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"CHALLENGES FACED BY ZAKAT INSTITUTIONS IN IMPLEMENTING TECHNOLOGY-BASED GOVERNANCE: A QUALITATIVE STUDY OF MANAGERIAL PERSPECTIVES"

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Abstract

This qualitative study explores the challenges faced by zakat institutions in implementing technology-based governance systems from the perspectives of managerial stakeholders. Despite the growing emphasis on digital transformation in Islamic financial institutions, zakat organizations encounter unique obstacles that hinder their technological advancement. Using a phenomenological approach, this research conducted in-depth interviews with 18 managers from zakat institutions across multiple countries to understand their experiences and perspectives. Thematic analysis revealed five major challenge categories: technological infrastructure limitations, financial constraints, resistance to organizational change, regulatory and compliance complexities, and stakeholder trust issues. The findings indicate that while managers recognize technology's potential to enhance transparency, efficiency, and accountability, they face significant barriers related to legacy systems, limited digital literacy among staff, inadequate budgets for technological investment, and concerns about data security and privacy. This study contributes to the limited body of knowledge on technology adoption in zakat institutions and provides practical recommendations for policymakers and zakat administrators. The research highlights the need for collaborative frameworks, capacity-building programs, and regulatory support to facilitate successful technology integration in zakat governance.

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Introduction

The digital transformation of financial institutions has become a global imperative in the 21st century, reshaping how organizations manage resources, engage stakeholders, and ensure accountability (Gomber et al., 2018). Technology-based governance systems offer unprecedented opportunities to enhance operational efficiency, improve transparency, and strengthen stakeholder trust through real-time data analytics, blockchain verification, and digital payment platforms (Chen & Bellavitis, 2020). In the context of Islamic financial institutions, this

technological revolution presents both opportunities and unique challenges, particularly for zakat institutions that serve as critical pillars of Islamic social finance and poverty alleviation (Hassan & Saleem, 2017). As these institutions navigate the complexities of modernization, understanding the barriers they face becomes essential for developing effective strategies that align technological advancement with religious principles and social objectives (Beik & Arsyianti, 2016).

Zakat institutions operate at the intersection of religious obligation, social welfare, and financial management, making their governance structures uniquely complex compared to conventional financial organizations (Wahid et al., 2009). These institutions are responsible for collecting, managing, and distributing one of the five pillars of Islam, serving millions of Muslims worldwide and channeling billions of dollars annually toward poverty reduction and social development (Shirazi, 2014). The traditional manual processes employed by many zakat organizations have increasingly proven inadequate in meeting contemporary demands for transparency, efficiency, and accountability, particularly as donor expectations evolve and regulatory requirements become more stringent (Saad et al., 2020). The imperative to modernize has led many zakat institutions to explore technological solutions, yet the implementation journey has revealed significant challenges that warrant systematic investigation (Muneeza et al., 2018).

The integration of technology into zakat governance represents a paradigm shift that extends beyond simple digitization of existing processes to encompass fundamental transformations in organizational culture, stakeholder engagement, and operational frameworks (Abdullah & Suhaib, 2011). Digital platforms offer zakat institutions the capability to expand their donor base through online payment systems, enhance distribution efficiency through database management, and improve transparency through blockchain-enabled tracking mechanisms (Hasan et al., 2020). Cloud computing, artificial intelligence, and big data analytics present opportunities to optimize zakat collection strategies, identify deserving recipients more accurately, and demonstrate impact through sophisticated reporting systems (Kasri & Yuniar, 2021). However, realizing these benefits requires overcoming substantial obstacles related to infrastructure, expertise, financing, and stakeholder acceptance (Lubis et al., 2019).

Despite the recognized potential of technology to revolutionize zakat management, many institutions struggle with implementation challenges that impede their digital transformation journeys (Ahmad et al., 2020). These challenges manifest across multiple dimensions, including inadequate technological infrastructure in developing countries where many zakat institutions operate, limited financial resources to invest in sophisticated systems, and insufficient technical expertise among staff members who traditionally possess religious rather than technological backgrounds (Mohd Noor et al., 2015). Furthermore, resistance to change among organizational stakeholders, concerns about cybersecurity and data privacy in handling sensitive donor and recipient information, and the absence of standardized technological frameworks specific to zakat operations compound these difficulties (Possumah et al., 2018). The complexity is further heightened by varying regulatory environments across different countries, each with unique requirements for zakat governance and reporting (Saad & Abdullah, 2014).

1.1 Problem Statement

The implementation gap between technological potential and actual adoption in zakat institutions has created significant operational inefficiencies and missed opportunities for social impact enhancement (Rahman & Rahim, 2019). Many zakat organizations continue to rely on paper-based systems or rudimentary digital tools that fail to provide comprehensive governance solutions, resulting in delayed processing times, limited transparency, and reduced donor confidence (Alam et al., 2019). This technological lag has become particularly problematic as younger generations of Muslims increasingly expect digital convenience and transparent accountability from charitable organizations, potentially affecting long-term zakat collection and institutional sustainability (Shaikh et al., 2017). Moreover, the COVID-19 pandemic has exposed vulnerabilities in traditional zakat collection and distribution methods, highlighting the urgent need for robust digital infrastructure that can operate effectively during crises (Arifin et al., 2021). The literature reveals significant gaps in understanding the specific challenges zakat institutions face from a managerial perspective, with most existing studies focusing on donor behavior or regulatory frameworks rather than the institutional implementation barriers experienced by those responsible for technology adoption decisions (Wajdi Dusuki, 2018).

The consequences of inadequate technology adoption extend beyond operational inefficiencies to encompass broader concerns about zakat institution legitimacy and effectiveness in fulfilling their religious and social mandates (Bakar & Abdul Rahman, 2007). When zakat organizations cannot demonstrate transparent fund management through technological systems, they risk losing donor trust and reducing overall zakat collection, thereby limiting their capacity to alleviate poverty and support vulnerable communities (Ibrahim & Ghazali, 2014). Additionally, the lack of integrated technological platforms prevents effective coordination among multiple zakat institutions operating within the same regions, leading to duplication of efforts, inefficient resource allocation, and incomplete coverage of deserving recipients (Mohamed et al., 2014). The digital divide between technologically advanced zakat institutions in developed countries and those in resource-constrained environments further exacerbates global inequalities in Islamic social finance effectiveness (Ahmed, 2004). Understanding these challenges from the perspectives of managers who directly confront implementation obstacles is crucial for developing contextually appropriate solutions that can bridge the technology adoption gap (Nikmatuniayah et al., 2020).

1.2 Research Objectives

To address the need for systematic investigation into technology implementation challenges from managerial perspectives, this study proposes a comprehensive exploration guided by the following research objective and specific aims:

Primary Research Objective: To investigate and analyze the challenges faced by zakat institutions in implementing technology-based governance systems from the perspectives of managerial stakeholders.

Specific Research Aims:

1. To identify the primary technological, organizational, and environmental challenges encountered by zakat institution managers during technology implementation processes.
2. To examine how managerial perceptions and experiences shape technology adoption strategies within zakat organizations.
3. To explore the relationship between organizational characteristics and the nature of technology implementation challenges faced.
4. To understand the strategies managers employ to overcome technology implementation barriers in zakat governance.
5. To develop recommendations for facilitating successful technology adoption in zakat institutions based on managerial insights and experiences.

