermore, assessing national *Zakāh* funds in India poses challenges due to limited data. Dr. Rahmatullah, Managing Director of the AICMEU (All India Council of *Muslim* Economic Upliftment), estimated India's *Zakāh* contributions to be around INR 100,000 million,

based on government and independent data on per capita income and charity contributions. With the increase in per capita income, *Zakāh* contributions are likely to have grown

significantly, potentially rivaling the Brihan Mumbai Municipal Corporation's annual budget of approximately INR 370,000 million (Rahman, 2017; Alam & Ahmed, 2020).

Table 2: Systematic review table

Source	Methodology	Key findings
Salleh et al., 2022	Secondary sources gather qualitative and relevant data on digital technology in <i>Zakāh</i> management.	<ul style="list-style-type: none"> ● Digital technologies like AI, blockchain, IoT, automation, and augmented reality enhance <i>Zakāh</i> security, efficiency, and transparency. ● These financial technologies address and resolve <i>Zakāh</i> -related issues.
Ahmed and Zakaria, 2021	Secondary sources provide diverse perspectives on blockchain technology in <i>Zakāh</i> distribution.	<ul style="list-style-type: none"> ● <i>Zakāh</i> targets poverty eradication via wealth contributions. ● Blockchain overcomes traditional banking and crowdfunding challenges. ● Key blockchain features: decentralized data, anti-tampering, distributed ledger, anti-forgery, immutability. ● Additional features: flexibility, orchestration, transparency, efficiency, low cost, sustainability.
Zulfikri et al. 2022	The study reviews literature on blockchain's effect on <i>Zakāh</i> recipients' trust using secondary sources.	<ul style="list-style-type: none"> ● Blockchain enhances security and service quality in <i>Zakāh</i> institutions ● Improves trust and satisfaction among fund collectors ● Creates secure, tamper-proof, legal identities ("trust stamp") for individuals
Elasrag, 2019	This study uses secondary qualitative data to explore blockchain in <i>Islamic</i> finance and its challenges.	<ul style="list-style-type: none"> ● Blockchain can be used for intricate financing and <i>Sharī'ah</i>-compliant transactions in <i>Islamic</i> financial institutions ● Offers traceability and provenance ● Ensures security through permissioned networks with digital ledgers
Rabbani et al. 2020	This study reviews 133 <i>Islamic</i> fintech research papers from various academic databases.	<ul style="list-style-type: none"> ● Blockchain detects fraud, minimizing failure risks ● Unalterable transactions enhance personal data security ● Improves overall security in <i>Zakāh</i> distribution

Alam and Ahmed, 2020	This study uses secondary methods to collect data on <i>Zakāh</i> practices and <i>Muslim</i> population in India.	<ul style="list-style-type: none"> • Religious institutions manage 40-50% of <i>Zakāh</i> collection and distribution in India • <i>Islamic</i> organizations like "<i>Jamaat-e-Islami</i>" contribute to the process • Specialized organizations focus on <i>Zakāh</i> within Indian <i>Muslim</i> communities
Laldin and Djafri, 2019	This study examines <i>Islamic</i> finance's digital trends using secondary data, focusing on blockchain.	<ul style="list-style-type: none"> • Modern tech offers efficient account opening and tailored solutions in <i>Islamic</i> finance • Blockchain enables decentralized document management without third parties • Insufficient blockchain knowledge in <i>Zakāh</i> distribution is a major challenge
Herasymenko And Bachynska 2021	The study created and tested an Ethereum-based decentralized app using various blockchain tools.	Ethereum smart contracts enable secure, transparent non-profit transactions "Charitable Fund" and "Request" contracts manage sponsor requests efficiently High initial costs but reduces risk of fund misuse for larger funds Study's results can aid software for generating required reports
Khairi et al.2023	Qualitative study using literature reviews, interviews, waterfall model, and controlled DRS.	<ul style="list-style-type: none"> • Peer-to-peer system enhances secure, transparent <i>Zakāh</i> distribution • Potential to boost confidence in Malaysian <i>Zakāh</i> institutions • <i>Zakāh</i> collection system developed with waterfall model • System includes web frontend and secure backend for traceable transactions

Source: Author's Own

3. Research Methodology

The proposed research is exploratory and doctrinal, aiming to investigate the role of *Zakāh* in fostering social development among Indian *Muslims*. It emphasizes the principles of *Zakāh* and its broader societal impact. The study reviews existing literature on the application of blockchain technology in *Zakāh* fund

