

Digitalization of Islamic Social Finance in Rural Areas: Optimizing the Management of Zakat, Infaq, and Sadaqah (ZIS) for Stunting Alleviation

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ABSTRACT

Stunting in rural areas remains a crucial challenge for human resource development in Indonesia. Conversely, the potential of Islamic Social Finance through Zakat, Infaq, and Alms (ZIS) is immense, yet it is often hindered by traditional management practices and limited distribution reach. This study aims to explore how the digitalization of Islamic social finance can optimize ZIS management to support stunting reduction programs in rural settings. The methodology employed is a descriptive qualitative approach utilizing a literature study. The findings indicate that the implementation of digital platforms in the collection and distribution of ZIS can enhance transparency, accountability, and the precision of targeting nutritional aid for toddlers and education for pregnant women. Digitalization enables data integration between zakat management institutions (LAZ/BAZNAS) and village health data, ensuring that stunting interventions are conducted in a sustainable and measurable manner. In conclusion, the synergy between financial technology and Islamic philanthropic instruments serves as a strategic pillar in accelerating the decline of stunting rates while simultaneously improving the economic welfare of rural communities.

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1. INTRODUCTION

The development of high-quality human resources serves as the primary foundation for a nation's progress, particularly in realizing the "Golden Indonesia 2045" vision. However, a significant structural obstacle haunting this developmental process is the high prevalence of stunting—a growth faltering condition in children under five resulting from chronic malnutrition and recurrent infections (Mulyani, Khairinisa, Khatib, & Chaerunisaa, 2025; Raiten & Bremer, 2020). This issue extends beyond physical stature; it represents a profound threat to the cognitive quality and future productivity of the next

generation. In rural Indonesia, the complexity of stunting is more pronounced due to limited access to primary healthcare, inadequate sanitation, and low awareness regarding nutritional adequacy for pregnant women and toddlers (Economics & Library, n.d.; Haselow, Stormer, & Pries, 2016).

Although the government has implemented various interventions through national policies, the decline in stunting rates in remote areas remains sluggish. This stagnation is largely attributed to a high dependency on state and regional budgets (APBN/APBD), which are often constrained and lack the flexibility to respond to urgent needs at the local level (Nihlah, 2022). Consequently, inclusive and sustainable alternative funding sources are required. This is where Islamic Social Finance (ISF) instruments, specifically Zakat, Infaq, and Sadaqah (ZIS), play a strategic role as a social safety net capable of filling the funding gaps that conventional government assistance schemes cannot reach.

Theoretically and empirically, ZIS possesses massive economic potential in Indonesia, given its status as the world's largest Muslim-populated country (Article, 2024). This potential is not merely limited to general poverty alleviation but can be specifically directed toward public health programs, such as addressing chronic malnutrition (Santoso & Nugroho, 2024). However, field realities reveal a disconnect between the vast potential of ZIS and the effectiveness of its distribution in rural areas. Often, zakat and infaq funds in villages are managed traditionally, utilized for short-term consumption, and remain disintegrated from national health agendas like stunting eradication.

The digitalization of the financial sector should serve as a catalyst to shift the ZIS management paradigm from traditional to professional (Siswantoro, 2022). The utilization of information technology within the Islamic philanthropy ecosystem offers higher transparency and accountability, which in turn enhances the trust of muzakki (donors) (Kholimah, Adinugraha, & Sain, 2025; Winanda, n.d.). Nevertheless, the penetration of financial technology in rural areas still faces significant hurdles, ranging from inadequate digital infrastructure to low digital literacy among local communities. As a result, the optimization of ZIS funds through digital platforms is often concentrated in urban centers, while rural needs continue to be managed via manual methods prone to inefficiency.

This is where the research gap lies. Most prior studies on stunting have focused purely on medical perspectives and public health policies. Meanwhile, studies on Islamic social finance generally emphasize MSME economic empowerment or macro-level poverty alleviation. There is a dearth of literature specifically examining a ZIS digitalization integration model that converges directly with village health data for stunting interventions. A literature void exists regarding the technical mechanisms of how digitalization can bridge the data from zakat management institutions (BAZNAS/LAZ) with real-time nutritional needs at the neighborhood or village level.

This lack of data integration causes the distribution of ZIS assistance in rural areas to be overlapping or poorly targeted. Without a robust digital system, zakat managers struggle to map which toddlers fall into the categories of stunting or wasting, leading to assistance that is often sporadic and unsustainable. The urgency of this research lies in the need to formulate a digital framework for Islamic social finance that focuses not only on fundraising but also on the effectiveness of measurable, data-driven nutritional aid distribution in hard-to-reach rural territories.

Furthermore, this urgency is heightened by the ambitious national stunting reduction targets, which necessitate multi-sectoral collaboration. Rural ZIS digitalization can bridge the synergy between religious scholars (ulama), Islamic finance practitioners, and village health workers (Adriani & Arifin, 2025). If ZIS management is optimized through technology, these funds can be transformed into specific nutritional intervention programs such as the sustainable provision of animal protein for underprivileged children the impact of which can be monitored directly through digital applications (Heidkamp et al., 2021).