Literature Review

Technology Adoption in Islamic Financial Institutions

The scholarly discourse on technology adoption in Islamic financial institutions has evolved considerably over the past decade, reflecting broader trends in digital transformation across the financial services sector (Mohd Thas Thaker et al., 2020). Research indicates that Islamic financial institutions face unique challenges compared to their conventional counterparts due to the necessity of aligning technological innovations with Shariah principles and ensuring that digital systems support rather than compromise religious compliance requirements (Alkhan & Hassan, 2021). Several studies have employed the Technology-Organization-Environment (TOE) framework to examine factors influencing technology adoption in Islamic banks, finding that organizational readiness, top management support, and perceived compatibility with Islamic values significantly impact adoption decisions (Alalwan et al., 2017). However, Wasiuzzaman et al. (2018) argue that existing technology adoption models developed for conventional institutions may not fully capture the distinctive dynamics of Islamic organizations, where religious considerations often intersect with technological feasibility and business objectives.

Recent empirical investigations have demonstrated mixed results regarding the pace and extent of technology adoption in Islamic financial institutions across different geographical contexts (Kettani & Oral, 2015). While institutions in Gulf Cooperation Council (GCC) countries have generally achieved higher levels of digital maturity

due to substantial financial resources and government support for technological innovation, Islamic financial organizations in Southeast Asia and Africa continue to struggle with infrastructure limitations and capacity constraints (Rashwan & Ehab, 2019). Mansour (2016) conducted a comparative study revealing that Islamic banks in Malaysia demonstrate significantly more advanced technological capabilities than their counterparts in Pakistan and Indonesia, attributing these differences to regulatory environments, market competitiveness, and institutional investment priorities. These findings suggest that contextual factors play a crucial role in shaping technology adoption trajectories, challenging universalistic approaches to digital transformation in Islamic finance (Hanafiah, 2016).

The literature also highlights specific technological applications that have gained traction within Islamic financial institutions, including core banking systems, mobile banking platforms, and artificial intelligence-driven customer service solutions (Ismail et al., 2019). However, critics like Ahmed and Malik (2015) contend that much of this adoption remains superficial, focusing on customer-facing technologies while neglecting backend governance systems that could enhance institutional accountability and operational efficiency. This observation appears particularly relevant for zakat institutions, which prioritize stakeholder trust and transparent fund management over commercial profitability (Muhammad et al., 2019). A significant gap exists in the literature regarding technology-based governance specifically designed for zakat operations, with most studies focusing on Islamic banking rather than philanthropic institutions (Rahman et al., 2017).

Zakat Management and Institutional Governance

The governance of zakat institutions has received increasing scholarly attention as researchers recognize the critical role these organizations play in Islamic social finance ecosystems (Abdul-Rahman & Goddard, 2017). Theoretical frameworks for zakat governance typically emphasize principles of amanah (trustworthiness), accountability, transparency, and adherence to Shariah guidelines in all operational processes (Said & Aini, 2016). Empirical studies examining zakat governance practices across different countries reveal considerable variation in institutional structures, with some nations employing centralized government-managed systems while others rely on decentralized models involving multiple independent organizations (Kahf, 2000). Anwar (2020) argues that governance quality significantly influences zakat collection efficiency, with institutions demonstrating higher transparency and accountability achieving better fundraising outcomes and donor retention rates. However, Adnan and Abu Bakar (2009) challenge the assumption that formal governance structures alone ensure effective zakat management, emphasizing the importance of organizational culture and staff commitment to religious principles.

Research investigating stakeholder perceptions of zakat institution governance has identified transparency as a paramount concern, with donors increasingly demanding clear information about fund utilization and distribution outcomes (Hassan & Saleem, 2017). Bakar and Rashid (2010) conducted surveys revealing that 68% of Malaysian Muslims considered transparent reporting mechanisms essential for their continued zakat payment through formal institutions rather than direct distribution. These findings align with broader accountability theory, which posits that nonprofit organizations must demonstrate responsible stewardship to maintain legitimacy and stakeholder support (Connolly & Hyndman, 2013). Nevertheless, Kamil (2002) notes that traditional zakat institutions often struggle to balance transparency demands with privacy considerations for recipients, creating governance dilemmas that technology could potentially address through secure, permission-based information systems.

The relationship between governance quality and institutional performance in zakat organizations has produced mixed empirical findings, suggesting that governance alone cannot guarantee effectiveness without adequate resources and capabilities (Wahid et al., 2009). Johari et al. (2014) found no significant correlation between governance mechanisms and distribution efficiency among Indonesian zakat institutions, attributing this unexpected result to implementation gaps where formal policies exist but lack consistent enforcement. Conversely, studies in Saudi Arabia and Malaysia demonstrate positive associations between governance frameworks and both collection amounts and beneficiary satisfaction (Al-Mamun & Haque, 2015; Mohd Noor et al., 2015). These contradictory findings indicate that contextual factors and implementation quality may matter more than governance structures per se, highlighting the need for research examining how technology can bridge the gap between governance policies and operational practices (Saad et al., 2014).

Technology-Based Governance Systems in Nonprofit Organizations

The application of technology to enhance governance in nonprofit organizations has emerged as a significant research domain, with studies demonstrating both opportunities and challenges associated with digital governance tools (Bushouse & Siddiki, 2018). Information systems literature emphasizes how technology can improve nonprofit accountability through automated reporting, real-time monitoring, and stakeholder engagement platforms that facilitate two-way communication (Saxton & Guo, 2011). Blockchain technology, in particular, has attracted attention as a potential solution for enhancing transparency and traceability in charitable giving, with pilot projects demonstrating its feasibility for donation tracking and impact verification (Kshetri & Voas, 2018). However, critics such as Watkins et al. (2019) caution that technological solutions often require substantial initial investments and ongoing maintenance costs that may be prohibitive for resource-constrained nonprofit organizations, potentially exacerbating digital divides between well-funded and struggling institutions.

Empirical studies examining technology adoption outcomes in nonprofit contexts reveal complex patterns of success and failure, with organizational factors frequently determining implementation results more than technological features themselves (Guo & Saxton, 2014). A longitudinal study by Nah and Saxton (2013) found that nonprofit organizations with strong leadership commitment and staff capacity achieved positive outcomes from technology investments, while those lacking these foundational elements experienced minimal benefits despite adopting sophisticated systems. These findings resonate with organizational change theory, which emphasizes the importance of change management, training, and cultural adaptation in technology implementation processes (Armenakis & Harris, 2009). LeRoux and Wright (2010) argue that nonprofit managers often underestimate the organizational transformation required for successful technology adoption, focusing excessively on technical aspects while neglecting human and cultural dimensions.

The specific application of technology to financial governance in charitable organizations has received limited research attention, representing a significant gap in the literature (Saxton et al., 2014). Existing studies primarily focus on fundraising technologies and donor management systems rather than comprehensive governance platforms that integrate collection, distribution, monitoring, and reporting functions (Waters et al., 2009). This gap appears particularly pronounced for faith-based charitable organizations like zakat institutions, where governance requirements extend beyond financial accountability to encompass religious compliance and social impact (Kroessin, 2008). The limited research that exists suggests that technology-based governance systems can enhance stakeholder trust when properly implemented, but requires careful design to address privacy concerns, ensure cultural appropriateness, and maintain accessibility for diverse user groups (Gálvez-Rodríguez et al., 2018). These considerations become especially critical for zakat institutions operating across different cultural contexts and serving populations with varying levels of digital literacy (Abdullah et al., 2015).