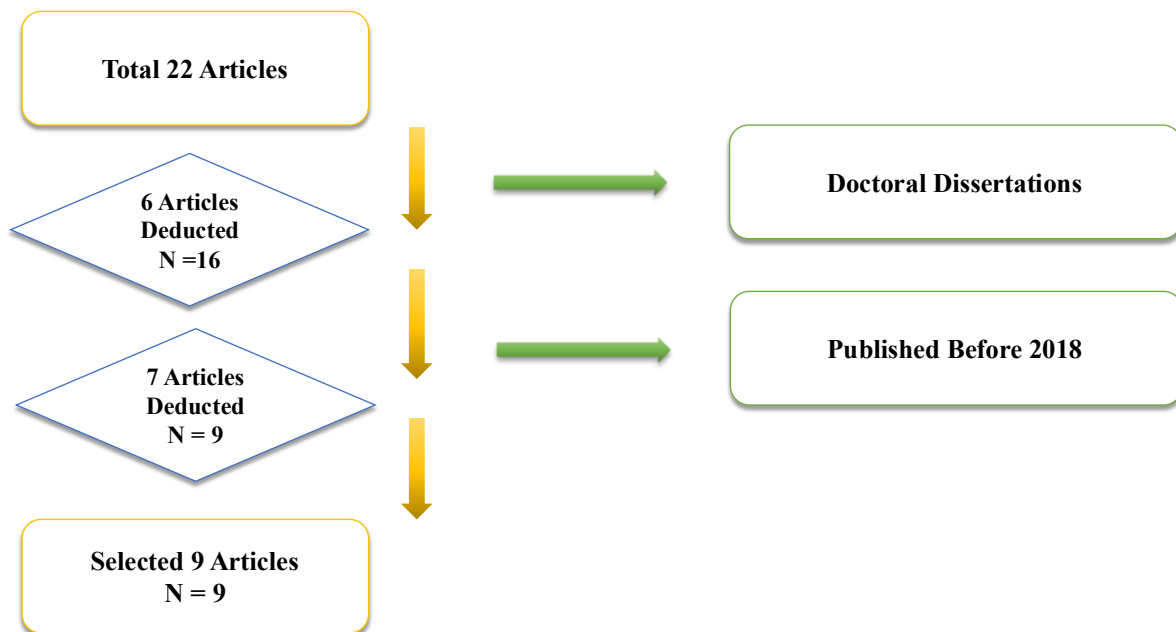
management and identifies critical research gaps in this area.

Furthermore, the research explores blockchain's potential to enhance financial transactions and streamline *Zakāh* distribution in India. It proposes a model leveraging smart contracts to revolutionize *Zakāh* management. This model is designed to improve transparency, efficiency, and trust, thereby optimizing fund distribution

and increasing public willingness to contribute through institutional channels. Numerous scholarly articles and journals underscore the significant global applications of blockchain technology in similar contexts. Consequently, secondary sources were utilized for data collection. Several articles were analyzed to elucidate the key concepts of *Zakāh* and blockchain technology. Specifically, nine

scholarly articles were selected, and relevant data were extracted for analysis. To systematically present the findings, a table containing annotated bibliographies was created, providing a clear overview of the data from these articles. This systematic review, detailed in Table 2, serves as an effective method for interpreting information from various authors' perspectives (Churuangsuk et al., 2018).

Figure 6: Flowchart



Source: Author's Own

As illustrated in Figure 6, the selection criteria for articles involved purposive sampling, focusing on journals and articles published after 2018. All selected articles addressed the application of blockchain technology in *Zakāh* distribution in India, with doctoral dissertations explicitly excluded. Out of an initial pool of 22

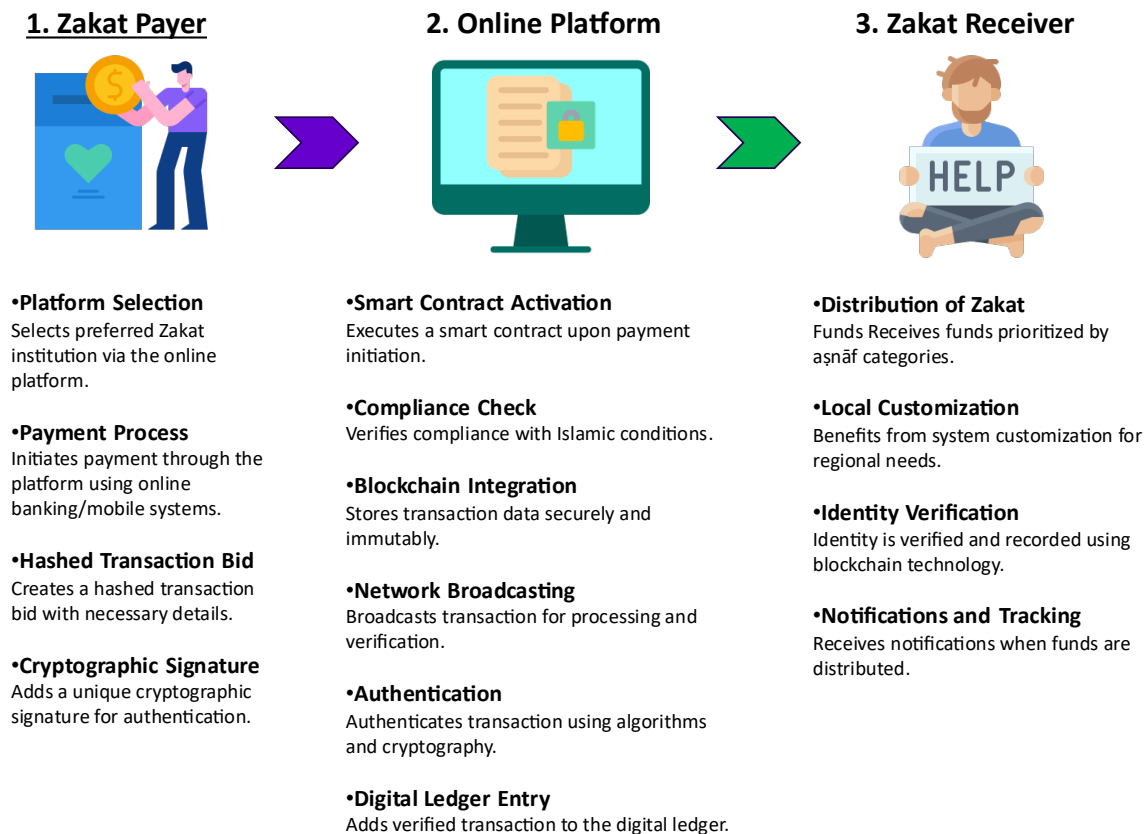
articles, 6 were excluded for being dissertations, and 7 were omitted for being published prior to 2018. The selection process is visually depicted in a flowchart. Ultimately, 9 articles were chosen (Salleh et al., 2022; Ahmed and Zakaria, 2021; Zulfikri et al., 2022; Elarag, 2019; Rabbani et al., 2020; Alam and Ahmed, 2020; Laldin and

