JISEL
Journal of Islamic Economic Laws VIII(1) 210-236 (2025)
Received 01 25 / Revised 05 25 / Accepted 05 25

UNIVERSITAS MUHAMMADIYAH SURAKARTA

P-ISSN: 2655-9609; E-ISSN: 2655-9617
https://journals2.ums.ac.id/index.php/jisel/index

Implementation of Advanced Technology in Waqf Management: A Systematic Literature Review

Sessa Tiara Maretaniandini[1], Fadilatul Hilmiyah[2], Syahrir Akbar[3], Abdelsalam Adam Hamid[4]

*[1]Politeknik Keuangan Negara STAN, Indonesia, 4121220293_sessa@pknstan.ac.id
[2]Politeknik Keuangan Negara STAN, Indonesia, 4121220135_dila@pknstan.ac.id
[3]Politeknik Keuangan Negara STAN, Indonesia, syahrir_4121230186@pknstan.ac.id
[4]A'Sharqiyah University, Ibra, Oman, Abdelsalam.adam@asu.edu.om

Abstract. This systematic literature review explores the implementation of advanced technology in waqf management by mapping and classifying key research themes and trends. Utilizing the PRISMA protocol, an initial search across Scopus, OpenAlex, Crossref, and Google Scholar identified 1,289 articles. These were then screened for relevance based on inclusion and exclusion criteria, resulting in 17 articles selected for in-depth analysis. The thematic mapping reveals four dominant clusters: (1) blockchain technology, which is frequently discussed for its potential to enhance transparency and accountability in waqf transactions; (2) cash waqf and digital waqf, highlighting innovations in fundraising and asset management; (3) artificial intelligence and fintech, which are explored for improving risk assessment, fund allocation, and operational efficiency; and (4) digital platforms, which are recognized for expanding accessibility, facilitating public participation, and streamlining waqf processes. The review also identifies significant challenges, including regulatory gaps, limited technological infrastructure, and stakeholder resistance to change. At the same time, best practices from countries such as Malaysia, Singapore, and Oman illustrate successful technology adoption in waqf management. By systematically mapping these themes, this study provides a comprehensive overview of the research landscape, offers practical insights for policymakers and practitioners, and highlights the need for further empirical research to measure the real-world impact of technology implementation in diverse waqf contexts.

Keywords: Technology, Waqf Management, Economic Welfare, Systematic Literature Review

***Corresponding Author**

INTRODUCTION

The economy and social welfare play a crucial role in Islamic society. Islam views fair and inclusive economic management as a way to achieve collective prosperity (Anas et al., 2024). Islamic principles, such as economic justice and community empowerment, are the primary foundations for creating social balance and reducing disparities among different social groups.

In Islam, economic justice is manifested through the equitable distribution of wealth, including implementing zakat, sadaqah, and waqf (Kalkavan et al., 2021). This system prioritizes

transactions based on fairness, transparency, and shared responsibilities. Consequently, Islamic economics promotes material growth and integrates moral and ethical values, enabling the holistic achievement of social welfare (Ahmadi et al., 2024). One instrument for achieving social welfare is waqf, which offers more flexibility than the other instruments. As one of the biggest and most generous Muslim countries, Indonesia shows excellent potential for waqf (Nugroho et al., 2023).

However, there is a significant disparity between the actualization and potential of waqf in Indonesia. In practice, the management of waqf funds in Indonesia is yet to reach its optimal potential, facing challenges such as a lack of transparency, inefficiency in utilization, and limitations in professional management (Purbasari et al., 2023). Inefficiency in waqf management primarily occurs in the collection and distribution processes, whereas asset management and operational costs are secondary issues (Putri, 2022). This condition is partly due to nazhir or waqf managers, often lacking the capacity or adequate training to perform their duties efficiently (Ulfa & Mustafa, 2023). This situation hinders the waqf from achieving its primary goal of benefiting the community.

The optimal management of waqf funds can significantly impact societal welfare. With transparent and professional management, waqf funds can be allocated to targeted economic empowerment programs, education, and healthcare services (Asra & Savitri, 2023). Accountability in waqf management can enhance the productivity of waqf assets, creating a domino effect that empowers communities economically (Ningsih et al., 2023). A digital-based productive waqf management model also shows the potential for creating a more efficient and integrated system.

Modernization through technology, including digital innovations, offers significant opportunities to optimize waqf management objectives in the financial sector and in waqf fund administration (Nurfattah & Bachtiar, 2023). As technology evolves, sectors such as blockchain, artificial intelligence (AI), and digital platforms can leverage advancements to enhance operational efficiency and decision-making quality. The implementation of modern technology allows for more precise, efficient, and cost-effective asset management while supporting sustainable economic growth (Aysan & Al-Saudi, 2023)

This study aims to comprehensively review the potential of implementing advanced technology in waqf management to improve social welfare in Islamic societies. Prior research on technology adoption in waqf management primarily emphasizes opportunities and challenges

(Almomani et al., 2024; Qurrata et al., 2021) studies within specific nations (Ibrahim et al., 2021; Janom et al., 2019), and the adoption of particular technologies (Mohaiyadin et al., 2022; Pakpahan et al., 2019). Awalluddin et al. (2024) and Abdulquadri & Quadri (2025) conducted previous research on technology and waqf management using a Systematic Literature Review. Abdulquadri & Quadri (2025) focused on blockchain technology for zakat and online platforms for waqf by examining selected publications from 2015 to 2024. The novelty of this study lies in its extensive examination of advanced technology types for waqf management and its thorough evaluation of a wide array of sources, including Scopus, Google Scholar, OpenAlex, and Crossref, from 2020 to 2025.