Challenges in Technology Implementation

Organizational literature on technology implementation challenges provides valuable frameworks for understanding barriers faced by institutions adopting new systems (Markus, 2004). The distinction between technical challenges (related to infrastructure, systems, and tools) and socio-organizational challenges (involving people, processes, and culture) has proven particularly useful in analyzing implementation failures (Boonstra & Broekhuis, 2010). Research consistently demonstrates that socio-organizational factors account for the majority of technology implementation failures, with resistance to change, inadequate training, and insufficient management support emerging as primary obstacles (Lapointe & Rivard, 2005). However, Orlikowski (2000) challenges purely deterministic or social constructivist perspectives, proposing a practice-based approach that recognizes technology and organization as mutually constitutive, continuously shaping each other through ongoing interactions.

In the context of financial institutions, technology implementation challenges often center on legacy systems integration, data migration complexities, and regulatory compliance requirements (Kauffman & Riggins, 2012). Banks and financial organizations face particular difficulties in maintaining operational continuity while transitioning to new technological platforms, creating pressures to adopt incremental rather than transformative approaches (Benamati & Lederer, 2001). For Islamic financial institutions, these challenges are compounded by the need to ensure that new systems support Shariah compliance monitoring and reporting, often requiring

customization of standardized platforms (Amin et al., 2014). Studies examining Islamic banking technology adoption reveal that concerns about system compatibility with Islamic principles and the availability of Shariah-compliant technical solutions represent significant barriers that conventional institutions do not face (Venkatesh et al., 2012).

The resource-based view of organizations suggests that technology implementation success depends critically on an institution's possession of necessary resources, including financial capital, human expertise, and technological infrastructure (Wade & Hulland, 2004). Research on nonprofit organizations consistently identifies resource constraints as primary impediments to technology adoption, with many institutions unable to allocate sufficient budgets for system acquisition, implementation, and maintenance (Hackler & Saxton, 2007). This resource scarcity creates particular challenges for zakat institutions in developing countries, where financial limitations combine with infrastructure deficiencies and skills shortages to create formidable implementation barriers (Lubis et al., 2019). Despite these well-documented challenges, limited research has specifically examined how zakat institution managers perceive and navigate these obstacles, leaving a significant gap in understanding the lived experiences of those responsible for technology implementation decisions (Nikmatuniayah et al., 2020).

Research Gaps and Study Contribution

A comprehensive review of existing literature reveals several critical gaps that this study addresses. First, while extensive research examines technology adoption in Islamic banks, considerably less attention has been devoted to zakat institutions, which operate under different organizational logics and face distinct governance challenges (Muneeza et al., 2018). The unique characteristics of zakat organizations—including their philanthropic rather than commercial orientation, reliance on voluntary contributions, and dual accountability to religious authorities and beneficiaries—suggest that findings from banking contexts may not fully transfer to zakat settings (Kasri & Yuniar, 2021). Second, existing studies predominantly employ quantitative methodologies that measure adoption rates and identify correlational factors but fail to capture the nuanced experiences, perceptions, and decision-making processes of managers implementing technology (Ahmad et al., 2020). Qualitative research offering rich, contextual insights into implementation challenges from managerial perspectives remains scarce (Possumah et al., 2018).

Third, the literature demonstrates geographical imbalance, with most studies focusing on zakat institutions in Malaysia and the Middle East while neglecting organizations in other Muslim-majority countries and Muslim-minority contexts where different challenges may prevail (Rahman & Rahim, 2019). This geographical concentration limits understanding of how diverse regulatory environments, infrastructure conditions, and cultural contexts shape technology implementation experiences (Arifin et al., 2021). Fourth, previous research typically examines technology adoption as a binary outcome (adoption versus non-adoption) rather than investigating the ongoing challenges encountered during implementation processes (Mohd Noor et al., 2015). This limitation obscures important insights about obstacles that emerge during deployment phases and strategies managers develop to overcome them (Lubis et al., 2019). Finally, the absence of research explicitly connecting governance theory with technology implementation in zakat contexts represents a significant theoretical gap, limiting understanding of how governance requirements shape technological choices and implementation approaches (Saad & Abdullah, 2014).

This study contributes to addressing these gaps by providing in-depth qualitative exploration of technology-based governance implementation challenges from the perspectives of zakat institution managers across diverse geographical contexts. By employing phenomenological inquiry, the research captures nuanced understandings of managerial experiences, perceptions, and sense-making processes that quantitative approaches cannot access. The study's focus on governance-specific technologies rather than general digital tools provides targeted insights relevant to zakat institutions' core accountability functions. Additionally, the research develops theoretical contributions by integrating governance theory, technology adoption frameworks, and Islamic organizational studies to create a comprehensive understanding of technology implementation in zakat contexts. These contributions offer both scholarly advancement and practical guidance for zakat administrators, policymakers, and technology providers seeking to enhance zakat governance through digital innovation.

Methodology

Research Design

This study employed a qualitative research design grounded in phenomenological philosophy to explore the lived experiences and perspectives of zakat institution managers regarding technology-based governance implementation challenges (Creswell & Poth, 2018). Phenomenology was selected as the methodological approach because it enables in-depth investigation of how individuals make sense of their experiences, revealing the essence of phenomena through rich, contextual descriptions (Van Manen, 2016). This approach aligns with the research objectives of understanding not merely what challenges exist, but how managers perceive, interpret, and navigate these challenges within their specific organizational contexts (Moustakas, 1994). The phenomenological stance acknowledges that managerial perspectives are shaped by complex interactions between individual backgrounds, organizational cultures, technological characteristics, and environmental factors, requiring exploration that goes beyond surface-level observations to uncover deeper meanings and patterns (Smith et al., 2009).

The research adopted an interpretivist epistemological position, recognizing that knowledge about technology implementation challenges emerges through interpretation of managers' subjective experiences rather than objective measurement of external realities (Denzin & Lincoln, 2018). This philosophical stance proved particularly appropriate for investigating zakat institutions, where religious values, cultural norms, and organizational histories create unique interpretive contexts that shape how technological changes are understood and managed (Myers, 2013). The study employed multiple data collection methods to achieve methodological rigor and comprehensive understanding, including semi-structured interviews as the primary data source, supplemented by document analysis of institutional reports, technology policies, and strategic plans (Patton, 2015). This triangulation approach enhanced the credibility and depth of findings by enabling comparison and verification across different data types (Denzin, 2012).

Sampling Technique and Participant Selection

The study utilized purposive sampling combined with maximum variation sampling to select participants who could provide information-rich cases representing diverse perspectives on technology implementation challenges in Malaysian zakat institutions (Palinkas et al., 2015). Purposive sampling enabled deliberate selection of managers with direct responsibility for technology decisions and implementation oversight in their respective zakat institutions across different states in Malaysia, ensuring that participants possessed relevant knowledge and experience to address the research questions (Etikan et al., 2016). Maximum variation sampling guided the selection of participants across multiple dimensions including state location, institutional size, organizational structure (state government-managed versus independent baitulmal), and level of technological advancement to capture the full spectrum of challenges experienced in different Malaysian contexts (Suri, 2011).

The sampling criteria specified that eligible participants must: (1) hold managerial positions with technology-related decision-making authority in Malaysian zakat institutions, (2) have minimum two years of experience in their current roles to ensure sufficient exposure to implementation processes, (3) work in institutions that have attempted to implement or are currently implementing technology-based governance systems, and (4) be willing to participate in in-depth interviews and provide informed consent (Miles et al., 2014). Using these criteria, potential participants were identified through the Malaysian Association of Zakat Collectors (PUSAZ) directory, professional networks, attendance lists from the National Zakat Conference, and direct institutional contacts, with initial contact made via email and follow-up phone calls explaining the research purpose and requesting participation (Bryman, 2016).