Djafri, 2019; Herasymenko and Bachynska, 2021; Khairi et al., 2023). Relevant data on the

research topic were extracted from these articles for analysis.

4. Result and discussion

Figure 7 Proposed Indian *Zakāh* Management through Blockchain Technology Model



Source: Author's Own

4.1 Enhancing Transparency, Security, and Efficiency of Indian *Zakāh* model

Key Participants

The proposed Indian *Zakāh* management model (Figure 11) leverages blockchain technology to enhance the efficiency, transparency, and security of *Zakāh* transactions. This model identifies three primary participants: *Muzakki* (donors), *Zakāh* institutions and *Mustahiqeens*

(beneficiaries). *Muzakki* refers to individuals or entities contributing *Zakāh* funds, while *Zakāh* institutions are organizations with the managerial and entrepreneurial expertise to administer and distribute these funds effectively. *Mustahiqeens* are the eligible recipients, comprising eight community groups prioritized for economic and social upliftment.

Platform and Process Flow

The process begins with the initiation of a *Zakāh* transaction. Donors can select their preferred *Zakāh* institutions through a dedicated online platform that aggregates various institutions across India. The donor then initiates the payment through this platform, which is integrated with online banking and mobile payment systems widely used in India. A hashed transaction bid is generated, including essential details such as the date, sender and receiver information, asset type, and the amount of *Zakāh* remitted. Each transaction is assigned a unique cryptographic signature for authentication. A critical aspect of the model is the execution of smart contracts, which are triggered upon payment initiation. These contracts specify the payer's details, type of *Zakāh*, and compliance with Islamic principles. Verification of Islamic compliance ensures that all obligatory conditions are met before proceeding, thereby maintaining adherence to *Sharī'ah* laws.

Blockchain Framework Components

The integration of blockchain technology is central to this model, providing a secure, transparent, and efficient framework for managing *Zakāh* funds. The blockchain architecture comprises three distinct layers:

1. **Data Layer:** Stores transaction and event records, ensuring all transactions are securely recorded, immutable, and transparently available for review.
2. **Access Control Layer:** Allows users to perform independent data queries and receive timely reports, enhancing accountability and transparency.
3. **Trust Layer:** Facilitates global participation, dispute resolution, and

transaction monitoring through decentralized management, thereby fostering trust among all participants.

Broadcasting and Authentication of *Zakāh* Transactions

Zakāh transactions are disseminated and verified through network broadcasting, where the proposed transaction is transmitted to a network of computers for processing and authentication. This process involves various stakeholders, including *Zakāh* authorities, mosques, charitable organizations, and financial institutions. The network authenticates the transaction using advanced algorithms and cryptographic methods, ensuring validity, privacy, and security while adhering to *Zakāh* regulations.

Adding to the Digital Ledger

Once authenticated, the transaction is added to a decentralized, distributed ledger, creating a transparent and immutable record of all *Zakāh* transactions. This digital ledger functions as a secure and decentralized database, preserving the integrity and accuracy of the data.