This study contributes to the literature in several ways. This study is expected to enrich the literature on the potential implementation of technology in more effective and efficient waqf management for the community's welfare, which has not been comprehensively discussed in previous literature. Additionally, this study can serve as a resource for the government, particularly the Ministry of Religious Affairs and the Indonesian Waqf Board (BWI), in formulating strategies for developing more modern waqf management technology and managing the large-scale waqf assets.

LITERATURE REVIEW

Previous Studies

Recent scholarly efforts have increasingly focused on integrating technology into waqf management. For instance, studies like Awalluddin et al. (2024) and Abdulquadri & Quadri (2025) explored blockchain and digital platforms for zakat and waqf. However, their scope was limited to specific technologies or regional implementations. Similarly, research by Hasbulah et al. (2024) emphasized blockchain's role in enhancing cash waqf transparency but lacked a comparative analysis of other technologies like AI or digital platforms. Meanwhile, Napitupulu et al. (2023) examined fintech's intersection with waqf, identifying gaps in empirical validation of its socio-economic impact.

Other works, such as Kosmon et al. (2023), highlighted blockchain's potential in Middle Eastern and Asian waqf systems but did not address regulatory challenges in developing nations like Indonesia. Studies like Ramdani et al. (2022) and Fachrurrazy et al. (2022) focused on strategic management and digital crowdfunding but overlooked systemic barriers such as infrastructural limitations and stakeholder resistance. Additionally, systematic reviews by

Ascarya et al. (2022) mapped traditional waqf models but lacked emphasis on modern technological integration.

The synthesis of previous research on the implementation of technology in waqf management reveals that while a growing body of literature examines various digital innovations, such as blockchain, artificial intelligence, and digital platforms, these studies often remain fragmented and limited in scope. Much of the existing research focuses on the opportunities and challenges of adopting specific technologies or presents case studies centred on particular countries, most notably Malaysia, Singapore, and several Gulf states. Furthermore, systematic reviews that have been conducted typically emphasize either the technical aspects of a single technology or the managerial challenges in waqf administration, without offering a comprehensive thematic mapping of the broader landscape. As a result, there is a lack of integrative studies that systematically classify and compare the diverse range of technologies being implemented in waqf management, especially in the context of Indonesia, which possesses unique socio-economic and regulatory characteristics.

This study addresses these gaps by providing a holistic and systematic literature review that not only explores the implementation of advanced technologies in waqf management but also maps out the main themes and research clusters emerging from a wide array of sources, including Scopus, Google Scholar, OpenAlex, and Crossref, over the period 2020–2025. The novelty of this research lies in its comprehensive bibliographic analysis, which synthesizes findings across multiple technologies and contextual settings, and its focus on the Indonesian context, which has been underrepresented in prior studies. By offering a detailed thematic classification and highlighting best practices, challenges, and opportunities, this study contributes new insights for policymakers, practitioners, and academics. It lays the groundwork for future empirical research on the measurable impact of technology adoption in waqf management.

Social Exchange Theory

The fundamental premise of Social Exchange Theory is that individuals behave rationally. Social exchange theory is the theoretical framework underpinning the study of charitable activities (Blau, 2017). In contrast to the pure economic theory, this framework evinces greater flexibility because of its capacity to apply universally and transcend economic markets. This quality renders it a suitable model for analyzing donor or giver behavior. Social exchange

theory addresses reward-driven efforts related to social interaction, human values, spiritual principles, personal empowerment, and emotional fulfilment (Blau, 2017).

In the context of waqf givers, the benefits derived from waqf assets include a perpetual exchange of rewards, the repercussions of which extend to numerous individuals throughout generations (Sakina et al., 2023). Consequently, beneficiaries of these assets benefit from their development and utilization (Sakina et al., 2023). This congruence renders social exchange theory highly pertinent to waqf praxis. The practice of waqf relies on the cooperation and participation of the waqif (waqf giver), nadzir (waqf manager), and *mauquf alaih* (waqf recipient), and each party benefits from both economic and social benefits.

The Concept of Waqf and Its Benefits

The term 'waqf' is generally understood to mean retention. At the same time, in Islamic law, it is defined as 'the retention or retirement of an asset and the distribution of its benefits. In essence, waqf signifies the right to hold the item in question, not to sell, distribute, store, or give it away, so that it can be helpful in the way of Allah. Ramdani et al. (2022) defined waqf as a pool of consumable resources developed into productive assets to increase economic capital accumulation and improve future services and income. Another study explains that waqf is an asset retained by its original owner and benefits people who cannot afford it (Sudirman & Ramadhita, 2020). The asset must remain original and not be developed by the owner. Meanwhile, the opinions of four eminent Islamic scholars, namely al-Hanafi, al-Maliki, al-Shafi'i, and Hanbali, diverge in their definitions of waqf. However, a consensus among these scholars exists that the property should be maintained in its original state and that profits should be allocated to those in need (Sudirman & Ramadhita, 2020).