Based on this background, this study aims to explore strategies for optimizing ZIS management through digitalization as an innovative solution for rural stunting alleviation. Using a descriptive qualitative approach, this study will dissect how technology can strengthen the transparency and precision of Islamic philanthropy within the health sector. It is expected that the findings will provide a theoretical contribution to the development of Sharia economics and a practical contribution to zakat

institutions and village governments in integrating local resources to foster a future generation free from stunting.

2. METHODS

This study employs a descriptive qualitative method with a library research approach. This method is selected to provide a comprehensive and systematic description of how Islamic Social Finance (ZIS) digitalization can be optimized for stunting alleviation. Data are sourced from secondary materials, including academic journals, official reports from BAZNAS/LAZ, national health statistics, and relevant government regulations. The data collection technique involves meticulous documentation and literature screening of works published within the last decade. Data analysis follows the Miles and Huberman interactive model, comprising data reduction, data display (in narrative and conceptual frameworks), and conclusion drawing. To ensure the study's credibility, data triangulation is applied by cross-referencing various scholarly perspectives and institutional reports.

3. FINDINGS AND DISCUSSION

The results of this study indicate that the digitalization of Islamic Social Finance (ISF) in rural areas operates as a transformative ecosystem that redefines the traditional ZIS management paradigm. Digitalization is not merely about shifting manual recording to digital formats; it involves the creation of an integrated "ZIS-Health" architecture. In rural settings, this digital ecosystem facilitates a more efficient flow of funds from muzakki (donors) to mustahiq (recipients) by utilizing mobile-based applications that are accessible even with limited infrastructure. By centralizing data, zakat management institutions (OPZ) can minimize the high administrative costs often associated with rural distribution, ensuring that a larger portion of the funds is directly allocated to high-impact nutritional interventions for stunted children.

Table 1. Transformation of ZIS Management for Rural Stunting Alleviation

Analysis Dimension	Traditional Management	ZIS	Optimized Based ZIS	Digital-	Impact on Stunting
Data System	Manual, paper-based, prone to inaccuracy.		Real-time integration with Village Information Systems (Siskades).	Village Systems	Precision targeting for identified stunted toddlers.
Distribution Mechanism	Cash-based; often diverted for non-essential consumption.	often	Digital Vouchers / E-Wallets restricted to nutritional products.		Guarantees 100% fund utilization for nutritional improvement.
Transparency	Periodic and purely administrative reporting.	purely	Public Dashboards for real-time monitoring.	donor	Enhances donor trust for long-term program sustainability.
Nutritional Chain	Supply Sourcing from urban/manufactured markets.	from	Empowerment of Village Enterprises (BUMDes) and local farmers.	of Enterprises and local	Stimulates rural economy; provides fresher food sources.
Monitoring & Education	Sporadic face-to-face meetings.	face-to-face	Automated notifications	digital for	Sustained improvement in

		prenatal/postnatal care.	maternal literacy.	health
Accountability Model	Based on physical receipts; hard to verify.	Longitudinal data tracking (digital child growth charts).	Measurable based weight/height metrics.	success on gain

Table 1 Description: Table 1 illustrates a comprehensive comparison between traditional ZIS management paradigms and the optimized digital model within the context of rural stunting intervention. This transformation spans six key dimensions: data systems, distribution mechanisms, transparency, nutritional supply chains, monitoring education, and accountability models. Overall, the table demonstrates that digitalization shifts the role of ZIS from sporadic social assistance into a systematic, measurable, and data-driven public health instrument.

Supporting Narrative: The integration of digital technology in rural ZIS management is not merely an administrative update but a methodological leap in resolving the "data disconnect" that has historically hindered stunting alleviation. These findings emphasize that when zakat institutions transition from manual recording to real-time integration with Village Information Systems (Siskades), aid accuracy significantly improves. This proves that digitalization can effectively mitigate inclusion and exclusion errors, ensuring that zakat funds are distributed to families with clinically identified stunted toddlers rather than based on social proximity.

Furthermore, the utilization of digital vouchers or restricted e-wallets—specifically for nutritional products solves a classic issue in Islamic philanthropy: the diversion of aid for non-essential needs. This is reinforced by the fact that stunting requires consistent daily intake of animal protein. Through a digital system, ZIS managers ensure that every donated rupiah is converted into eggs, milk, or meat via partnerships with Village-Owned Enterprises (BUMDes) and local farmers (Fahmi & Panorama, 2025; Rosadi & Andrini, 2024). This creates a "circular philanthropy" ecosystem that not only saves children from stunting but also revitalizes the rural micro-economy. Ultimately, the high level of transparency provided by digital growth tracking builds stronger public trust, securing sustainable health funding for rural communities.