Distribution and Monitoring

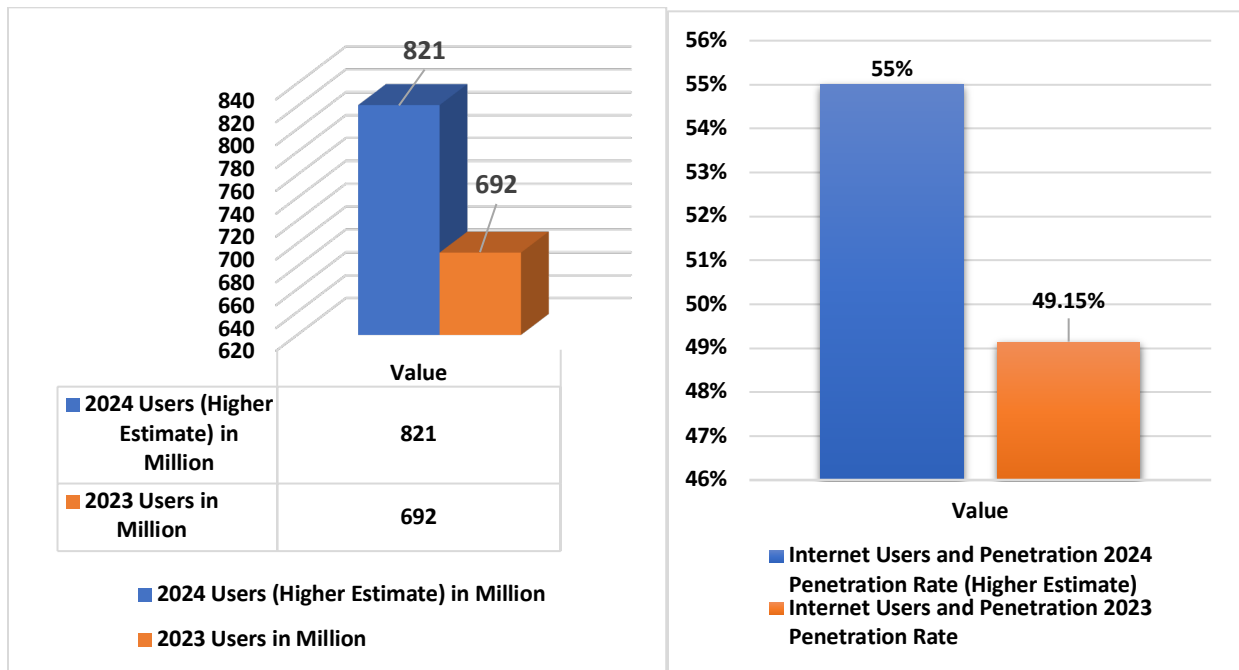
Funds are allocated to designated *aṣnāf* categories (e.g., the impoverished, indigent, or indebted) based on local priorities to promote social equity. The system is adaptable, allowing for customization to address specific socio-economic challenges in different regions of India. Transactions are secured using proof of work, ensuring payment integrity. Funds are segregated and accessible exclusively by authorized entities, preventing misappropriation. The system continuously monitors transactions, enabling interventions in cases of anomalous or unethical activities.

Record Keeping and Additional Features

Zakāh payers receive detailed documentation of their contributions and the subsequent allocation of funds, enhancing accountability and enabling traceability of *Zakāh* 's impact on the community. Transparent records aim to build public confidence in the *Zakāh* management process. Blockchain technology authenticates and records the identities of both contributors and recipients, safeguarding the integrity of the

data. Donors can monitor their contributions and receive notifications when funds are disbursed to beneficiaries. This integrated model combines the capabilities of blockchain technology and smart contracts with a user-centric platform to facilitate secure, transparent, and efficient *Zakāh* fund management in India. By employing these technologies, the model seeks to enhance trust, accountability, and the overall effectiveness of the *Zakāh* distribution system.

Figure 8 and 9 Internet Users and Penetration in India



Source: Kemp, 2023; Kemp, 2024.

This review study explores the integration of traditional Islamic *Zakāh* practices with digital technologies in India, focusing on platforms for *Zakāh* collection, management, and distribution. India's digital infrastructure has experienced substantial growth, with internet users increasing from 692 million to 821 million between 2023 and 2024, maintaining a 55% penetration rate (Kemp, 2023; Kemp, 2024).

Mobile internet speeds have surged by 418%, and fixed internet speeds improved by 19.4% during the same period (Behera, 2024; Kemp, 2023; Kemp, 2024). Active cellular mobile connections now exceed 1.12 billion, with 96.6% of internet users accessing the internet through mobile devices (Kemp, 2023; Behera, 2024; Kemp, 2024). Ranked 13th globally in broadband affordability, India offers an average

monthly cost of USD 9.73 (Cable.co.uk, 2024). The number of smartphone users is projected to surpass 1.1 billion by 2025, with smartphone penetration expected to reach nearly 71% by the end of 2023 (Agarwal, 2023). This rapid expansion is driven by affordable devices, the rollout of 5G technology, and the increasing availability of digital services (The Times of India, 2024; Murthy, 2022). Notably, smartphone ownership has risen significantly among older individuals in rural areas, signaling broader digital inclusion and increasing incomes (Parbat, 2024).

4.2 A Technological Approach to Strengthening *Zakāh* Practices: Addressing Inefficiencies and Building Trust Through Blockchain

The proliferation of digital technologies, particularly post-COVID-19, has greatly enhanced service efficiency and quality. However, the increased reliance on online transactions has introduced risks such as data breaches. In the context of *Zakāh* distribution, emerging digital tools including IoT, augmented reality, artificial intelligence, big data analytics, and blockchain offer solutions to ensure secure and efficient financial transactions (Mohamed Salleh et al., 2022). Blockchain technology, with its decentralized data management, anti-tampering mechanisms, distributed ledgers, and transparency, provides heightened security for online transactions (Ibrahim Ahmed & Zakaria, 2021). It not only safeguards personal data but also fosters trust between *Zakāh* institutions and contributors by ensuring data integrity and compliance with legal standards (Zulfikri et al., 2022). Additionally, blockchain facilitates fraud detection by making transactions traceable and reducing the likelihood of transaction failures (Rabbani et al., 2020).

Effective *Zakāh* practices have been shown to contribute to the socio-economic development of India's *Muslim* community. Currently, approximately 40–50% of *Zakāh*'s revenue is collected and distributed by religious schools, primarily supporting educational scholarships and self-employment initiatives (Alam & Ahmed, 2020). A systematic review (Zaman, 2011) categorizes *Zakāh* distribution methods into three main approaches, detailed in Table 2. However, inefficiencies persist. Many fictitious organizations exploit *Zakāh* funds (Zaman, 2011), while some *Madrasas* use commission-based collectors, who reportedly retain 60–80% of the collected amount, often selling receipt books at fixed prices to pocket additional proceeds. These practices result in improper collection, remittance, and utilization of *Zakāh* funds. Donors rarely monitor how their contributions are used. Alarmingly, only 10–15% of eligible Indian *Muslims* pay *Zakāh*. Traditional small donations of flour, cloth, or a few hundred rupees perpetuate dependency and fail to address systemic issues (Alam & Ahmed, 2020).

