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A Sharia-Based Digital Farming Platform: Integrating Digital Technology for Efficient Zakat Distribution in Agriculture

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ABSTRACT

This study contributes to the advancement of Islamic social finance discourse by developing a conceptual framework for a digitally integrated zakat governance model within the agricultural sector. The study addresses a critical gap between productive zakat practices and the emerging landscape of digital agricultural transformation. While previous research has largely focused on the redistributive function of zakat as a mechanism for poverty alleviation, limited scholarly attention has been directed toward its potential transformation into a technology-enabled and productivity-oriented instrument that supports sustainable development objectives. Employing a qualitative research approach through content analysis, this study synthesizes interdisciplinary perspectives from Islamic economics, zakat governance, agricultural technology innovation, and digital sustainability studies. The study proposes a Digital Farming Zakat Platform framework consisting of five interconnected dimensions: geospatial-based beneficiary identification, smart farming empowerment, sharia-compliant financial mechanisms, agricultural market integration, and data-driven monitoring systems.

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INTRODUCTION

The rapid advancement of digital technology has transformed multiple sectors, including zakat management and agricultural practices, offering significant potential for innovative integration (Rafiki et al., 2024). The convergence of these domains through a sharia-based digital platform can enhance the efficiency of zakat distribution while simultaneously fostering sustainable agricultural development (Rafiki et al., 2024). Such platforms enable

automated zakat calculation, real-time donation tracking, and transparent distribution to eligible beneficiaries, thereby expanding the operational reach of zakat institutions (Radzi et al., 2024). Moreover, digital systems can facilitate the development of smart agriculture ecosystems, where real-time data access supports farmers' decision-making, increases productivity, and mitigates risks (Purwanto et al., 2025). However, the integration of digital systems in zakat and agriculture continues to face challenges related to accessibility, transparency, and the efficiency of social fund mobilization (Sari & Raharja, 2023).

In the context of the transition toward a new economic paradigm, innovation is essential to optimize socio-economic instruments to strengthen national resilience, particularly in the food sector (Abdullayev et.al., 2025). Zakat, as an Islamic social finance instrument, holds strategic potential not only as a consumptive transfer but also as productive capital for empowering *mustahik* in agriculture. Previous studies indicate that productive zakat distribution through mechanisms such as *qard hasan, mudharabah,* business development, and productive grants can enhance household food security and reduce rural economic vulnerability (Akhadi et.al., 2025). Therefore, optimizing the management of zakat, infaq, and sadaqah is increasingly recognized as a strategic approach to achieving sustainable rural development through transparent governance and active community participation (Arif, 2024). In addition, the application of digital technology in zakat management has been shown to improve transparency and operational efficiency, as demonstrated by the adoption of financial technologies by global zakat institutions (Siagian & Nasution, 2023).

Despite these potentials, zakat distribution in the agricultural sector still faces several limitations, including insufficient *mustahik* data, targeting inefficiencies, weak monitoring and evaluation mechanisms, and limited integration between zakat institutions and local agricultural resources (Maulidizen et.al., 2026). Meanwhile, the rapid development of digital technologies—such as big data analytics, geospatial mapping, artificial intelligence, agricultural IoT, and digital dashboard systems—presents significant opportunities to transform zakat governance into a more efficient, transparent, and sustainable system. These technologies enable more accurate beneficiary identification, real-time monitoring of distribution processes, and comprehensive impact evaluation, in line with e-government principles that enhance efficiency and the quality of public services (Syahrir et al., 2024). Furthermore, advancements in information and communication technology have reshaped economic and social dynamics, influencing public perceptions of technology and improving the collection of *zakat, infaq*, and *sadaqah* funds (Chamid et al., 2025).

Through digitalization, the untapped potential of zakat—particularly from professional and corporate sources—can be further optimized, leading to more targeted and productive distribution (Hasibuan & Marliyah, 2023; Latifah & Lubis, 2020). Digital zakat management also facilitates the implementation of productive zakat programs that play a crucial role in empowering rural economies, especially in the agricultural sector (Arif, 2024). Therefore, there is a need to develop a digital platform that integrates sharia-compliant zakat governance with agricultural sector requirements, effectively bridging the gap between available resources and beneficiaries. Such a platform is expected to enhance transparency and accountability in zakat management while generating tangible impacts on farmers' productivity and welfare through the adoption of modern agricultural technologies (Arif, 2024; Latifah & Lubis, 2020). In addition, digital transformation can strengthen supervision mechanisms and increase public trust and participation in zakat institutions (Yasdar & Zulki, 2024).