Furthermore, the study finds that the optimization of ZIS for stunting alleviation is heavily dependent on the precision of data synchronization. One of the primary findings is the potential for integrating "Siskades" (Village Information Systems) with ZIS digital platforms. When village health data—such as the height-for-age measurements of toddlers—are linked with the socioeconomic data of zakat recipients, the resulting "Social-Health Map" allows for laser-focused distribution. This prevents the common issue of aid overlapping or being misdirected to families who do not meet the malnutrition criteria, thereby addressing the transparency and accountability concerns that have historically hindered Islamic philanthropic effectiveness in remote areas (Alterman & Hunter, 2004; Fauzia, 2013).

In the context of the rural economy, digitalization empowers local stakeholders, such as village-owned enterprises (BUMDes) and local MSMEs, to become part of the ZIS supply chain. Discussion reveals that ZIS funds do not have to be distributed as cash, which is often used for non-essential consumption. Instead, digital vouchers can be used to purchase local poultry, eggs, and organic vegetables from village farmers. This "circular philanthropic economy" model not only addresses the immediate nutritional needs of stunting-prone children but also stimulates the local rural economy, creating a sustainable synergy between Islamic social finance and village economic resilience.

The discussion also highlights that the digitalization of ZIS acts as a crucial bridge for behavioral change communication in rural areas. Digital platforms can integrate educational features that send automated reminders to pregnant women and mothers regarding prenatal check-ups and breastfeeding. The findings suggest that when financial aid from ZIS is coupled with digital-based health literacy, the success rate of stunting interventions increases significantly compared to financial

assistance alone. This holistic approach ensures that the root causes of stunting—namely poor nutrition and lack of knowledge—are addressed simultaneously through a single, technology-driven gateway.

However, the transition to a digital ZIS system in rural areas is not without significant challenges, primarily regarding digital literacy and "trust gaps." The study identifies that many rural mustahiq and local zakat administrators still rely on cash-based, face-to-face interactions rooted in local customs. Therefore, the digitalization strategy must adopt a "high-tech, high-touch" approach. This means that while the backend management and data tracking are digital, the frontend interaction still involves local religious leaders and village volunteers to validate the data and maintain the social fabric of Islamic philanthropy, ensuring that technology serves as an enabler rather than a barrier.

From a strategic management perspective, the results underscore the importance of "Real-Time Monitoring and Evaluation" (M&E) made possible by digital tools. Unlike traditional ZIS reports, which are often delayed or purely anecdotal, digital systems provide longitudinal data on the growth progress of children receiving aid. Discussion suggests that this data-driven accountability significantly boosts the confidence of urban muzakki to donate specifically to rural stunting programs. This "crowdfunding for health" model can bridge the urban-rural wealth gap, channeling massive urban zakat potential directly into targeted, measurable stunting reduction projects in the most vulnerable villages.

Another critical finding is the role of digitalization in institutionalizing ZIS as a formal part of the national stunting reduction strategy. By adopting digital standards, BAZNAS and LAZ can provide the government with accurate "contribution maps" of how much Islamic social finance has reduced the stunting burden in specific regions. This allows for better policy synchronization, where the state budget (APBN) can focus on infrastructure like clean water and sanitation, while digitalized ZIS funds focus on the "last-mile" nutritional supplementation for families, creating a more efficient and comprehensive national intervention framework.

The analysis also points toward the necessity of a unified digital platform for all Islamic social finance actors to avoid data silos. Currently, different zakat institutions often use different applications, which leads to fragmented data in rural areas. The findings suggest that a "National ZIS Dashboard for Stunting" would be the ideal optimization strategy. Such a platform would allow for the monitoring of the "Nutritional Status Index" of beneficiaries across various villages, ensuring that no stunting-prone child is left behind due to geographical isolation or administrative invisibility.

Finally, the study concludes that the digitalization of ZIS for stunting alleviation in rural areas represents a significant leap toward "Prophetic Philanthropy in the Digital Age." It transforms zakat from a static religious obligation into a dynamic tool for social engineering and public health. By combining the ethical values of Islamic finance with the efficiency of modern technology, rural communities can move toward self-reliance. This synergy not only alleviates the symptoms of stunting but also addresses the underlying socioeconomic vulnerabilities, ultimately fostering a healthier, more productive generation in line with the objectives of Maqasid al-Shari'ah (the goals of Sharia) in preserving life and progeny.

4. CONCLUSION

This study concludes that the digitalization of Islamic Social Finance through the optimization of ZIS serves as a strategic instrument capable of shifting the rural stunting intervention paradigm from traditional-consumptive aid to systematic, data-driven health interventions. Through the integration of digital technology with village information systems, ZIS management ensures transparency, accountability, and real-time precision in nutritional distribution while simultaneously strengthening the rural circular economy by empowering local resources. The synergy between Sharia financial technology innovation and multi-sectoral collaboration not only effectively accelerates the reduction of stunting prevalence but also establishes a vital foundation for achieving sustainable health independence and social welfare within rural communities.

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