Digital technologies can transform *Zakāh* distribution by improving efficiency and reducing costs through digital payment systems. Alam and Ahmed (2020) propose the implementation of a mosque card system to better organize *Zakāh* fund distribution in India. Blockchain technology, in particular, has significant potential within Islamic finance, enabling educational support and small business development for *Muslim* communities (Mohd Akram Laldin & Fares Djafri, 2019). Blockchain-backed systems, such as the "Web Backend Application," play a critical role in integrating graphical user interfaces (GUI) with blockchain platforms to manage system logic and operations (Khairi et al., 2023). By reducing

administrative costs and minimizing the risks of fund misappropriation, blockchain can significantly enhance public trust in charitable organizations. However, as Herasymenko & Bachynska (2021) note, challenges such as high Ethereum transaction fees and limited expertise in smart contract development pose barriers to widespread adoption. Despite these hurdles, digital technologies offer promising solutions to modernize *Zakāh* management in Islamic finance and charitable sectors.

4.3 Digital Infrastructure and Blockchain Adoption for *Zakāh* Management in India: A Transformative Landscape

This review provides critical insights into India's rapidly evolving digital landscape and its implications for adopting blockchain technology in *Zakāh* management. With internet users increasing from 692 million to 821 million between 2023 and 2024, and a penetration rate of 55% (Kemp, 2023; Kemp, 2024), the potential for digital *Zakāh* platforms is significant. Improved internet accessibility paves the way for blockchain-based *Zakāh* systems, enabling wider participation in digital financial services.

A 418% improvement in mobile internet speeds (Behera, 2024; Kemp, 2023; Kemp, 2024) is essential for blockchain adoption, ensuring real-time processing of transparent transactions. Enhanced connectivity addresses technical challenges that often hinder blockchain development in India. The rise of active cellular mobile connections to 1.12 billion, with 96.6% of users accessing the internet via mobile devices (Kemp, 2023; Behera, 2024; Kemp, 2024), underscores the need for mobile-centric blockchain solutions. Affordable broadband, with an average monthly cost of USD 9.73, ranked 13th globally (Cable.co.uk, 2024),

further supports the adoption of digital *Zakāh* systems. Smartphone penetration, expected to exceed 1.1 billion users by 2025 and reach 71% by 2023 (Agarwal, 2023), presents a unique opportunity for smartphones to serve as personal wallets for blockchain-based *Zakāh* transactions.

The increasing adoption of smartphones among older populations in rural regions (Parbat, 2024) suggests blockchain-powered *Zakāh* systems could reach underserved communities, promoting equitable resource distribution in line with Islamic principles. India's expanding digital infrastructure, fueled by affordable devices, 5G technology, and diverse digital services (The Times of India, 2024; Murthy, 2022), offers an ideal environment for integrating blockchain into *Zakāh* management. However, challenges such as improving digital literacy, developing user-friendly interfaces, and addressing security concerns must be addressed to fully realize blockchain's potential in *Zakāh* administration.

Blockchain technology has the capacity to enhance transparency, security, and efficiency in *Zakāh* distribution by eliminating intermediaries, fostering donor trust, and ensuring proper fund utilization. The narrowing gender gap in smartphone ownership and growing digital literacy through initiatives like Digital India and the National Digital Literacy Mission (NDLM) further support blockchain adoption in *Zakāh* management (Girdonia, 2023). These efforts aim to make at least one member of 6 crore households digitally literate, creating a strong foundation for advanced technologies in *Zakāh* administration. The extensive mobile internet access (96.6%) and 117 billion Unified Payments Interface (UPI) transactions in 2023 (The Economic Times, 2024) highlight India's shift towards digital financial services. The nation's affordable

broadband, ranked 13th globally, ensures widespread digital access, crucial for applying blockchain technology in *Zakāh* systems.

The World Food Programme (WFP) has demonstrated blockchain's transformative potential by distributing over \$1 million in aid to 10,000 Syrian refugees through 100,000 transactions (World Food Programme, n.d.-b). Similarly, blockchain could revolutionize India's *Zakāh* system by increasing trust, minimizing fraud, and enabling targeted aid distribution, thereby maximizing the impact of charitable contributions.

5. Conclusion

This study highlights the potential of blockchain technology to modernize traditional Islamic *Zakāh* practices within India's expanding digital ecosystem. By integrating blockchain, *Zakāh* management can become more transparent,

secure, and efficient, addressing prevalent issues such as fraud and mismanagement. A blockchain-based model involving *Muzakki* (donors), *Zakāh* institutions, and *Mustahiqeens* (beneficiaries) can streamline transactions while ensuring compliance with *Islamic* principles through smart contracts. Blockchain's secure, immutable ledger fosters trust and reduces fraud. India's growing internet accessibility, robust mobile connectivity, and initiatives like Digital India create a favorable environment for blockchain integration. Collaborative efforts among stakeholders are vital for successful implementation. By modernizing *Zakāh* practices, blockchain can enhance transparency, efficiency, and impact, increasing charitable contributions, promoting social equity, and advancing the socio-economic development of India's *Muslim* community through improved education, healthcare, and self-employment opportunities.