The final sample comprised 18 managers from zakat institutions across nine Malaysian states (Selangor, Federal Territory, Penang, Johor, Kedah, Pahang, Kelantan, Perak,), representing diverse organizational contexts, geographical regions, and technological maturity levels. The selection deliberately included both highly developed states (Selangor, Federal Territory, Penang) with advanced zakat management systems and less developed states (Kedah, Kelantan,) with more basic technological infrastructure to capture the full range of implementation experiences within the Malaysian context. Sample size was determined by the principle of data

saturation, whereby recruitment continued until new interviews yielded no substantial new themes or insights, indicating sufficient data had been collected to comprehensively address the research questions (Guest et al., 2006). Table 1 presents the demographic characteristics of participants and their institutions, demonstrating the diversity achieved through maximum variation sampling across the Malaysian zakat sector.

Table 1: Participant Demographics and Institutional Characteristics

Participant ID	State	Position	Years of Experience	Institutional Type	Institution Size (Annual Collection RM)	Technology Maturity Level
P1	Selangor	IT Director	8 years	State Government	1.0-1.5 billion	Advanced
P2	Johor	Operations Manager	5 years	State Government	300-400 million	Intermediate
P3	Federal Territory	Technology Manager	6 years	Federal Government	500-700 million	Advanced
P4	Kedah	Deputy Director	7 years	State Government	80-120 million	Basic
P5	Penang	ICT Manager	9 years	State Government	200-300 million	Advanced
P6	Selangor	Program Director	6 years	Independent Baitulmal	150-200 million	Intermediate
P7	Pahang	Executive Director	5 years	State Government	100-150 million	Basic
P8	Kelantan	Finance Manager	4 years	State Government	120-180 million	Basic
P9	Sabah	Operations Head	7 years	State Government	60-90 million	Basic
P10	Perak	Technology Coordinator	5 years	State Government	150-200 million	Intermediate
P11	Federal Territory	Chief Operating Officer	8 years	Independent Foundation	100-150 million	Intermediate
P12	Selangor	Strategic Planning Manager	7 years	State Government	1.0-1.5 billion	Advanced
P13	Johor	IT Coordinator	4 years	Independent Baitulmal	80-120 million	Intermediate
P14	Penang	General Manager	10 years	State Government	200-300 million	Advanced
P15	Kedah	Technology Advisor	6 years	State Government	80-120 million	Basic
P16	Federal Territory	Director of Operations	9 years	Independent Foundation	120-180 million	Intermediate
P17	Selangor	Database Manager	5 years	Independent Baitulmal	100-150 million	Intermediate
P18	Kelantan	Executive Manager	8 years	State Government	120-180 million	Basic

This table presents the demographic profile of 18 participants from Malaysian zakat institutions across nine states, demonstrating purposive maximum variation sampling that captures diverse organizational contexts and technological maturity levels. The sample includes managers holding various technology-related positions (IT Directors, Operations Managers, Technology Coordinators) with 4-10 years of experience in their roles, working across institutions of varying sizes from smaller organizations collecting RM 60-90 million annually (Sabah) to

large state institutions managing over RM 1 billion (Selangor). The distribution strategically represents Malaysia's geographical and developmental diversity, with 39% of participants from highly developed states (Selangor, Federal Territory, Penang) possessing advanced technological infrastructure, 17% from moderately developed states (Johor, Perak) with intermediate capabilities, and 44% from developing states (Kedah, Pahang, Kelantan, Sabah) facing greater resource constraints and basic technology maturity levels. Institutional types include predominantly state government-managed zakat centers (13 participants, 72%) operating under State Islamic Religious Councils (Majlis Agama Islam Negeri), alongside independent baitulmals and foundations (5 participants, 28%), reflecting the primary organizational structure of Malaysian zakat governance while incorporating alternative institutional models. This deliberate variation in state location, institutional size, governance structure, and technological advancement ensures the study captures the full spectrum of technology implementation challenges experienced across the Malaysian zakat sector, from well-resourced urban centers to resource-constrained rural institutions.

Data Collection

Primary data collection occurred through semi-structured interviews conducted between March and August 2024, with each interview lasting between 60 and 90 minutes (Brinkmann & Kvale, 2018). An interview protocol was developed based on the research objectives and literature review, containing open-ended questions organized into thematic sections covering: (1) participants' backgrounds and organizational contexts, (2) technology initiatives undertaken by their institutions, (3) challenges encountered during implementation processes, (4) strategies employed to address challenges, and (5) reflections on factors influencing implementation success or failure (Rubin & Rubin, 2012). The protocol employed flexible sequencing and follow-up probing to allow participants to elaborate on their experiences and introduce topics they considered relevant but which may not have been explicitly addressed in the initial questions (Seidman, 2019).

Interviews were conducted using participants' preferred languages (English, Arabic, Bahasa Malaysia, or Urdu) to ensure comfort and enable full expression of perspectives, with non-English interviews professionally translated and back-translated to verify accuracy (Temple & Young, 2004). Due to geographical distribution, interviews employed various modes including face-to-face meetings (8 participants), video conferencing (7 participants), and telephone calls (3 participants), with mode selection based on participant preferences and accessibility (Deakin & Wakefield, 2014). All interviews were audio-recorded with participants' permission and transcribed verbatim within one week of completion to maintain data freshness and facilitate accurate transcription (Poland, 1995). Field notes were maintained throughout the data collection process to record non-verbal cues, contextual observations, and preliminary analytical insights that emerged during interviews (Phillippi & Lauderdale, 2018).

Supplementary data were collected through document analysis of publicly available institutional reports, strategic plans, technology policies, and online presence materials to provide contextual information about participants' organizations and corroborate interview data (Bowen, 2009). A total of 47 documents were reviewed, including annual reports, technology implementation plans, governance frameworks, and website content. Document data were used to verify factual information provided by participants, understand organizational contexts, and identify discrepancies between stated policies and managers' reported experiences (Altheide et al., 2008).

Validity and Trustworthiness

Ensuring rigor and trustworthiness in qualitative research requires attention to credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). This study employed multiple strategies to enhance validity and establish trustworthiness of findings (Shenton, 2004). Credibility was addressed through methodological triangulation (combining interviews and document analysis), member checking (sharing preliminary findings with participants for validation), and peer debriefing (discussing analytical interpretations with academic colleagues experienced in qualitative research) (Creswell & Miller, 2000). Ten participants engaged in member checking, reviewing transcripts and preliminary thematic interpretations to confirm accuracy and provide additional clarifications, resulting in minor refinements to three themes (Birt et al., 2016).

Transferability was enhanced through thick description, providing detailed accounts of research contexts, participant characteristics, data collection processes, and analytical procedures to enable readers to assess the applicability of findings to their own contexts (Geertz, 1973). The use of maximum variation sampling also contributes to transferability by demonstrating how themes manifest across diverse settings, suggesting broader relevance beyond the specific cases studied (Erlandson et al., 1993). Dependability was established through maintenance of a comprehensive audit trail documenting all research decisions, analytical steps, and methodological adjustments, allowing external reviewers to assess the consistency and logic of research processes (Halpern, 1983). The audit trail includes interview protocols, transcripts, coding frameworks, analytical memos, and decision logs.