Using waqf for economic activities has effectively improved societal welfare (Alam et al., 2018; Asra & Savitri, 2023; Qurrata et al., 2021). Several countries, including Kuwait, Bangladesh, Singapore, Turkey, Malaysia, and Egypt, have successfully developed waqf assets. For instance, in Bangladesh, the development of cash waqf has played a pivotal role in providing financing capital for small and medium enterprises, microfinance, consumptive financing (e.g., murabaha, salam, istishna, ijarah), and other financing, thereby contributing to poverty reduction and income inequality (Haneef et al., 2015). Similarly, Singapore has allocated approximately 140 million Singapore dollars to construct 23 large mosques, 20 units of Kassim waqf houses, commercial buildings, and Wisma Indah on Changi Road. In Turkey and Malaysia, the development of investment waqf was made possible by introducing the stock

waqf scheme, while Egypt successfully integrated waqf into various business sectors (Ascarya et al., 2022). In Kuwait, waqf assets are employed via diverse investment channels, with the proceeds subsequently distributed following the stipulations set by the waqif (Latifah & Jamal, 2019).

This phenomenon indicates that waqf performs a significant function in reducing economic inequality through the distribution of benefits. This assertion is further substantiated by Herindar & Rusydiana (2022), who asserted that waqf's role is paramount in achieving equity and serving as a catalyst for national development. Consequently, the present study emphasizes the necessity for implementing effective and efficient waqf management, which necessitates the integration of advanced technologies.

Waqf Management in the Modern Era

The definition of management is not significantly different from its application to waqf management. As Supanto (2019) stated, the term derives from the old French 'ménagement,' signifying the art of execution and organization. Management can thus be regarded as an art, as the execution of certain tasks necessitates the expertise of individuals possessing specific skills (Supanto, 2019). The implementation of management involves a series of activities, including planning, organizing, mobilizing, and supervising, to determine and achieve organizational goals through the effective utilization of human and other resources (Supanto, 2019). In waqf, waqf management refers to managing waqf, collecting cash waqf, and building harmonious relationships among nazir, wakif, and society (Nazir et al., 2021). Ramdani et al. (2022) examine the strategic management aspects of waqf management, including Islamic management, quality, entrepreneurship, marketing, and leadership.

The management of waqf in the modern era has undergone significant developments in line with technological advances, globalization, and the increasingly complex demands of society. Digital innovation is an integral component of waqf management in Indonesia. A notable innovation was the adoption of digital platforms for waqf collection. This development has been shown to facilitate the donation of waqifs (waqf givers) (Syaifullah & Idrus, 2019). This development can potentially enhance community participation in supporting waqf management in a practical and contemporary manner. Furthermore, a strategic initiative has been identified in the form of collaboration between waqf nazirs, Islamic banking, and fintech entities, which is expected to facilitate the establishment of an integrated digital waqf management ecosystem

(Fikriyah & Alam, 2021). This partnership has the dual benefit of simplifying the management process and encouraging innovation in waqf services that are more efficient and transparent.

Optimizing social media to socialize waqf is another important innovation (Rohim et al., 2022). The use of social media facilitates the dissemination of information regarding waqf to the public, aligning with contemporary digital habits. This initiative is expected to enhance public awareness and engagement through the significant potential of waqf. Finally, the digital transformation undertaken by the Indonesian Waqf Board (BWI) is an important step in developing waqf management. This transformation encompasses internal digitalization, nazir digitalization, and waqf data integration (Rohim et al., 2022). The overarching objective of this initiative is to enhance transparency, accountability, and efficiency of waqf management in Indonesia.

METHOD

This study employs a Systematic Literature Review (SLR) to thoroughly examine the potential of advanced technology to enhance economic welfare in Islamic societies. SLR offers a structured and rigorous approach to synthesizing existing research, aiming to capture and critically assess all relevant studies on a given topic (Belahouaoui & Attak, 2024). By minimizing biases, SLR provides a reliable and inclusive overview, making it particularly valuable for identifying research gaps and establishing a solid basis for future studies, particularly for new researchers in the field. Nevertheless, applying SLRs from a critical perspective and acknowledging their limitations is essential to ensure balanced and effective outcomes.

We adopted the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) to guide the SLR process. PRISMA enhances transparency and clarity by systematically documenting each stage of the review, from identifying studies to final selection, which helps reduce bias and improve the comprehensiveness of the review (Belahouaoui & Attak, 2024). Known for its ability to increase the reliability and relevance of systematic reviews, PRISMA is regularly updated to reflect the current evidence and best practices in research. The PRISMA approach aligns with our goal of exploring the role of advanced technology in achieving social and economic welfare for Islamic societies, as it enables a thorough and unbiased review of literature in this rapidly evolving area. By

systematically collating and assessing relevant studies, PRISMA ensures a deep and structured understanding of advanced technology applications within the waqf management system.

Identification of Research Questions

Formulation of research questions using the concepts of population (P), concept (C), and context (C). The following table describes the concept of PCC used in this study.

Table 1. PCC Details

Concept	Description
P (Population)	Islamic societies
C (Concept)	Implementation, Adoption
C (Context)	Technology, Waqf

Source: Processed by authors (2024)

Identification of Relevant Studies

The selected studies met our inclusion criteria. A literature search was conducted using the Publish or Perish search engines (OpenAlex, Google Scholar, Crossref, and Scopus). The inclusion criteria were Indonesian and English language studies, studies published between 2020 and 2025, all types of studies (quantitative and qualitative), and fully available and accessible studies. In addition, inclusion was a combination of the keywords "Implementation" AND "Technology" AND "Waqf." On the other hand, studies that did not fit P (population), C (concept), and C (context) were exclusion criteria that were excluded from the research data (Table 2).