Based on these considerations, this study aims to explore the concept and potential of a Digital Farming Zakat Platform that integrates sharia-based zakat governance with modern

agricultural technologies. This model is expected to enhance agricultural productivity, improve household food security, and promote sustainable rural economic development, in alignment with the broader objectives of a balanced, inclusive, and sustainable new economy.

RESEARCH METHOD

This study adopts a qualitative approach utilizing a library research method as the primary strategy for data collection. The selection of this method aligns with the research objective, which is to examine the concepts, models, and potential integration of digital technology in zakat distribution for the agricultural sector based on theoretical perspectives, prior empirical findings, and existing regulatory frameworks. Accordingly, this study emphasizes the exploration and critical analysis of relevant literature rather than field-based data collection (Alshehadeh et al., 2024; Sari & Raharja, 2023).

The research process begins with the identification of various scholarly sources related to the topic, including books on Islamic economics, peer-reviewed journal articles on productive zakat, digital agriculture technologies, household food security, and studies on digital economic transformation. Additional sources are obtained from official reports of zakat institutions such as BAZNAS, government regulations including the Zakat Management Law and the Food Law, as well as fatwas issued by the National Sharia Council (DSN-MUI) concerning the implementation of productive zakat (Rizal & Pakkanna, 2023).

Subsequently, a content analysis is conducted to examine key concepts such as sharia-compliant zakat distribution mechanisms, integrated agricultural models, digital farming systems, the application of big data in food security, and technology-based zakat governance. This analysis involves systematic reading, thematic categorization, and evaluation of the relevance of each source in relation to the research objectives (Flores et al., 2025). The final stage consists of synthesizing the reviewed literature to construct a conceptual framework for a Digital Farming Zakat Platform. This synthesis integrates Islamic economic theory, digital social system transformation, and smart agriculture approaches to develop a comprehensive model. Therefore, this study not only summarizes existing literature but also formulates a theoretical design as a reference for future development of digital-based productive zakat platforms.

RESULT AND DISCUSSION

The Potential of Zakat in Agricultural Empowerment

Productive zakat plays a strategic role in improving the welfare of *mustahik* by providing financial capital and supporting agricultural enterprises. Various financing schemes, including *qard hasan, mudharabah,* and *musyarakah*, have been shown to increase income, expand access to capital, and strengthen household food security among *mustahik* communities (Maulidizen et.al., 2024). However, traditional approaches to zakat distribution often encounter institutional challenges, such as manual data collection, limited data-driven evaluation, and the absence of integrated monitoring systems. Advances in information technology offer promising solutions by enabling transparent, accountable, and efficient zakat management platforms (Abdurrahman & Herianingrum, 2020). The utilization of digital platforms facilitates accurate data collection on *mustahik*, accelerates fund distribution, and enables impact tracking related to productivity and farmers' welfare (Flores et al., 2025).

Empirical evidence, such as the use of the Bitani application in Palopo, demonstrates that digitalization can improve administrative processes and the distribution of agricultural inputs, resulting in more efficient and transparent management of beneficiary data (Syahrir et al., 2024). This approach is consistent with studies emphasizing the importance of strong internal systems and controls to maintain the integrity of digital zakat management (Alshehadeh et al., 2024). As a result, digital systems not only reduce administrative issues such as data duplication and delays in distribution but also enhance accountability and effectiveness in managing agricultural assistance programs (Syahrir et al., 2024). Nevertheless, the success of such digital platforms depends on addressing challenges related to low digital literacy among farmers and limited infrastructure in rural areas (Purwanto et al., 2025).