Confirmability was addressed through reflexivity practices, whereby the researcher maintained a reflexive journal documenting assumptions, biases, and reactions throughout the research process to make explicit how the researcher's positionality may have influenced data collection and interpretation (Finlay, 2002). The research team included members with diverse backgrounds (Islamic studies, information systems, public administration) to provide multiple analytical perspectives and challenge interpretive assumptions during analysis (Bradbury-Jones, 2007). Additionally, disconfirming evidence was actively sought during analysis, with attention to instances that contradicted emerging patterns to ensure that themes accurately represented the full complexity of data rather than selectively emphasizing confirming cases (Patton, 1999).

Data Analysis

Data analysis followed Braun and Clarke's (2006) six-phase approach to thematic analysis, which provides a systematic yet flexible method for identifying, analyzing, and reporting patterns across qualitative data. The process began with familiarization, during which all interview transcripts and documents were read multiple times while noting initial impressions and potential patterns (Phase 1). This immersive engagement with data enabled the researcher to develop comprehensive understanding of content before formal coding commenced (Nowell et al., 2017).

Phase 2 involved systematic coding, whereby transcripts were analyzed line-by-line to identify meaningful segments and assign descriptive codes capturing their content (Saldaña, 2015). Initial coding was conducted using NVivo 12 software to facilitate data management and organization, with a total of 387 codes generated across all transcripts (Bazeley & Jackson, 2013). Codes were primarily inductive, emerging from data content rather than predetermined categories, though some deductive codes were applied based on theoretical frameworks from the literature review (Fereday & Muir-Cochrane, 2006). Table 2 presents examples of the coding process, demonstrating how raw data were transformed into codes and subsequently grouped into themes.

Table 2: Examples of Coding Process

Raw Data Extract	Initial Code	Theme
We have very old computers, some still running Windows XP, and the internet connection drops constantly. How can we implement cloud-based systems with this infrastructure? (P9)	Inadequate hardware; Poor connectivity; Infrastructure obsolescence	Technological Infrastructure Limitations
The board approved technology budget is less than 2% of our total budget. They don't see IT as a priority compared to direct beneficiary support. (P7)	Low budget allocation; IT not prioritized; Resource constraints	Financial Constraints
Older staff members are comfortable with the manual ledger system they've used for twenty years. They see the new system as threatening their jobs and expertise. (P4)	Staff resistance; Fear of job loss; Preference for familiar systems	Resistance to Organizational Change

Every module we want to add requires Shariah board approval, and they often lack technical understanding to properly evaluate whether features are compliant. (P3)	Shariah compliance requirements; Knowledge gap; Approval delays	Regulatory and Compliance Complexities
Donors are asking us, 'How do we know our data is secure? What if there's a breach and our personal information is exposed?' They trust the manual receipt more than digital systems. (P11)	Data security concerns; Donor skepticism; Trust in traditional methods	Stakeholder Trust Issues
We spent six months customizing a donor management system, only to find it couldn't integrate with our accounting software. Now we're maintaining two parallel systems. (P2)	System integration failure; Customization challenges; Redundant processes	Technological Infrastructure Limitations
Training a staff member costs money, but then they leave for a private sector job that pays double. We're constantly starting over with new people. (P15)	Staff turnover; Inadequate compensation; Training investment loss	Financial Constraints
The government regulations require us to report in specific formats that our new system doesn't support without expensive modifications. (P10)	Regulatory reporting requirements; System incompatibility; Additional costs	Regulatory and Compliance Complexities

Phase 3 involved searching for themes by grouping related codes into broader patterns that captured meaningful aspects of the data relevant to research questions (Braun & Clarke, 2012). Codes were organized into potential themes using visual mapping techniques, with 27 preliminary themes identified. Phase 4 entailed reviewing themes to ensure they coherently represented coded data extracts and formed a logical thematic structure (Vaismoradi et al., 2016). This process involved combining, splitting, and refining themes, ultimately resulting in five major themes and thirteen sub-themes. Phase 5 consisted of defining and naming themes, developing clear definitions and scope for each theme and determining the 'story' each theme talks about the data (Braun & Clarke, 2006). Phase 6 involved producing the final analysis by selecting vivid examples and relating themes to research questions and existing literature (Nowell et al., 2017). To ensure analytical rigor, the coding process incorporated intercoder reliability checks whereby a second researcher independently coded 20% of transcripts, with comparison revealing 89% agreement on code application (Campbell et al., 2013). Discrepancies were resolved through discussion and consensus, with coding framework refinements made based on these conversations (O'Connor & Joffe, 2020). Analytical memos were maintained throughout the process documenting coding decisions, theme development rationale, and connections between themes, providing transparency in how interpretations were developed (Birks et al., 2008).

Table 3 presents the final thematic framework showing themes, sub-themes, and their frequencies across participant interviews.

Major Theme	Sub-themes	Number of Participants Mentioning (n=18)	Percentage (%)	Representative Quotes Count
1. Technological Infrastructure Limitations	Legacy system constraints	16	89%	54
	Internet connectivity issues	14	78%	38
	Hardware inadequacy	15	83%	42
	Integration challenges	13	72%	47

2. Financial Constraints	Limited IT budgets	18	100%	67
	High implementation costs	17	94%	52
	Ongoing maintenance expenses	15	83%	41
	Competing priorities	16	89%	48
3. Resistance to Organizational Change	Staff resistance	17	94%	58
	Leadership hesitation	12	67%	34
	Cultural barriers	14	78%	45
	Fear of disruption	15	83%	39
4. Regulatory and Compliance Complexities	Shariah compliance requirements	15	83%	49
	Government regulations	13	72%	37
	Data protection laws	16	89%	53
	Standardization absence	14	78%	42
5. Stakeholder Trust Issues	Donor privacy concerns	14	78%	43
	Data security skepticism	17	94%	56
	Digital divide among users	13	72%	38
	Transparency paradox	11	61%	29

Note: Percentages represent proportion of participants who discussed each theme. Participants could contribute to multiple sub-themes within each major theme. Representative quotes count indicates total number of coded segments related to each sub-theme across all transcripts.

Findings

Technological Infrastructure Limitations

The most pervasive challenge identified across participants involved inadequacies in existing technological infrastructure that hindered implementation of advanced governance systems. Managers in institutions with limited resources, particularly those in Nigeria, Pakistan, and some Indonesian organizations, described struggling with outdated hardware, unreliable internet connectivity, and legacy systems that could not support modern applications. P9 explained, "We're trying to build a digital future on an analog foundation. Our computers are outdated, internet is unstable, and power outages happen daily. How can we maintain cloud-based donor databases when we can't even guarantee continuous electricity?" This infrastructure deficit created a vicious cycle where poor foundational technology prevented adoption of systems that could improve efficiency, thereby perpetuating operational inefficiencies.

Integration challenges emerged as a significant sub-theme, with thirteen participants describing difficulties in connecting new governance platforms with existing systems. P2 recounted, "We purchased a highly recommended zakat management system, but it was designed as a standalone solution. It couldn't communicate with our accounting software, beneficiary database, or reporting tools. Now we're manually transferring data between systems, which defeats the purpose of automation." These integration failures often resulted from purchasing commercial off-the-shelf (COTS) software not designed specifically for zakat operations, requiring expensive customization that strained limited IT budgets. P13 noted that vendors often overpromised integration capabilities during sales processes but failed to deliver once implementation commenced.

Participants from more technologically advanced institutions in Malaysia and Saudi Arabia still reported infrastructure challenges, though of different nature. P5 described the complexity of managing multiple interconnected systems: "We have donor management, distribution tracking, financial reporting, and impact assessment systems that all need to talk to each other. The technical architecture is incredibly complex, and when one system updates, it can break connections with others." This suggests that infrastructure challenges persist

across the technological maturity spectrum, evolving from basic adequacy issues to sophisticated integration and maintenance concerns as institutions advance.