Table 2: Inclusions and Exclusions Criteria

Inclusion	Exclusion
Include keywords "Implementation" AND "Technology" AND "Waqf"	Not include keywords "Implementation" AND "Technology" AND "Waqf"
Quantitative & Qualitative	-
Publication between 2020 and 2025	Publication under 2020
Language: Indonesian & English	-

Source: Processed by authors (2025)

The literature search strategy is explained using the PRISMA Flowchart, which is a strategy for database searching, as follows:

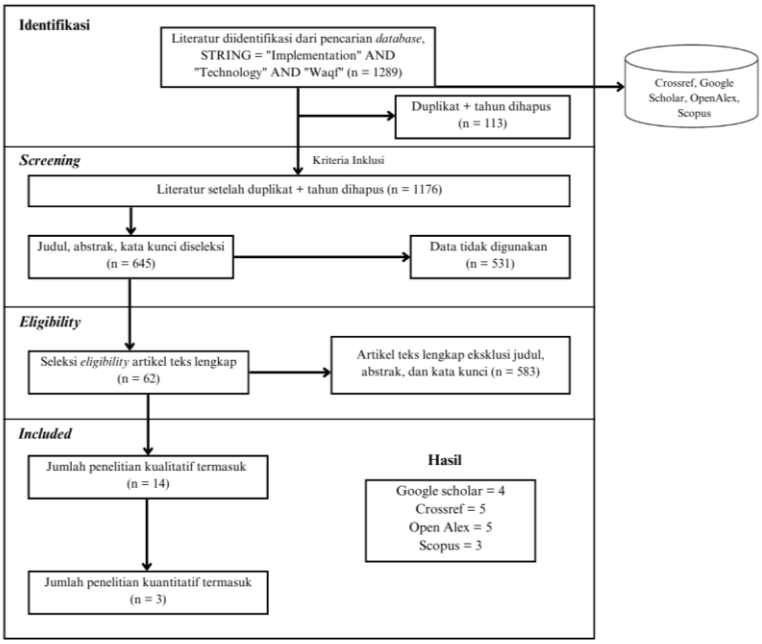
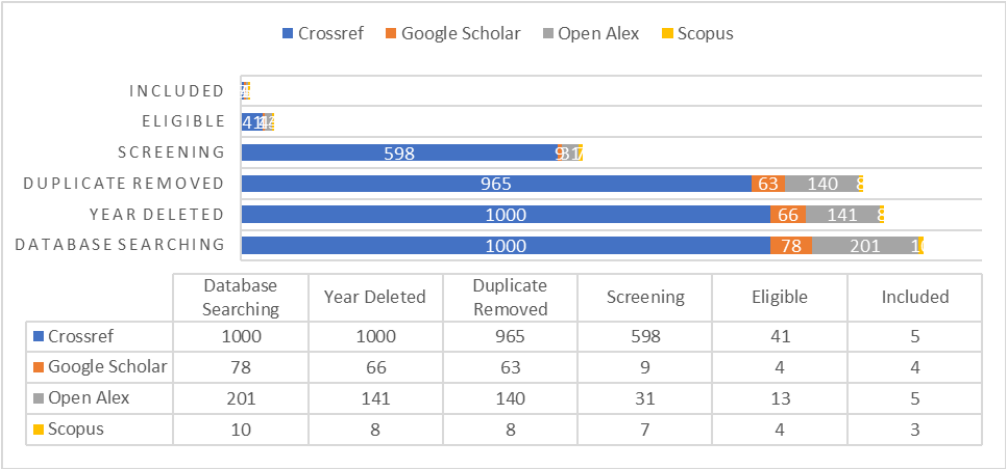


Figure 2. PRISMA Flowchart

Sources: Processed by authors

In detail, the results of the selection of literature articles as research data are presented as follows:



	Database Searching	Year Deleted	Duplicate Removed	Screening	Eligible	Included
Crossref	1000	1000	965	598	41	5
Google Scholar	78	66	63	9	4	4
Open Alex	201	141	140	31	13	5
Scopus	10	8	8	7	4	3

Sources: Processed by authors

Figure 3. Literature Selection Process

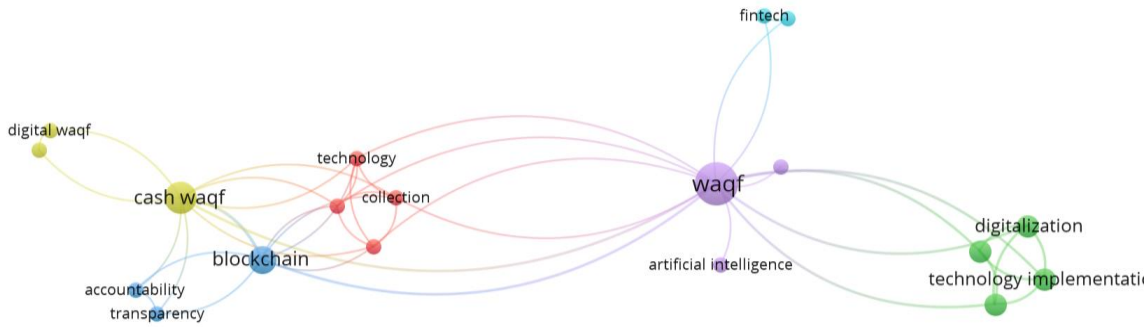
Literature sources were obtained through searches using the search engines Publish or Perish applications (OpenAlex, Google Scholar, Crossref, and Scopus). Searching available data sources using predetermined keywords, 1289 articles related to the research topic were found. Articles from each available data source came from Scopus (10 articles), Open Alex (201 articles), Crossref (1000 articles), and Google Scholar (78 articles).