Furthermore, the integration of digital technologies must consider sustainability and adaptability within the socio-cultural context of farming communities (Purwanto et al., 2025). It is also essential to account for local potential, including natural resources, skills, and social capital, to develop competitive agricultural products (Arif, 2024). Therefore, digital agricultural zakat platforms should be designed not only to facilitate fund distribution but also to incorporate training and continuous mentoring modules to support *mustahik* in managing their agricultural businesses (Mashuri, 2016). In addition, effective digital communication—through interactive simulations and data visualization such as yield comparisons and cost-efficiency graphs—can assist farmers in making informed decisions regarding the adoption of smart farming technologies (Purwanto et al., 2025).

Information and communication technologies (ICT) further enhance farmers' access to broader market information, reduce search costs, and optimize the allocation of production factors (Arvianti et al., 2022). This indicates that digital platforms can serve as bridges to overcome information asymmetry and improve farmers' capabilities, particularly in adopting smart agricultural technologies (Purwanto et al., 2025). Moreover, digital platforms can increase transparency in zakat fund management, from collection to distribution, thereby strengthening public trust and encouraging broader participation (Hadi et al., 2023; Radzi et al., 2024).

However, the adoption of digital technologies must be accompanied by improvements in digital literacy among farmers, as not all farmers have the necessary skills or access to utilize these technologies effectively (Hasan et al., 2023; Purwanto et al., 2025). Limited internet access and inadequate technological infrastructure in rural areas remain significant barriers to ICT adoption (Saridewi & Annisa, 2025). Addressing these challenges requires comprehensive strategies, including the development of rural digital infrastructure, digital literacy training programs, and policies that enhance technological accessibility for farmers (Herawati et al., 2023; Subejo et al., 2021). Investment in digital infrastructure, particularly improving internet connectivity in rural regions, is crucial to enable farmers to actively participate in the digital agricultural economy (Herawati et al., 2023).

Government support, including infrastructure development and financial assistance, is a key factor in promoting digital adoption in the agricultural sector (Bancin et al., 2025). This includes funding for platform development, hardware subsidies, and training programs to enhance farmers' technological capabilities (Bancin et al., 2025; Dujali et al., 2025). Furthermore, improving agricultural productivity through digital technologies requires optimizing resource management and reducing operational costs, with data serving as the foundation for more accurate and effective decision-making (Purwanto et al., 2025). The effective use of data has the potential to drive an agrotechnological transformation, meet global food demand, and promote sustainable agricultural systems (Rusmayadi et al., 2023).

The Need for Digital Transformation in Zakat Governance

Digital transformation in zakat governance aims to enhance efficiency, transparency, and accountability through the adoption of information technology (Adinegoro, 2023). The process of digitalization enables significant improvements across these dimensions, as the use of online systems and automation simplifies complex procedures, increases data accuracy through electronic verification, and reduces human errors (Maulidizen, 2019). In addition, digital technologies facilitate real-time reporting and monitoring of zakat distribution, thereby providing greater transparency for both *muzakki* and *mustahik*. These technological advancements also play a crucial role in addressing infrastructural limitations in remote areas and strengthening human resource capacity for more effective zakat management (Afdilati, 2025; Sulistiarini et al., 2025).

The Indonesian government has actively initiated digital transformation programs in rural areas, including the development of digital infrastructure and the provision of digital skills training, to improve farmers' access to technology and information (Saputra et al., 2023). However, the implementation of these initiatives continues to face significant challenges, particularly limited internet connectivity in rural regions and low levels of digital literacy among farming communities (Hamilaturroyya & Adibah, 2025; Syamsuri et al., 2022). Addressing these gaps requires collaborative efforts involving government institutions, the private sector, and local communities to ensure the provision of adequate infrastructure and structured educational programs (Rusmayadi et al., 2023; Sangaji & Irianto, 2025; Sulistiarini et al., 2025).