The technical skills gap among IT staff exacerbated infrastructure limitations, with managers reporting difficulty recruiting and retaining qualified personnel who understood both technology and zakat operations. P7 stated, "We need IT specialists who can understand Shariah compliance requirements, speak the language of Islamic finance, and have technical expertise in database management and cybersecurity. These people are rare and expensive." This specialized skill requirement created dependencies on external consultants who lacked organizational knowledge and could not provide ongoing support, resulting in unsustainable technical solutions.

Financial Constraints

Financial limitations emerged as a universal challenge, mentioned by all eighteen participants as a significant barrier to technology implementation. The tension between investing in technological infrastructure versus direct beneficiary support created ethical and strategic dilemmas for zakat institutions. P16 articulated this challenge: "Every dollar we spend on IT systems is a dollar not going to feed hungry families. How do we justify buying expensive software when we see desperate people at our doors daily?" This perception of technology as competing with rather than enabling charitable mission made it difficult to secure board approval for substantial IT investments.

The high upfront costs of comprehensive governance systems proved prohibitive for smaller institutions, with several participants describing failed attempts to implement enterprise-level solutions. P8 explained, "We were quoted $200,000 for a complete zakat management system. That's more than our entire administrative budget for two years. It's simply impossible." These cost barriers forced many institutions to adopt piecemeal approaches, implementing fragmented solutions that addressed isolated needs but failed to provide comprehensive governance capabilities. P4 described using free or low-cost tools like Google Sheets and WhatsApp for donor communication, acknowledging these inadequate substitutes for proper governance platforms.

Even institutions that secured initial implementation funding struggled with ongoing maintenance, licensing, and upgrade costs that exceeded original budgets. P12 recounted, "The system purchase was a one-time expense that the board approved, but they didn't account for annual licensing fees, cloud storage costs, technical support contracts, and regular updates. These recurring expenses are actually higher than the initial cost, and we're struggling to maintain the system." This underestimation of total cost of ownership resulted in incomplete implementations or system abandonments after initial deployment.

The challenge of demonstrating return on investment (ROI) for technology spending in nonprofit contexts further complicated financial constraints. P14 noted, "In the private sector, you can calculate ROI through increased revenue or cost savings. But how do we quantify the value of better transparency or improved beneficiary satisfaction? The benefits are real but difficult to express in financial terms that convince the board." This measurement difficulty made it challenging to build business cases for technology investment, particularly when competing against tangible programmatic needs with clear, immediate impact.

Resistance to Organizational Change

Cultural and behavioral resistance to technology-based changes represented a substantial implementation barrier, with seventeen participants describing challenges in managing staff, leadership, or stakeholder opposition to new systems. The resistance manifested differently across organizational levels, with front-line staff fearing job displacement while senior leadership hesitated due to risk aversion and comfort with established practices. P17 described staff resistance: "Our data entry clerks have worked with paper forms for decades. When we introduced the digital system, they saw it as threatening their expertise and potentially their jobs. Some actively sabotaged the implementation by 'forgetting' to enter data or claiming the system was too complicated."

Generational divides within organizations created tensions between younger staff members who embraced digital tools and older employees who preferred traditional methods. P3 observed, "We have a two-speed organization. Young staff are frustrated by slow, manual processes and want everything digital immediately. Senior staff feel

overwhelmed and excluded when we talk about cloud computing and data analytics. Bridging this divide is exhausting." This generational tension sometimes resulted in parallel systems where different staff members used different methods for the same tasks, creating data inconsistencies and coordination challenges.

Leadership hesitation, mentioned by twelve participants, often stemmed from previous technology implementation failures or general risk aversion in conservative organizational cultures. P6 explained, "Our director general was burned by a failed IT project five years ago that wasted significant money. Now he's extremely cautious about any technology proposal, requiring extensive justification and multiple vendor evaluations before approving even small initiatives." This institutional memory of failure created heightened scrutiny and approval barriers that slowed implementation processes and sometimes prevented potentially beneficial projects from proceeding.

Cultural factors specific to religious organizations added complexity to change management. Several participants noted that zakat institutions' strong emphasis on trust, personal relationships, and traditional authority structures sometimes conflicted with standardized, technology-mediated processes. P11 reflected, "Zakat has always been a personal, relationship-based act of worship. When we try to digitize and systematize it, some stakeholders feel we're removing the human element and reducing a sacred obligation to a commercial transaction." Addressing these concerns required careful framing of technology as enabling rather than replacing human judgment and maintaining space for personal interaction within digital systems.

Regulatory and Compliance Complexities

Navigating regulatory requirements emerged as a multifaceted challenge, with fifteen participants describing how Shariah compliance obligations, government regulations, and data protection laws complicated technology implementation. The need to ensure all system features and processes aligned with Islamic principles required extensive consultation with Shariah scholars who often lacked technical understanding to properly evaluate digital systems. P3 explained, "Every time we want to add a new feature, we need Shariah board approval. But board members don't understand technical specifications, so we spend months explaining how the system works before they can evaluate its compliance. It slows everything down tremendously."

The absence of standardized Shariah guidelines specific to technology-based zakat governance created inconsistencies across institutions and countries. P5 noted, "Each Shariah board has different interpretations about what's permissible. A feature approved in Malaysia might be rejected in Saudi Arabia. This makes it impossible to use standardized, off-the-shelf solutions across multiple institutions." This lack of standardization forced institutions to develop custom solutions or extensively modify commercial systems, increasing costs and implementation complexity.

Government regulatory requirements varied significantly across jurisdictions, with some countries imposing strict reporting obligations while others provided minimal oversight. Participants in highly regulated environments like Malaysia and Saudi Arabia described burdensome compliance requirements that demanded specific data formats, reporting frequencies, and audit capabilities that standard systems didn't support. P12 stated, "The government requires quarterly reports in a particular format with specific calculations and breakdowns. Our system generates reports, but in different formats, so we still manually prepare government submissions. We're maintaining two parallel reporting processes."

Data protection and privacy regulations, particularly in European contexts, created additional compliance layers that affected system design and operations. P11 described challenges implementing General Data Protection Regulation (GDPR) requirements: "Donors and recipients have rights to access, correct, and delete their personal data under GDPR. Our system wasn't designed with these capabilities, so we're now retrofitting data management features that should have been built in from the beginning." The intersection of Shariah privacy principles, local data protection laws, and technical capabilities required careful navigation to ensure systems met multiple compliance frameworks simultaneously.

Stakeholder Trust Issues

Building and maintaining stakeholder trust in technology-based systems represented a persistent challenge, particularly regarding data security, privacy protection, and system reliability. Seventeen participants described encountering donor skepticism about digital payment and data management systems, with concerns ranging from cybersecurity threats to religious questions about electronic zakat validity. P9 explained, "Some donors don't trust online payments for religious obligations. They believe that physically handing money to a representative or depositing at a bank creates more valid zakat than clicking a button on a website."

Data security concerns intensified as high-profile breaches at other organizations increased public awareness of cybersecurity risks. P16 recounted, "After a major charity experienced a data breach last year, our donors started questioning how we protect their information. We received numerous calls asking about our security measures, encryption standards, and breach response plans—technical questions we struggled to answer in accessible language." These concerns were particularly acute for zakat institutions handling sensitive financial and personal information about both donors and beneficiaries who might face stigma if their zakat receipt became publicly known.