Studies Selection

The selection process of studies that have gone through the duplicates removed and year deleted process was then carried out by identification based on the inclusion criteria. Subsequently, articles that passed the identification stage were screened for title, abstract, and keywords to determine which were eligible. At the eligible to include stage, the articles were studied thoroughly to determine whether they fit the research objectives. Suitable articles were then organized into a table with information about the author's name, year of publication, title, research design, results, and conclusions. The results of the analysis and selection of the final study showed that the selected articles were Google Scholar (4 articles), Crossref (5 articles), OpenAlex (5 articles), and Scopus (3 articles).

RESULTS

Bibliographic analysis related to research on the implementation of advanced technology in waqf management reveals various main themes and topics that are the focus of this research. The largest and most central node is waqf, which shows that this topic is the core of the research analyzed. There are two significant branches of waqf: blockchain and cash waqf.



Sources: Processed by Authors with VOSViewer, 2025

Figure 4. Bibliographic analysis

First, blockchain is a significant branch of the waqf theme, which includes accountability and transparency. This data shows that blockchain is vital to waqf management through accountability and transparency. Furthermore, the cash waqf theme is also a concern. This condition means that many studies focus on the waqf types, including cash and digital waqf. Smaller nodes such as technology, collection, and digitalization show that research also covers technology adoption in effectively collecting waqf funds. Smaller nodes also consist of artificial intelligence and fintech, advanced technologies initiated in modern waqf

management. The connections between various nodes show the interaction between different themes in the research, such as waqf and advanced technology, which are interrelated in the context of waqf management optimization.

Furthermore, 17 articles were found after filtration. The articles that can be used as references in this study are as follows.

Table 3. Selected Research Articles

No.	Author (Year)	Research Purposes	Research Results
1.	Napitupulu et al. (2023)	Fintech and Waqf	• Focus on Fintech's Role in Waqf • Innovative Approaches in Fintech for Waqf • Exploration of Additional Innovative Methods
2.	Hasbulah et al. (2024)	Technology in Cash Waqf	• Analysis of technology adoption in cash waqf • Identification of challenges and opportunities • Recommendations for effective implementation
3.	Awalluddin et al. (2024)	Fourth Industrial Revolution in Waqf	• Examination of Waqf 4.0 transformation • Assessment of digital tools for waqf management • Discussion on readiness and obstacles
4.	Mutmainah et al. (2021)	Blockchain and Online Platforms in Zakat and Waqf	• Comparative analysis of blockchain and online platforms • Evaluation of developmental roles • Insights into modern Islamic philanthropy

5.	Zulkarnaen et al. (2021)	Blockchain for Accountability in Waqf	• Study on blockchain's impact on transparency • Identification of governance challenges • Suggestions for regulatory frameworks
6.	Fachrurrazy et al. (2022)	Blockchain Applications for Waqf	• Exploration of blockchain in the Middle East and Asia • Analysis of sustainability aspects • Highlighting regional implementation differences
7.	Rohim et al. (2022)	Blockchain in Indonesian Waqf	• Review of blockchain adoption in Indonesia • Identification of barriers and facilitators • Policy recommendations for integration
8.	Ismail (2020)	Blockchain and Smart Contracts in Waqf	• Discussion of blockchain and smart contract potentials • Analysis of implementation challenges • Recommendations for future adoption
9.	Agaileh (2024)	Management and Strategy in Waqf Institutions	• Systematic review of management strategies • Identification of best practices • Suggestions for improving effectiveness

10.	Wan Ismail & Abdul Rasool (2021)	Digital-Based Productive Waqf	• Case study on digital waqf in Islamic boarding schools • Analysis of digitalization impact • Recommendations for scaling digital waqf
11.	Bakar et al. (2020)	Digital Transformation in Waqf Management	• Meta-synthesis of digital waqf practices • Identification of transformation drivers • Insights on public engagement strategies
12.	Wildana & Imamia (2022)	Transformation in Waqf Management	• Case study on waqf management transformation • Exploration of opportunities and challenges • Recommendations for sustainable practices
13.	Abdulquadri & Quadri (2025)	Digitalization of Cash Waqf	• Study on philanthropic intentions and digitalization • Analysis of factors influencing digital waqf adoption • Policy implications for increasing participation
14.	Mohaiyadin et al. (2022)	Educational Waqf and Artificial Intelligence	• Investigation of AI programs in educational waqf

			• Proposal for new waqf forms • Assessment of implementation feasibility
15.	Bonang et al. (2024)	Technology Acceptance in Cash Waqf	• Application of the UTAUT model • Analysis of factors affecting technology use • Recommendations for enhancing adoption
16.	Hatimah et al. (2024)	Digital Transactions in Halal Retail and Waqf	• Exploration of digital transaction trends • Analysis of new technological developments • Implications for waqf and halal sectors
17.	Kosmon et al. (2023)	Digital Waqf Management	• Identification of opportunities and challenges • Evaluation of digital waqf models • Recommendations for future research

Source: processed by authors

Analyzing the selected articles in Table 3, the literature emphasizes the importance of technology adoption in waqf management. However, some studies have highlighted the challenges and potential of using technology in waqf management. Several countries worldwide have also implemented blockchain technology, artificial intelligence, and digital platforms in waqf management.