The shifting global economic landscape has encouraged zakat institutions to adopt digital technologies to enhance program effectiveness. Digital innovation enables several strategic functions, including:

1. Data-driven and geospatial-based *mustahik* profiling

Digital systems allow more accountable and transparent zakat fund management while improving operational efficiency (Nefianto, 2025). Through digital platforms, geographic data can be integrated with demographic information to ensure more precise targeting of beneficiaries, while administrative processes can be automated to reduce operational costs (Hadi et al., 2023). The concept of digital governance highlights the importance of integrating technology into organizational management and decision-making processes to improve service quality and efficiency. Digitalization accelerates workflows, enhances data accuracy, and expands service coverage, thereby simplifying bureaucratic procedures and reducing face-to-face interactions that may increase corruption risks (Hadi et al., 2023; Sangaji & Irianto, 2025).

Furthermore, digital information systems strengthen national zakat networks, expand distribution reach more equitably, and accelerate reporting and accountability processes (Arif, 2024; Yasdar & Zulki, 2024). However, digital transformation still faces challenges related to technological infrastructure disparities, particularly in remote areas, leading to unequal access and service quality (F. Nisa & Tamrin, 2025). Therefore, innovative strategies are required to optimize technology use in managing *muzakki* engagement and increasing public participation in zakat (Yasdar & Zulki, 2024).

2. Real-time monitoring of agricultural activities

Digital systems can automate processes, reduce human error, and enhance service speed, resulting in more efficient and accurate service delivery (Sangaji & Irianto, 2025). Increased efficiency allows zakat institutions to allocate resources more effectively, especially in poverty

alleviation programs (Hadi et al., 2023). Digital reporting systems enhance transparency by enabling *muzakki* to track the utilization of zakat funds, which is essential for building public trust and encouraging participation (Afdilati, 2025; Hadi et al., 2023).

Advanced technologies such as blockchain ensure transparency, traceability, and accountability in zakat transactions while minimizing risks of fraud and corruption (Luntajo & Hasan, 2023). Additionally, big data analytics enables zakat institutions to analyze distribution patterns and program impacts, allowing for more adaptive and effective strategies (Yasdar & Zulki, 2024). These innovations not only streamline administrative procedures but also promote broader public engagement (Sangaji & Irianto, 2025; Ulfa & Frinaldi, 2025).

3. Productivity and risk analysis

Digital technologies enable in-depth agricultural data analysis to predict crop yields, identify potential threats such as pests and diseases, and optimize the use of resources such as water and fertilizers. These capabilities improve operational efficiency and data accuracy while enhancing transparency and accountability through accessible information systems (Sangaji & Irianto, 2025). Data-driven approaches support better planning and decision-making, as well as the identification of trends in zakat distribution (Hamdani & Aziz, 2024). Collaboration between zakat institutions, local governments, and communities—supported by digital platforms—further improves the effectiveness of zakat, infaq, and sadaqah (ZIS) management (Arif, 2024).

Digital platforms also strengthen trust among *muzakki* by enabling real-time tracking of contributions and ensuring proper distribution to eligible beneficiaries (Hadi et al., 2023). As a result, digital systems create a comprehensive ecosystem of accountability involving *muzakki, amil,* and *mustahik* (Rahmatullah et al., 2024; Wijaya & Khotijah, 2020).

4. Transparency in fund distribution

Digital platforms enhance transparency by allowing real-time tracking of donations and facilitating direct communication between *muzakki* and beneficiaries, thereby strengthening trust (Arif, 2024). Integrated digital systems support the management of zakat, infaq, sadaqah, and waqf, improving efficiency and equity in wealth distribution (Latifah & Lubis, 2020; Arif, 2024).

Digital zakat systems, including multi-platform integration and national information networks, simplify payment processes and enable donors to monitor fund distribution (Dzikrulloh & Permata, 2019). These systems improve accountability, reduce the risk of fund mismanagement, and enhance public trust in zakat institutions (Sari & Raharja, 2023; Hadi et al., 2023; Ninglasari & Muhammad, 2021). Innovations such as personalized donation features and detailed impact reporting further strengthen donor engagement (Zetira & Fatwa, 2021).

5. Expanded market access for *mustahik* farmers

Digital technology enables *mustahik* farmers to market their products directly to consumers, reducing supply chain inefficiencies and increasing profit margins (Dzikrulloh & Permata, 2019). It also opens access to broader markets, including urban and international markets, which are difficult to reach through conventional systems (Sari & Raharja, 2023). Through digital platforms, farmers benefit from faster and more transparent payment systems, while transaction data can be used to analyze consumer preferences and optimize production strategies (Chamid et al., 2025). These platforms also provide access to training,

market information, and best agricultural practices, thereby enhancing farmers' competitiveness (Dzikrulloh & Permata, 2019).