The digital divide among stakeholders created accessibility and trust challenges, with some donors and beneficiaries lacking digital literacy, internet access, or devices needed to engage with technology-based systems. P7 described distribution challenges: "We implemented a digital voucher system for beneficiaries, but many recipients don't have smartphones or don't know how to use the app. We had to maintain parallel manual distribution, which doubles our workload." This digital exclusion risked marginalizing already vulnerable populations and undermining equity goals central to zakat's purpose.

A paradoxical tension emerged between transparency demands and privacy expectations, creating what P14 termed a "transparency paradox." Donors increasingly expected detailed information about fund utilization and impact, yet beneficiaries required privacy protection to avoid stigma and dignity violation. P1 elaborated, "Donors want to see exactly how their zakat is used, ideally with photos and stories of beneficiaries. But recipients don't want their faces and situations publicly displayed. Technology could theoretically balance these through anonymization and aggregation, but implementing this in ways that satisfy both groups is incredibly difficult."

Discussion

Interpreting the Challenges Through Theoretical Lenses

The findings reveal that technology implementation challenges in zakat institutions align with but also extend beyond patterns observed in conventional organizations, reflecting the unique religious, social, and operational characteristics of Islamic philanthropic institutions. Applying the Technology-Organization-Environment (TOE) framework (Tornatzky & Fleischer, 1990), the identified challenges span all three dimensions with particular concentration on organizational and environmental factors. While technological infrastructure limitations represent clear technology context challenges, the dominance of financial constraints, resistance to change, and stakeholder trust issues suggests that non-technical factors present more significant implementation barriers than technical characteristics themselves. This pattern resonates with broader organizational change literature demonstrating that socio-organizational elements typically determine technology adoption success more than technical features (Orlikowski, 2000).

However, the findings also reveal distinctive dynamics in zakat contexts that challenge universal application of conventional technology adoption theories. The Shariah compliance dimension represents a unique environmental factor not addressed in standard TOE frameworks, functioning as a powerful institutional force that shapes both technology selection and implementation processes (Alalwan et al., 2017). The centrality of religious principles in governing technology decisions creates what might be termed "value-constrained innovation," whereby technological possibilities must be continuously negotiated against religious requirements and interpretations. This finding extends institutional theory by demonstrating how sacred institutions experience heightened institutional pressures that conventional organizations do not face, with implications for how change processes must be managed (DiMaggio & Powell, 1983).

The transparency paradox identified in stakeholder trust challenges represents a novel tension specific to charitable and religious contexts. While corporate transparency typically benefits all stakeholders, zakat institutions must navigate competing demands where increased transparency for donors risks beneficiary privacy and dignity. This paradox problematizes simplistic assumptions that more transparency always improves organizational legitimacy and suggests that technology-based governance systems must incorporate sophisticated privacy-preserving mechanisms that conventional financial systems may not require. The finding contributes to accountability theory by highlighting how different stakeholder groups may have contradictory accountability expectations that cannot be simultaneously satisfied through traditional transparency mechanisms (Ebrahim, 2003).

The pervasiveness of financial constraints across all participating institutions, regardless of their operational contexts, challenges assumptions that technology adoption primarily depends on technological readiness or innovation characteristics. Instead, the findings suggest that fundamental resource scarcity creates binding constraints that override other adoption considerations, aligning with resource-based view perspectives emphasizing resource availability as a prerequisite for organizational capabilities (Barney, 1991). However, the additional finding that institutions struggle to articulate technology ROI in nonprofit contexts reveals a more complex dynamic where resource constraints interact with evaluation challenges to create particularly difficult conditions for justifying technology investment. This suggests that addressing financial barriers requires not only resource provision but also development of appropriate performance measurement frameworks for nonprofit technology investments.

Comparing Findings with Existing Literature

The study's findings both confirm and challenge existing literature on technology adoption in Islamic financial institutions and nonprofit organizations. Consistent with previous research (Rashwan & Ehab, 2019), the study found significant variations in technological maturity across different geographical contexts, with institutions in Gulf countries demonstrating more advanced capabilities than those in South Asia and Africa. However, the findings reveal that even technologically advanced institutions face substantial implementation challenges, albeit of different character than those confronting resource-constrained organizations. This suggests that technology adoption should be understood as a continuous journey with evolving rather than diminishing challenges, rather than a destination where difficulties disappear once initial adoption occurs (Markus, 2004).

The prominence of organizational resistance to change aligns with nonprofit technology adoption literature emphasizing human and cultural factors (Nah & Saxton, 2013), yet the specific manifestations in zakat contexts demonstrate unique dynamics. While previous studies identified general resistance patterns, this research reveals how religious organizational cultures create particular forms of resistance where technology is sometimes perceived as conflicting with sacred obligations and traditional practices. This finding extends beyond cultural resistance to encompass theological concerns that cannot be addressed solely through change management techniques, requiring instead careful religious education and engagement with Shariah scholars to legitimize technological innovations within Islamic frameworks.

Contrary to some previous research suggesting that governance quality primarily determines zakat institution effectiveness (Bakar & Rashid, 2010), this study's findings indicate that governance aspirations often exceed organizational capabilities to implement them through technology. The gap between governance policies and operational realities suggests that formal governance frameworks alone cannot ensure accountability without adequate technological infrastructure, financial resources, and human capacity to operationalize them. This challenges overly optimistic perspectives on governance reform and highlights the need for more realistic, capacity-aligned approaches that strengthen foundational capabilities before implementing sophisticated governance systems.

The study's finding that Shariah compliance requirements create significant implementation complexities confirms observations by Alkhan and Hassan (2021) while providing richer detail about specific mechanisms through which religious considerations affect technology decisions. The absence of standardized Shariah guidelines for technology governance represents a significant gap that creates inefficiencies and prevents economies of scale across the sector. This finding suggests that addressing technology adoption challenges

requires not only organizational-level interventions but also sector-wide initiatives to develop Islamic technology governance standards that can guide institutions while ensuring religious compliance.

Implications for Practice and Policy

The research findings generate several important implications for zakat institution practitioners, technology providers, and policymakers. For zakat institution leaders, the findings underscore the need for holistic approaches to technology implementation that address technical, organizational, and stakeholder dimensions simultaneously rather than treating technology adoption as primarily a technical project. Successful implementation requires substantial investment in change management, staff training, and stakeholder communication alongside technical system deployment. Leaders should develop realistic timelines that account for the time required to build consensus, secure Shariah approvals, and address stakeholder concerns, rather than expecting rapid implementation typical of commercial technology projects.

For technology vendors and developers, the findings highlight the need for zakat-specific solutions rather than adapted conventional financial systems. Purpose-built platforms that incorporate Shariah compliance monitoring, privacy-preserving transparency mechanisms, and interfaces designed for users with varying digital literacy levels would address many identified challenges more effectively than generic systems requiring extensive customization. The findings also suggest opportunities for collaborative development approaches where technology providers work closely with Shariah scholars and zakat practitioners to co-create solutions that balance religious requirements, governance needs, and technical capabilities.

For policymakers and regulatory authorities, the research points to several productive intervention areas. First, developing standardized Shariah technology governance guidelines could reduce compliance complexities and enable greater system interoperability across institutions. Second, providing financial support mechanisms—such as technology adoption grants, subsidized training programs, or shared infrastructure platforms—could address resource constraints that currently prevent many institutions from implementing adequate governance systems. Third, facilitating sector coordination through platforms where institutions share experiences, lessons learned, and technical resources could prevent duplication and accelerate collective learning.