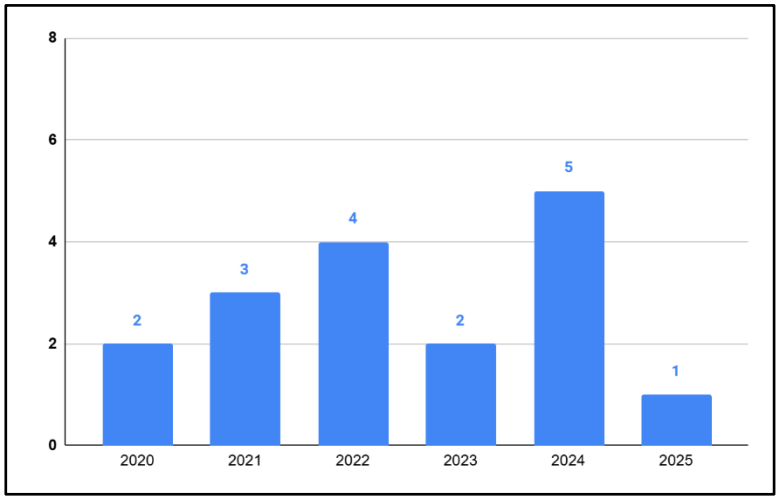


Figure 5. Number of Research by Year

Sources: Processed by Authors, 2025

The articles analyzed in this study were mainly published in 2024, with five articles, followed by four articles each in 2022, 3 in 2021, 2 in 2020 and 2023, and 1 in 2025. Information regarding the distribution of the publication years of the articles used is shown in **Figure 5**.

Table 4. Previous Research Methods

Research Design	Number of Research
Qualitative	15
Quantitative	2
Mixed	0
Total	17

Source: Processed by authors

Based on the methods used, qualitative research dominated the selected articles compared with quantitative research. Qualitative research utilized literature review and descriptive analysis methods. The quantitative research employed descriptive quantitative methods and a structural equation model (SEM).

DISCUSSION

Blockchain and Waqf Accountability

The application of blockchain technology to waqf management presents both opportunities and challenges. The emergence of blockchain in the context of waqf is particularly relevant in the era of digital transformation, as it promises to revolutionize the sector by addressing critical issues, such as transparency, accountability, and efficiency (Mutmainah et al., 2021). The

decentralized and immutable nature of blockchain ensures that all waqf transactions are securely recorded, fostering trust among donors and beneficiaries. As highlighted by Hasbulah et al. (2024), blockchain's cryptographic protection and transparent structure make it a powerful tool for managing waqf funds.

Blockchain can provide significant advantages regarding velocity, transparency, and security (Zulkarnaen et al., 2021). This technology enables real-time monitoring of waqf transactions, making tracking the distribution of funds easier and preventing mismanagement. Despite these advantages, several challenges must be addressed before blockchain can be fully integrated into waqf systems in Indonesia. One such challenge is the lack of regulatory frameworks to govern the use of blockchains in waqf practices (Napitupulu et al., 2023). As blockchain technology is still in its early stages of adoption in the waqf sector, regulators must establish clear guidelines to ensure compliance with Sharia principles and prevent deviations from established norms (Bakar et al., 2020).

Moreover, blockchain can contribute to the development of waqf in the digital age by allowing for more efficient and cost-effective fundraising methods. Blockchain in crowdfunding platforms, such as Finterra's Endowment Chain, provides a transparent system for waqf contributions and rewards (Bakar et al., 2020). This model has been successfully applied in Singapore and Malaysia, where blockchain has been leveraged to enhance waqf fund management and distribution. Similarly, the potential to create digital waqf tokens through blockchain, such as WaqfCoin, further strengthens the adoption of blockchain technology in waqf institutions (Napitupulu et al., 2023).

However, as Wildana and Imamia (2022) pointed out, while the concept of blockchain in waqf management is promising, its implementation remains limited. Blockchain could revolutionize how waqf institutions operate, but it requires a paradigm shift in governance and transparency. For instance, blockchain could help waqf institutions overcome traditional barriers, such as corruption and mismanagement, by providing a transparent and auditable system for all transactions (Kosmon et al., 2023).

To fully realize the potential of blockchain in waqf, it is crucial for stakeholders to work together to build regulatory clarity, enhance the capacity of waqf managers, and raise public awareness of the benefits of digital waqf (Zulkarnaen et al., 2021). Additionally, ongoing research and collaboration between experts from various fields, including regulators,

blockchain developers, and waqf institutions, are necessary to overcome existing barriers and ensure successful integration of blockchain into waqf management (Mutmainah et al., 2021; Napitupulu et al., 2023).

In conclusion, although blockchain implementation in waqf management offers immense potential for increasing transparency, accountability, and efficiency, significant challenges remain. By addressing regulatory gaps, enhancing data security, and improving stakeholder education, blockchains can play a transformative role in the development of waqf in the digital age (Hasbulah et al., 2024; Hamid & Alemu, 2023). The future of waqf management, driven by blockchain technology, promises a more transparent and accountable system to benefit donors and beneficiaries.