Despite these advantages, digital adoption still faces challenges, including limited financial technology literacy, unequal internet access, and insufficient digital competencies among stakeholders (Sofiyawati & Halimah, 2022). Therefore, adaptive strategies and continuous capacity-building initiatives are essential to ensure the successful implementation of digital zakat systems in the evolving digital economy.

Key Features of a Sharia-Based Digital Farming Platform

The Digital Farming Zakat Platform proposed in this study is designed to integrate sharia-based zakat governance with digital technologies to support the productivity, effectiveness, and sustainability of productive zakat programs. The platform aims to facilitate transparent and accountable zakat distribution to *mustahik* farmers while providing continuous assistance in developing their agricultural businesses (Puspitawati & Suari, 2025). Through a decision-support system, the platform can help *mustahik* farmers make more informed cultivation decisions based on relevant data and analytical insights (Rusmayadi et al., 2023). Based on the literature analysis, the platform consists of at least five interconnected components that operate as an integrated system.

1. GIS-Based *Mustahik* and Land Mapping System

This component serves as the main foundation for ensuring the accuracy of zakat distribution targets. By utilizing Geographic Information System (GIS) technology and big data analytics, the profiles of *mustahik* and agricultural land conditions can be mapped more precisely (Muchtar et.al., 2022). The data collected may include land area, soil type, water availability, local superior commodities, household welfare levels, and potential agricultural risks. Through this mapping system, zakat institutions can determine funding priorities more objectively, transparently, and based on actual field needs. The use of GIS in land registration can also accelerate mapping processes and reduce data inconsistencies, thereby improving the accuracy of identifying *mustahik* farmers (Maharani et al., 2025). In addition, geospatial data can be integrated with demographic and socio-economic information to create more comprehensive *mustahik* profiles and enable more personalized and effective interventions (Purwanto et al., 2025).

Village data digitalization, including geospatial information, also facilitates data exchange among government institutions and supports more effective regional development (Meidodga et al., 2023). This system can improve zakat distribution by ensuring that assistance reaches *mustahik* who have not received support from other institutions, while also enabling continuous monitoring of empowered beneficiaries (Hakim, 2016). Moreover, spatial analysis and GIS can support precision agriculture by mapping soil nutrient content and analyzing land conditions, which are essential for improving productivity and resource efficiency (Widhiartana et al., 2023).

2. Smart Farming Support System

The second component refers to digital agricultural technology support aimed at increasing the productivity and work efficiency of *mustahik* farmers. This system may include features such as crop recommendations based on land characteristics, weather prediction using meteorological data, pest risk detection, and plant growth monitoring through IoT sensors. These technologies enable farmers to adopt more precise, efficient, and climate-adaptive cultivation practices, which can significantly improve harvest outcomes. The

integration of artificial intelligence can further optimize agricultural recommendations by providing adaptive suggestions based on historical and real-time data (Amalia et al., 2023). In addition, the system can provide dynamic and accurate land-use data to support more responsive decision-making in spatial planning and agricultural management (Allen & Syahfitra, 2025).

Thus, this system contributes to the sustainability of food production and national food security (Azis & Suryana, 2023). The use of sensor data and remote sensing technologies, such as those implemented in SISCrop by the Ministry of Agriculture, can strengthen the Smart Farming Support System by providing real-time information on land and crop conditions (Shofiyati, 2022). The system may also integrate technologies such as drones for spraying and monitoring, as well as soil and weather sensors, to support efficient and measurable farming practices from planting to harvesting (Knierim et al., 2019). This approach aligns with the concept of precision agriculture, which enables resource optimization and significant productivity improvement (Rusmayadi et al., 2023).