References

- Agarwal, M.** (2023). Samsung, Xiaomi Lead Indian Smartphone Market In Q3 2023. *Inc42*.
- Ahmed, I., Fumimoto, K., Nakano, T., & Tran, T. H.** (2024). Blockchain-Empowered Decentralized Philanthropic Charity for Social Good. *Sustainability (Switzerland)*, *16*(1). <https://doi.org/10.3390/su16010210>
- AICMEU.** (n.d.). Zakat and Economic Empowerment of Indian Muslims.
- Alam, S., & Uddin Ahmed, M.** (2020). A Critique of Zakat Practices in India. *International Journal of Zakat and Islamic Philanthropy. Issues*, *2*, 2672–7471.
- AMP.** (2020). National Zakat Survey.
- AMP.** (2023). AMP Zakat Fund Project Facts & Figures. *Association of Muslim Professionals*. https://www.ampindia.org/amp_Zakat_fund
- Anand, N., Agrawala, P., & Das, D.** (2024). Blockchain & Cryptocurrency Laws and Regulations 2024. *Global Legal Insights*.
- Ashiq, M., & Mushtaq, U.** (2020). The Convergence of Crowd Funding and Zakat System in India: An Integrated Approach for Human Welfare. <https://doi.org/10.12928/ijiefb.v3i2.1879>
- Choiriyah, E. A. N., Kafi, A., Hikmah, I. F., & Indrawan, I. W.** (2020). Zakat and Poverty Alleviation in Indonesia: a Panel Analysis At Provincial Level. *Journal of Islamic*

Monetary Economics and Finance, 6(4), 811–832.

<https://doi.org/10.21098/jimf.v6i4.1122>

Churuangsuk, C., Kherouf, M., Combet, E., & Lean, M. (2018). Low-carbohydrate diets for overweight and obesity: a systematic review of the systematic reviews. *Obesity Reviews*, 19(12), 1700–1718. <https://doi.org/10.1111/obr.12744>

Dumitriu, P. (n.d.). United Nations Blockchain applications in the United Nations system: towards a state of readiness.

Elasrag, H. (2019). Munich Personal RePEc Archive Blockchains for Islamic finance: Obstacles Challenges.

ESCWA. (2021). International Dialogue on the Role of Islamic Social Financing in Achieving the SDGs, 1–32.

Ghani, E. K., Abdul Aziz, A., Mohamed Tajularifin, S., & Samargandi, N. (2018). Effect of Board Management and Governmental Model on Zakat Payers' Trust on Zakat Institutions, 73.

Girtonia, S. (2023). India's Digital Literacy: Challenges, Progress and the Way Forward. *The Processor*.

Grinchenko, S., & Shchapova, Y. (2020). The Deductive Approach to Big History's Singularity (pp. 201–210). https://doi.org/10.1007/978-3-030-33730-8_10

Hamdani, L. (2020). ZAKAT BLOCKCHAIN: A DESCRIPTIVE QUALITATIVE APPROACH. December 2020, 492–502.

Herasymenko, O., & Bachynska, V. (2021). Blockchain technology for accounting and distribution of contributions from a charitable foundation. *Technology Audit and Production Reserves*, 5(2(61)), 9–14. <https://doi.org/10.15587/2706-5448.2021.239019>

Ibrahim Ahmed, T. A., & Zakaria, M. S. B. (2021). Using Blockchain for Managing Zakat Distribution: a Juristic Analytical Study. *Al Hikmah International Journal of Islamic Studies and Human Sciences*, 4(2), 1–25. <https://doi.org/10.46722/hkmh.4.2.21b>

ICIF. (2021). Collective System of Zakat in India.

Ikhsan, N. (2023). Blockchain zakat in zakat management organizations, is it necessary? *Nurul Ikhsan Journal of Enterprise and Development (JED)*, 5(3), 2023.

IndiaTomorrow. (2022). Zakat Center India: 'Using Zakat Funds To Bring Changes in Economic Life of Poor People. *IndiaTomorrow*.

Jamaat-e-Islami Hind. (2023). Zakat Centre India to expand its activities to 20 centres across the country. *Jamaat-e-Islami Hind*.

Javed, Z. (2022). Zakat collection may cross 150cr as Muslims take charity before eid. *The Times Of India*.

Jayaswal, R. (2023, September). Digital economy playing a major role in boosting India's growth says finance ministry.

Khairi, K. F., Laili, N. H., Sabri, H., Ahmad, A., Pham, V. H., & Tran, M. D. (2023). The Development and Application of the Zakat Collection Blockchain System. *Journal of*

Governance and Regulation, 12(1 special issue), 294–306.
<https://doi.org/10.22495/jgrv12i1siart9>