AI and Waqf Management

Artificial Intelligence (AI) has become one of the most influential technologies in the 21st century (Akhter et al., 2024). AI is defined as the ability of machines to perform cognitive functions usually associated with the human mind, such as perception, reasoning, learning, interaction with the environment, problem solving, decision-making, and creativity (Entezari et al., 2023). The advantages of AI in big data analysis, efficient information gathering, and rapid decision-making processes have led to its relevance in various sectors, including waqf management.

According to Awalluddin et al. (2024), AI can be utilized to create more accurate risk profiles related to waqf initiatives. AI-based data analysis enables a more effective assessment of the risk level of waqf-funded programmes. Ismail et al. (2022) posit that waqf-funded projects frequently encounter delays due to financing challenges and inadequate management competencies, which can result in unanticipated additional expenses, favoring entities with a profit motive. The AI's capacity for meticulous data analysis enables more precise predictions based on prior experiences or projects. It can identify trends, generate forecasts, and help minimize the cost inefficiencies of endowment projects (Awalluddin et al., 2024). Thus, using AI can potentially optimize the efficiency of fund allocation and promptly complete projects.

Additionally, AI can improve the management efficiency of waqf institutions. AI-based digital technologies such as chatbots enable the automation of administrative tasks and reduce manual processes. Waqf institutions can use data processed by AI to design, organize, and implement

more effective funding strategies (Awalluddin et al., 2024). These technologies also help institutions adapt to environmental changes such as changes in donor behavior, legal issues, productive asset management, and project innovation.

Digital Platforms and Waqf Accessibility

The digital platform performs multiple functions in the waqf optimization. Various digital platforms facilitate social connections to encourage donations, especially waqf (Kosmon et al., 2023). Using technology via online digital platforms can improve accessibility for the general community, allowing equitable participation in implementing cash waqfs (Hasbulah et al., 2024).

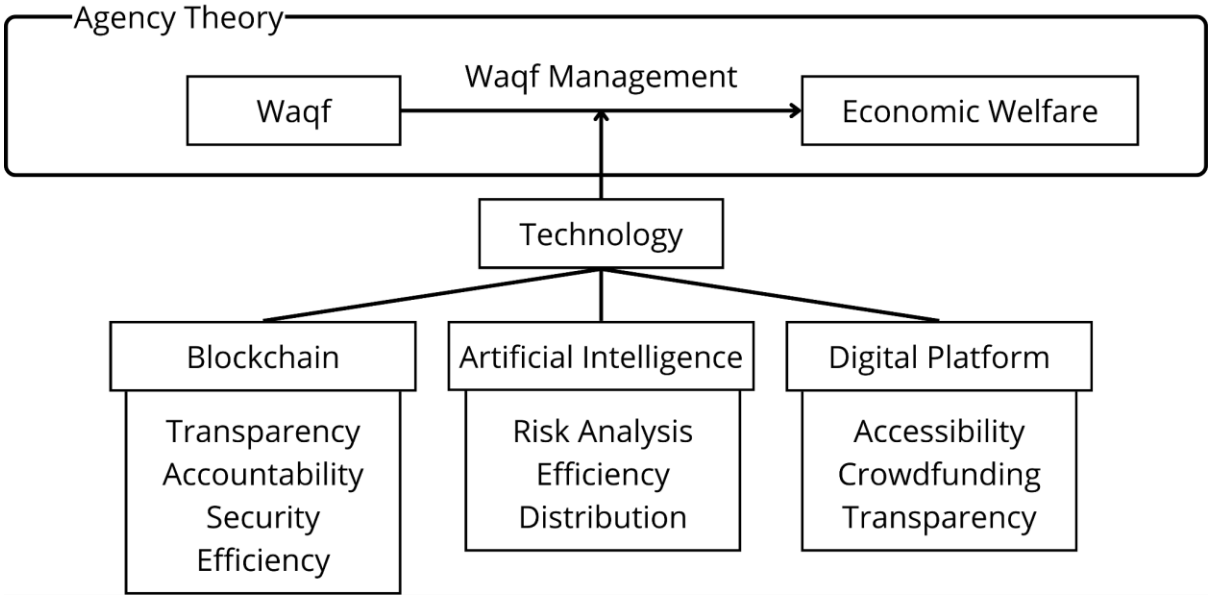
Social media is the most extensively utilized digital channel among the Indonesian population. Due to its extensive usage, social media has emerged as a highly successful platform for waqf campaigning in the community (Rohim et al., 2022). Video marketing is among the most efficacious media for publicizing waqf (Rohim et al., 2022). Media marketing can be a powerful catalyst for engaging the Muslim community in financial waqf initiatives and enhancing awareness and participation in cash waqf (Hasbulah et al., 2024).

Digital platforms can enhance the waqf user experience. Digital systems and mobile applications have been created to enhance waqf monies' collection, management, and distribution (Abdulquadri & Quadri, 2025). Donors can effortlessly contribute to Waqf funds via online platforms, monitor the effects of their donations, and receive updates on the utilization of their contributions. Furthermore, online public disclosure of waqf fund finances may be the most efficient method for reporting funds (Napitupulu et al., 2023). Digital transformation facilitates direct communication with donors via digital channels, including chatbots, social media, and email, enhancing donor involvement and satisfaction (Hatimah et al., 2024).