3. Sharia Financing Dashboard

The third component functions as a digital center for managing zakat-based financing. Through this dashboard, zakat institutions can distribute funds using sharia-compliant contracts such as *qard hasan, mudharabah, musyarakah*, and productive grants. Each transaction is automatically recorded and traceable by administrators, thereby improving transparency and accountability. The dashboard also enables zakat institutions to monitor fund allocation, capital utilization by *mustahik*, and repayment levels for certain contracts in real time. The flexibility of contract options allows assistance to be adapted to the needs and capacities of *mustahik* while ensuring compliance with sharia principles and economic empowerment objectives. The system can also generate automated financial reports, making reporting easier and ensuring that all transactions are recorded in detail and auditable (Hamida et al., 2025).

This dashboard may also include automatic notification features for payment reminders or monitoring schedules, as well as integration with digital payment systems to facilitate faster and more efficient transactions. Such features are crucial in establishing an integrated zakat management ecosystem that supports collaboration between human resources and business support systems holistically (Rachman & Salam, 2018). Collaboration among Islamic banking institutions or sharia fintech, zakat institutions, entrepreneurs, farmers, and the government is essential for the successful implementation of this digital platform (Padli, 2021). The platform also has the potential to become a digital hub that integrates and maps all stakeholders in the agricultural sector through FinTech-based networks (Ningrat & Nurzaman, 2019). This innovation enables more efficient and accountable fund management through real-time tracking of donations and fund allocation, thereby improving financial monitoring and reporting (Sari & Raharja, 2023).

4. Market Integration Module (Market Linkage)

The fourth component is designed to connect *mustahik* farmers with broader markets. Through this module, agricultural products can be marketed through various distribution channels, such as halal e-commerce platforms, sharia cooperatives, food-based MSMEs, and local buyer networks. This feature may also include daily market price information, commodity demand data, and logistics mechanisms that support technology-based supply chains. With market integration, *mustahik* farmers gain not only access to capital but also sustainable economic access. The use of digital technology for market penetration, both online and offline, can expand customer reach and support the branding of agricultural products

produced by *mustahik*. Integration with major e-commerce platforms such as Shopee or Tokopedia can also increase national market reach and ensure transactions through established marketplace systems.

Furthermore, support for optimizing social media as a low-cost yet effective promotional tool can expand the market reach of agricultural products, in line with increasing digital literacy among farmers. The use of digital platforms for marketing and promotion can broaden market access and accelerate transactions, enabling *mustahik* farmers to compete in wider markets, including global markets (Judijanto et al., 2025). Human resource development through training and technical assistance in export standards, quality management, and international marketing should also become a priority in empowering *mustahik* farmers (Judijanto et al., 2025). Therefore, this market integration module focuses not only on product sales but also on the holistic development of *mustahik* farmers' capabilities to achieve sustainable economic independence (Susilawati et al., 2025).

5. Monitoring, Evaluation, and Impact Dashboard System

The fifth component serves as an instrument for measuring the success of productive zakat programs. This system provides key performance indicators such as *mustahik* income growth, household food security levels, commodity productivity, socio-economic impact, and business sustainability. Data are collected periodically through field applications, IoT sensors, or farmer reports. Through this dashboard, zakat institutions can conduct evidence-based evaluations and formulate more effective development policies. This monitoring and evaluation system aligns with continuous efforts to improve promotional strategies and services, ensuring that each intervention produces maximum impact and remains relevant to community needs (Suhandi, 2023). Data analysis from this system also enables the identification of new trends and challenges in productive zakat distribution, allowing strategies to be adjusted dynamically to achieve optimal results.

The success of processing agricultural sales data and marketing outcomes from *mustahik* farmers can serve as a key evaluation benchmark by considering changes in conditions after program implementation within farming communities (Sibarani, 2021). Regular mentoring and periodic monitoring are also essential to ensure program sustainability and develop farmers' digital marketing skills (Aulia et al., 2025; Setyoningrum et al., 2024). Periodic review of digital cash book records and social media activities is crucial to measure data consistency and accuracy, as well as to observe promotional reach development (Puspitawati & Suari, 2025). A structured evaluation system can measure the impact of zakat management on economic welfare, business sustainability, and community capacity in managing resources, using indicators such as household income growth (Arif, 2024).