- Khan, S.** (2023). A Blockchain-based Decentralized Zakat Collection and Distribution Platform. *International Conference on Software and E-Business*.
- Khatiman, M. N. A. Bin, Ismail, M. S. Bin, & Yahya, N.** (2021). Blockchain-based Zakat Collection to Overcome the Trust Issues of Zakat Payers. *International Journal on Perceptive and Cognitive Computing (IJPCC)*, 7(1), 1.
- Kumar, A., Mahindru, T., Shukla, P., & Sharan, A.** (2020). Blockchain: The India Strategy Part I.
- Mawardi, I., Widiastuti, T., Al Mustofa, M. U., & Hakimi, F.** (2022). Analyzing the impact of productive Zakat on the welfare of Zakat recipients. *Journal of Islamic Accounting and Business Research*, 14(1), 118–140. <https://doi.org/10.1108/JIABR-05-2021-0145>
- MeitY.** (2021). NATIONAL STRATEGY ON BLOCKCHAIN Towards Enabling Trusted Digital Platforms.
- Mirza, A.** (2021, May 25). Making our Zakat more constructive. *Times of India*.
- Mohamed Salleh, W. N. A. W., Abdul Rasid, S. Z., & Basiruddin, R.** (2022). Optimising Digital Technology in Managing Zakat. *International Journal of Academic Research in Business and Social Sciences*, 12(8), 726–733. <https://doi.org/10.6007/ijarbss/v12-i8/14355>
- Mohd Akram Laldin, & Fares Djafri.** (2019). Islamic Finance in the Digital World: Opportunities and Challenges. *Journal of Islam in Asia*, 16(3), 283–299.
- Muhammad, S. A., Al, R., & Saad, J.** (2016). Determinants of Trust on Zakat Institutions and its Dimensions on Intention to Pay Zakat: A Pilot Study. *Journal of Advanced Research in Business and Management Studies*, 3(1).
- Muneeza, A., & Nadwi, S.** (2019). The Potential of Application of Technology-Based Innovations for Zakat Administration in India. *International Journal of Zakat*, 4(2), 87–100.
<https://doi.org/10.37706/ijaz.v4i2.191>
- Murthy, N. R.** (2022). Smartphone users in India to cross 1 billion in 2023. *The Hindu*.
- Noordin, K. A.** (2018, September 6). Islamic Finance: Using blockchain to improve transparency of Zakat process. *The Edge Malaysia*.
- NOR PAIZIN, M., & Abd Aziz, A. R.** (2021). Concepts and Views of Individuals on Wakalah Zakat Implementation. *International Journal of Islamic Economics and Finance Research*, 4(2 December), 25–38. <https://doi.org/10.53840/ijiefer57>
- Nur Aqmal Bin Khatiman, M., Salikin Bin Ismail, M., & Yahya, N.** (2021). Blockchain-based Zakat Collection to Overcome the Trust Issues of Zakat Payers. *International Journal on Perceptive and Cognitive Computing (IJPCC)*, 7(1).
- Nur, A., Nazeri, N., Abdul-Rahman, A., Abdul-Majid, M., Ngayesah, S., & Hamid, A.** (2023). EXPLORATION OF A NEW ZAKAT MANAGEMENT SYSTEM

EMPOWERED BY BLOCKCHAIN TECHNOLOGY IN MALAYSIA. *International Journal of Islamic Finance (IJIF)*, 127(4), 127–147. <https://doi.org/10.55188/ijif.v15i5>

Obaidullah, M., & Shirazi, N. S. (2017). Irti Islamic social finance report 2017 (1438h). *ResearchGate*, 2017(October), 1–105. <https://doi.org/10.13140/RG.2.2.26825.44645>

Omar, N., & Khairi, K. F. (2021). Zakat and Blockchain: a Review. *International Journal of Islamic Economics and Finance Research*, 4(2 December), 60–66. <https://doi.org/10.53840/ijiefer53>

Parbat, K. (2024). Smartphone ownership among 44+ drops in urban India, rises in villages. *The Economic Times*.

PUSKAS BAZNAS. (2021). Indonesia Zakat Outlook 2021. *Center of Strategic Studies the National Board of Zakat*.

Rabbani, M. R., Khan, S., & Thalassinos, E. I. (2020). FinTech, blockchain and Islamic finance: An extensive literature review. *International Journal of Economics and Business Administration*, 8(2), 65–86. <https://doi.org/10.35808/ijeba/444>

Rahman, S. (2017, June 25). This Eid, an opportunity to give Zakat with a strategic outlook.

Rajinder Sachar. (2006). Prime Minister's High Level Committee Cabinet Secretariat Government of India A Report.

Rangone, A., & Busolli, L. (2021). Managing charity 4.0 with Blockchain: a case study at the time of Covid-19. *International Review*

on Public and Nonprofit Marketing, 18(4), 491–521. <https://doi.org/10.1007/s12208-021-00281-8>

Rejeb, D. (2020). Blockchain and Smart Contract Application for Zakat Institution. *International Journal of Zakat*, 5(3), 20–29. <https://doi.org/10.37706/ijaz.v5i3.260>

Sabahuddin. (2014). Analytical Study of Challenges of Zakat Distribution in India. *Institute of Islamic Banking and Finance, International Islamic University Malaysia*.

Salleh, W. N. A. W. M., Rasid, S. Z. A., & Basiruddin, R. (2019). Towards Transforming Zakat Collection and Distribution Roles Using Digital Wallet in Support of Social Justice and Social Financing. *Open International Journal of Informatics (OIJI)*, 7(2), 95–103.

Shaikh, Z. (2019, May 3). Zakat can transform Muslim community: Survey. *Indian Express*.

Smith, A. (2020). How the World Food Programme uses blockchain to better serve refugees? *International Telecommunication Union (ITU)*.

Statista. (2023a). Estimated population growth in India from 2010 to 2050, by religion.