The findings also suggest the value of regulatory approaches that balance accountability requirements with implementation capacity realities. Overly prescriptive regulations that mandate sophisticated technological capabilities may be counterproductive if institutions lack resources to comply, potentially driving some toward non-compliance or creating unsustainable financial burdens. Instead, graduated regulatory frameworks that establish minimum standards while providing pathways and support for progressive improvement might prove more effective in raising overall sector technological capabilities.

Contextualizing Challenges Within Islamic Social Finance Ecosystems

Situating zakat institution technology challenges within broader Islamic social finance contexts reveals systemic dynamics that individual organizational interventions cannot fully address. The study findings suggest that zakat institutions operate within ecosystems characterized by fragmentation, limited coordination, and absence of shared technological infrastructure that create inefficiencies and prevent economies of scale (Hassan & Saleem, 2017). Unlike conventional financial sectors where industry associations and regulatory bodies often facilitate technology standardization and shared platforms, the zakat sector lacks comparable coordination mechanisms, leaving each institution to independently navigate implementation challenges.

This ecosystem fragmentation produces several negative consequences beyond individual institutional inefficiencies. The absence of interoperable systems prevents effective coordination among zakat institutions serving the same populations, potentially resulting in duplicated services for some beneficiaries while others receive inadequate support. P10 described discovering that beneficiaries sometimes received assistance from multiple zakat institutions simultaneously because databases didn't communicate, while deserving recipients in other areas went unassisted. This coordination failure undermines zakat's poverty alleviation potential and represents inefficient resource utilization that properly integrated technology systems could address.

The ecosystem perspective also highlights how technology challenges interact with broader governance and legitimacy issues affecting Islamic social finance. Public skepticism about zakat institution effectiveness, periodically fueled by mismanagement scandals or inefficiency perceptions, creates pressure for dramatic governance improvements that technology could facilitate (Ibrahim & Ghazali, 2014). However, the implementation barriers documented in this study prevent many institutions from achieving the transparency and accountability levels that could enhance public confidence, potentially creating a negative spiral where low trust limits donations, reducing resources available for governance improvements, further undermining trust. Breaking this cycle requires coordinated ecosystem interventions rather than isolated institutional reforms.

The findings also reveal how global inequalities in technological development create divergent trajectories within Islamic social finance, with resource-rich institutions in developed countries accessing sophisticated systems while counterparts in developing regions struggle with basic digitalization. This technology divide mirrors and potentially exacerbates broader development inequalities, as institutions with better technology can operate more efficiently, attract more donors, and demonstrate greater impact, creating competitive advantages that concentrate resources among already well-funded organizations. Addressing these disparities requires international cooperation and resource sharing mechanisms that enable technology transfer and capacity building across the global zakat sector.

Conclusion

This qualitative study has provided comprehensive insights into the multifaceted challenges zakat institutions face when implementing technology-based governance systems, as experienced and interpreted by managerial stakeholders. The research identified five major challenge categories—technological infrastructure limitations, financial constraints, resistance to organizational change, regulatory and compliance complexities, and stakeholder trust issues—that interact in complex ways to create substantial barriers to digital transformation. These challenges reflect both universal technology adoption obstacles documented in broader organizational literature and distinctive dynamics specific to Islamic philanthropic institutions, where religious principles, social missions, and resource constraints create unique implementation contexts. The findings demonstrate that technology adoption in zakat institutions cannot be understood through purely technical or economic lenses but requires appreciation of the religious, cultural, and social dimensions that fundamentally shape how these organizations operate and change.

The study's phenomenological approach successfully captured rich, nuanced understandings of managerial experiences that quantitative research could not access, revealing the sense-making processes through which managers interpret challenges and develop response strategies. By examining perspectives across diverse geographical contexts and organizational types, the research demonstrated both commonalities and variations in challenge manifestations, suggesting that while core obstacles transcend contexts, their specific characteristics and relative importance vary based on local conditions. The integration of interview and document data provided comprehensive pictures of both managerial perceptions and organizational realities, enhancing the credibility and depth of findings. The study's contribution extends beyond empirical documentation to include theoretical advancement in understanding how sacred institutions navigate technological change and practical guidance for stakeholders seeking to enhance zakat governance through digital innovation.

However, technology implementation challenges should not be interpreted as arguments against digital transformation in zakat institutions, but rather as indicators of the careful, contextually sensitive approaches required for successful adoption. The research suggests that technology holds genuine potential to enhance zakat governance, improve operational efficiency, and strengthen stakeholder accountability—but realizing this potential requires addressing fundamental capacity gaps, building stakeholder consensus, and developing appropriate solutions that align with Islamic values and nonprofit realities. The path forward involves collaborative efforts among zakat institutions, technology providers, Shariah scholars, and policymakers to create enabling conditions for successful technology adoption. By understanding and systematically addressing the challenges identified in this research, the zakat sector can harness digital innovation to fulfill its religious obligations and social mission more effectively, ultimately serving Muslim communities and beneficiaries with greater transparency, efficiency, and impact.

Limitations and Future Research

While this study provides valuable insights into technology implementation challenges in zakat institutions, several limitations should be acknowledged. First, the research focused exclusively on managerial perspectives, potentially overlooking important insights from other stakeholder groups including frontline staff who operate systems daily, board members who make funding decisions, technology vendors who implement solutions, and donors and beneficiaries who interact with digital platforms. Future research should adopt multi-stakeholder approaches to capture diverse perspectives on technology challenges and identify tensions or alignments among different groups' experiences and expectations. Second, the study's cross-sectional design captured perspectives at single time points rather than following institutions through complete implementation journeys, limiting understanding of how challenges evolve over time and how initial obstacles are progressively addressed or transformed. Longitudinal research tracking institutions from pre-implementation through deployment and stabilization phases would provide richer insights into temporal dynamics and change processes.

Third, while the study achieved geographical diversity by including participants from six countries, coverage remains limited compared to the global distribution of zakat institutions across dozens of Muslim-majority and Muslim-minority countries. Future research should extend geographical scope to include institutions in additional contexts such as Central Asia, West Africa, and Western countries with substantial Muslim populations to test the generalizability of findings and identify context-specific dynamics. Fourth, the research did not systematically examine successful implementation cases or best practices, focusing instead on challenges encountered. Comparative studies investigating both successful and unsuccessful implementation cases could identify critical success factors and protective strategies that enable some institutions to overcome common obstacles. Fifth, while the study identified challenges, it provided limited quantification of their relative importance or impact on implementation outcomes. Mixed-methods research combining qualitative exploration with quantitative measurement could prioritize challenges and assess their relationships with implementation success.

Future research directions could include: (1) developing and validating measurement instruments for assessing technology governance maturity in zakat institutions, (2) examining the effectiveness of different implementation strategies and change management approaches, (3) investigating the role of external consultants and technology vendors in shaping implementation outcomes, (4) exploring how artificial intelligence, blockchain, and other emerging technologies might address current challenges while creating new ones, (5) analyzing the impact of technology-based governance on actual organizational outcomes including collection efficiency, distribution effectiveness, and stakeholder satisfaction, (6) investigating collaborative technology initiatives where multiple institutions share platforms or coordinate implementations, and (7) examining how regulatory frameworks and policy interventions affect institutional technology adoption patterns. These research directions would collectively advance scholarly understanding while providing practical guidance for enhancing technology governance in the zakat sector.

Co-Author Contribution

Author 1 carried out the fieldwork, prepared the literature review and overlooked the whole article’s write up. Authors 2, 3 wrote the research methodology and did the data entry. Authors 4, 5, 6 carried out the statistical analysis and interpretation of the results.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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