A comprehensive reporting system, such as the Zakat Impact Assessment System, can greatly support accountable monitoring and evaluation of productive zakat distribution, both in terms of income improvement and the spiritual development of *mustahik* (Maryani & Firdonsyah, 2021). Accurate and continuous evaluation through a data-based system enables the measurement of digital initiative effectiveness and provides a basis for evidence-based decision-making (Nufuz et al., 2025). Monitoring can also be carried out through direct surveys involving communities and business groups to identify obstacles and design more effective program improvements (Arif, 2024). This evaluation approach should include comparative analysis of sales before and after intervention to provide stronger quantitative evidence regarding the effectiveness of the program in improving *mustahik* welfare (Puspitawati & Suari, 2025).

Impact on the New Economic Ecosystem

The implementation of digital platforms in zakat management for the agricultural sector holds significant potential in fostering a new economic ecosystem that is both inclusive and sustainable, particularly for *mustahik* farmers (Wibowo, 2023). This transformation involves the digitalization of the entire agricultural value chain, from upstream to downstream processes, enabling greater efficiency and transparency in the allocation and utilization of zakat funds. Digital technologies also facilitate the dissemination of business and market information while simplifying transactions between ZIS contributors and beneficiaries, as highlighted in previous studies (Arif, 2024). In addition to improving administrative efficiency, such systems enhance accountability in aid distribution, in line with e-government principles (Syahrir et al., 2024).

The digitalization of productive zakat also stimulates innovation in agricultural products and services, opens new market opportunities, and creates employment in rural areas. This is reflected in the potential for increased *mustahik* income through productive programs that enable sustainable business development (Mashuri, 2016). Furthermore, digital adoption enhances community participation in zakat, infaq, and sadaqah management while strengthening trust in zakat institutions through improved transparency and accountability (Arif, 2024).

The integration of digital zakat in agriculture contributes to key pillars of the new economic paradigm:

1. Sustainability: Promoting environmentally friendly agricultural practices

Digitalization enables continuous monitoring of sustainable farming practices, such as reducing pesticide use and improving irrigation efficiency, thereby supporting long-term environmental sustainability. Through such platforms, *muzakki* can directly observe the positive impact of their contributions, which can increase their motivation to donate consistently and strengthen the zakat ecosystem (Dzikrulloh & Permata, 2019). In addition, these platforms can enhance sharia economic literacy in rural communities, empowering them to manage financial resources more effectively and independently (Arif, 2024).

Technological innovation in this context is essential for providing relevant data that supports sustainable agricultural productivity (Purwanto et al., 2025), while also reinforcing transparency and accountability in zakat management through integrated information systems (Amalia et al., 2023; Pratama & Frinaldi, 2025). Consequently, these technologies have strong potential to reduce poverty and improve rural economic welfare, in line with sustainable development objectives (Hasibuan & Marliyah, 2023; Latifah & Lubis, 2020). The integration of zakat as an Islamic philanthropic instrument within a digital framework can also accelerate the achievement of sharia economic goals, such as income redistribution and social equity (Ghofar et al., 2024).

2. Inclusiveness and Equity: Expanding access to financing and markets

Digital platforms enable *mustahik* to access resources that were previously difficult to obtain, such as Islamic microfinance and agricultural technical training, thereby fostering more equitable economic growth (Padli, 2021). Transparent and accountable zakat management through digital systems also provides legal assurance and trust for both *muzakki* and *mustahik* (Zainuddin & Nasikhah, 2021).

This approach aligns with broader efforts to improve socio-economic welfare and reduce inequality through optimized ZIS management (Faoziyah, 2023). Furthermore, digital platforms create inclusive ecosystems that allow rural communities to actively participate in

the digital economy, supporting equal access to technology and economic opportunities (Hamilaturroyya & Adibah, 2025). The equitable distribution of resources ensures that underdeveloped regions are not merely passive recipients but active participants in the digital ecosystem. Additionally, zakat distribution can be directed toward developing local economic infrastructure, such as irrigation systems and small-scale industries, which generate employment and increase community income (Faoziyah, 2023).