Statista. (2023b). Muslims as a share of the total population in India between 1951 and 2011.

Suprayitno, E. (2019). Zakat and SDGs: The Impact of Zakat on Economic Growth, Consumption and Investment in Malaysia.

Tewari, R., & Mishra, A. (2019). Every second ST, every third Dalit & Muslim in India poor, not just financially: UN report. *The Print*.

- The Economic Times.** (2024, January 2). Total UPI transactions cross 100 billion mark in 2023. *The Economic Times*.
- The Times Of India.** (2024). How Samsung, Apple, Xiaomi performed in the Indian smartphone market in 2023. *The Times Of India*.
- Wajihuddin, M.** (2024). Charity in Ramzan, goes online to uplift the needy. *Times Of India*.
- Wani, S., & Dhasmana, I.** (2024). Minority report: Unemployment rate among religious minorities up in 2023-24. *Business Standard*.
- Widadio, N. A.** (2019). World Zakat Forum: Optimising funds to reduce poverty.
- World Food Programme.** (n.d.-a). Building Blocks. *World Food Programme*.
- World Food Programme.** (n.d.-b). Building Blocks.
- Zainal, H., Abu Bakar, A., & Saad, R. A. J.** (2016). Reputation, satisfaction of Zakat distribution and service quality as determinant of stakeholder trust in Zakat institutions. *International Journal of Economics and Financial Issues*, 6(7 Special Issue), 72–76.
- Zakat Foundation of India.** (2022). About us. *Zakat Foundation of India*. <https://www.zakatindia.org/AboutUs.html>
- Zaman, Md. M.** (2011a). Model India: A Poverty Alleviation Strategy for India. <http://dx.doi.org/10.2139/ssrn.1912677>
- Zambrano, R., Young, A., Verhulst, S., & Alden, A.** (n.d.). BLOCKCHANGE: Connecting Refugees to Aid through Blockchain-Enabled ID Management: World Food Programme’s Building Blocks.
- Zulfikri, Z., Adam, A., Kassim, S., & Hassan, A.** (2022). Trust Enhancement in Zakat Institutions using Blockchain Technology: A Qualitative Approach. *European Journal of Islamic Finance*, 9(1), 31–36. <https://doi.org/10.13135/2421-2172/6312>
- Zulfikri, Z., Hj Kassim, S., & Hawariyuni, W.** (2021). Proposing Blockchain Technology Based Zakat Management Model to Enhance Muzakki’s Trust in Zakat Agencies: A Conceptual Study. *Journal of Accounting Research, Organization and Economics*, 4(2), 153–163. <https://doi.org/10.24815/jaroe.v4i2.20467>

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تقنية سلاسل الكتل لإدارة الزكاة بكفاءة في الهند: دراسة استكشافية

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المستخلص. تستكشف هذه الدراسة إمكانات تقنية سلاسل الكتل (*blockchain*) لتحسين إدارة الزكاة في الهند، من خلال تحقيق الشفافية ومعالجة قضايا الثقة في النظام القائم. والزكاة هي الركن الثالث من أركان الإسلام فُرضت لتعمل على التقليل من الفوارق الاجتماعية والاقتصادية بين فئات المجتمع الإسلامي، ولتحقيق الغاية من الزكاة في الزمن المعاصر لا بدّ من توافر نظم تحقق الشفافية والمصادقية. تعتمد الدراسة على المنهج العَقْدي، حيث تراجع المصادر الفرعية لاستكشاف كيفية تحوّل إدارة الزكاة باستخدام سلاسل الكتل والعقود الذكية. يسعى النموذج المقترح إلى تعزيز الشفافية وبناء الثقة بين الأطراف المشاركة والمستفيدة، كما يعمل على تحسين توزيع الأموال؛ مما قد يزيد من تأدية الزكاة عبر القنوات الرسمية. الأمر الذي يؤدي إلى كفاءة أكبر في توزيع الزكاة على مستحقيها، وتقليل الفقر داخل المجتمع المسلم في دولة الهند. ومن النتائج التي تم التوصل إليها وجود فجوة في الدراسات التي تتعلق بدور سلسلة الكتل في توزيع الزكاة وتأثيرها الاجتماعي في الهند. كما تسلط الدراسة الضوء على الحاجة إلى تحديث البيانات المتعلقة بأموال الزكاة؛ حيث إن الإحصاءات الحالية قديمة. وباستخدام مراجعة منهجية للأدبيات (*SLR*)، تجمع الدراسة الأدبيات الموجودة وتناقش البيانات مع التركيز على القضايا الأخلاقية وقيود أخذ العينات. ومن خلال استخدام المنهج البنائي والتفسيري، تقدم الدراسة رؤى نوعية حول كيفية تحسين كفاءة وموثوقية نظام توزيع الزكاة باستخدام سلسلة الكتل. ولا تثرى هذه الدراسة الخطاب الأكاديمي فحسب؛ بل تقدم أيضًا إطارًا عمليًا لصنّاع السياسات والقادة الدينيين في الهند.

الكلمات الدّالة: الزكاة، المجتمع المسلم الهندي، التوزيع الفعّال، الفقر، تقنية سلاسل الكتل.

تصنيف JEL: D31, I30, I32, L30, L31, O33, O35, P46

تصنيف KAUJIE: C55, E0, E1, E12, E14, E15, H41, N4, N5