3. Efficiency: Improving governance and reducing information asymmetry

Digital platforms enable real-time reporting and monitoring, enhancing transparency and accountability throughout the entire zakat management process (Achir & Muhtar, 2023). This supports the goal of improving service effectiveness and efficiency while ensuring compliance with Islamic principles (Zainuddin & Nasikhah, 2021).

The adoption of information and communication technologies in zakat management improves efficiency in fund collection, distribution, and reporting, while strengthening transparency and accountability (Achir & Muhtar, 2023). Such innovations also increase public trust in zakat institutions, as management processes become more open and accountable (Nurviliza, 2024). Moreover, digital platforms simplify transactions for *muzakki*, providing speed, convenience, and transparency, while encouraging greater awareness and compliance in zakat payments (Rohim et al., 2021). Digitalization also enables zakat institutions to automate calculations, track donations, and distribute funds in real time to eligible recipients, ensuring more efficient and targeted management (Radzi et al., 2024).

4. Strengthening Food Security and Household Economy

The integration of productive zakat with agricultural data allows more precise targeting to enhance food production and farmers' income (Arif, 2024). Digital platforms also facilitate system integration, preventing data duplication and accelerating service delivery, enabling zakat institutions to respond more effectively to *mustahik* needs (Sangaji & Irianto, 2025).

The digitalization of zakat, infaq, and sadaqah management has the potential to significantly increase the volume of collected funds, which in turn contributes to improved welfare among *mustahik* and enhanced food security (Verdianti & Puja, 2023). Furthermore, digital fundraising technologies enable zakat and waqf institutions to mobilize resources more efficiently, thereby providing broader benefits to communities in need (Sari & Raharja, 2023). In addition, digital reporting systems allow for real-time public feedback and performance evaluation, reducing bureaucratic complexity and strengthening accountability in governance (Afdilati, 2025).

CONCLUSION

This study demonstrates that the integration of digital technology into agricultural zakat management constitutes a strategic and transformative approach to enhancing the effectiveness of productive zakat programs. By developing a conceptual Digital Farming Zakat Platform that integrates GIS-based beneficiary mapping, smart farming support systems, sharia-compliant financing mechanisms, market linkage modules, and data-driven monitoring systems, this research offers a comprehensive framework for improving the governance of zakat distribution.

The findings highlight that digitalization significantly improves targeting accuracy, transparency, and accountability, while also strengthening the sustainability of agricultural activities among *mustahik*. Furthermore, the integration of digital tools not only enhances

agricultural productivity but also expands market access and promotes the economic independence of *mustahik* farmers. In a broader context, this model contributes to the development of an inclusive, efficient, and sustainable economic ecosystem aligned with the principles of Islamic social finance and the emerging digital economy.

This study provides a theoretical contribution by bridging Islamic social finance, digital governance, and agricultural innovation into a unified conceptual model. It also offers practical implications for zakat institutions, policymakers, and development practitioners in designing more adaptive and impactful zakat-based empowerment programs.

LIMITATIONS AND FUTURE RESEARCH RECOMMENDATIONS

Despite its contributions, this study has several limitations. First, the research relies on a qualitative library research approach, which limits its ability to empirically validate the effectiveness of the proposed platform in real-world settings. Second, the conceptual model developed in this study has not yet been tested through pilot implementation, which restricts the assessment of its operational feasibility and scalability. Third, the analysis does not fully capture regional variations in technological readiness, digital literacy, and infrastructure availability, which may influence the adoption of digital zakat systems in different contexts.

Future research is therefore recommended to conduct empirical studies, including field experiments, pilot projects, or case studies, to evaluate the practical impact of the Digital Farming Zakat Platform. Quantitative approaches may also be employed to measure the relationship between digital zakat implementation and key outcomes such as income growth, food security, and mustahik empowerment. Additionally, further studies should explore the role of emerging technologies—such as blockchain, artificial intelligence, and fintech integration—in strengthening zakat governance systems.

Finally, interdisciplinary research involving collaboration between Islamic finance experts, agricultural specialists, and digital technology practitioners is strongly encouraged to refine and scale the proposed model. Such efforts will be essential in ensuring that digital zakat innovations can be effectively implemented to support sustainable development and inclusive economic growth.

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