Furthermore, as advancements in Augmented Reality (AR) and Virtual Reality (VR) have gained prominence, these technologies can be integrated into Waqf practice. By applying this notion to the management of waqf funds, the operational team can develop the waqf project concept via augmented reality or virtual reality and present it to prospective stakeholders (Awalluddin et al., 2024). This approach fosters effective conservation and provides exceptional customer service on the frontline, enhancing productivity and customer happiness.

Finally, digital platforms make payments more ordinary. Crowdfunding models are viable for cash waqf fundraising (Hasbulah et al., 2024). Waqf institutions might augment their initiatives by creating supplementary waqf collection applications and combining them with diverse e-commerce platforms, thereby increasing the total funds amassed (Napitupulu et al., 2023). Waqf payments via electronic transactions are experiencing significant growth (Rohim et al, 2022). Numerous Islamic banks designated Islamic Financial Institutions Recipients of Cash Waqf (LKS-PWU) have developed applications or websites to enable e-payments. Numerous Islamic fintech companies launched waqf crowdfunding systems to enhance waqf contributions.

Technology Adoption in Waqf Management: Opportunities & Challenges



Sources: Processed by Authors, 2025

Figure 6: Technology Adoption in Waqf Management Framework

Implementing blockchains, artificial intelligence, and digital platforms could enhance waqf management. Blockchain technology can enhance waqf management accountability. Furthermore, artificial intelligence technology enhances waqf management through distribution, risk assessment, and improved efficiency. Ultimately, digital networks facilitate broader access to waqf, thereby enhancing the collection efficiency. Implementing this technology can be conceptualized as a remedy for waqf management issues, elucidated through agency theory, thereby facilitating the attainment of economic welfare. Nonetheless, the practical implementation of this technology presents distinct opportunities and obstacles. Referring to previous research journals, some opportunities and challenges must be faced when adopting technology for waqf management.

Table 5. Opportunities and Challenges

Challenges	Source	Opportunities	Source
• Resistance to change in waqf management Implications for future adoption	(Mohaiyadin et al., 2022)	• Transparency in waqf management Enhanced accountability	(Mohaiyadin et al., 2022)
• Limited technical expertise and digital literacy among waqf managers	(Hasbulah et al., 2024)	• Improved efficiency and reduced administrative costs	(Hasbulah et al., 2024)
• Concerns about data security and privacy in digital waqf systems	(Almomani et al., 2024)	• Real-time monitoring and reporting of waqf assets	(Almomani et al., 2024)
• Lack of standardized digital infrastructure	(Bonang et al., 2024)	• Broader accessibility and increased public participation via digital platforms	(Bonang et al., 2024)
• Regulatory uncertainty and compliance issues	(Hatimah et al., 2024)	• Data-driven decision making using AI and analytics	(Hatimah et al., 2024)
• Insufficient capacity building and staff training	(Fachrurrazy et al., 2022)	• Innovative fundraising through digital crowdfunding and fintech	(Fachrurrazy et al., 2022)
• Disparities in technology adoption between large and small waqf institutions	(Hatimah et al., 2024)	• Personalized donor engagement and improved trust	(Hatimah et al., 2024)
• Low public understanding and digital literacy among donors	(Hasbulah et al., 2024)	• Integration with national financial and social systems	(Hasbulah et al., 2024)

• Fragmented waqf data and reporting systems	(Napitupulu et al., 2023)	• Opportunities for regulatory development and best-practice adoption	(Napitupulu et al., 2023)

Source: Fachrurrazy et al (2022); Hasbulah et al (2024); Hatimah et al (2024); Mohaiyadin et al (2022); Napitupulu et al. (2023), and Wan Ismail and Abdul Rasool (2021).

Table 5 shows that adopting technology in waqf management presents opportunities and challenges. The utilization of technologies, such as blockchain and digitalization, offers significant opportunities to enhance transparency, accountability, and public participation in waqf management (Fachrurrazy et al., 2022; Hatimah et al., 2024; Mohaiyadin et al., 2022; Napitupulu et al., 2023). Innovations such as waqf crowdfunding and asset optimization through collaboration with private entities can accelerate asset growth and fundraising (Hasbulah et al., 2024; Napitupulu et al., 2023). However, challenges such as resistance to change, lack of technological infrastructure in remote areas, vulnerability to cybercrime, deficiency of managerial proficiency, and regulatory uncertainty are obstacles that must be overcome to optimize the potential of technology in waqf management (Bonang et al., 2024; Hatimah et al., 2024; Mohaiyadin et al., 2022).

Best Practices of Waqf Digitalization

The digitalization of waqf management has been carried out in various countries worldwide. Although it has its opportunities and challenges, the digitalization that has been carried out has succeeded in transforming waqf practices to be more optimal.

Table 6. Adoption of Technology in Waqf Management: Best Practice

No	Country	Technology	Implementation
1	Indonesia	Blockchain	Applying waqf blockchain technology in Indonesia presents considerable potential for enhancement, particularly given that over 80% of the population is Muslim. It is essential to confront the existing lack of laws from waqf institutions regarding the application of blockchain technology in waqf activities in Indonesia.
2	Singapore	Blockchain	Singapore utilizes blockchain technology to create "smart contracts" associated with unique waqf initiatives. Blockchain technology's application in crowdfunding has created new opportunities for financial inclusion, fundraising, and maybe Islamic banking.
3	Oman	Blockchain	The first blockchain-based platform for Sharia-compliant investments and Waqf charity crowdfunding was established in Oman in 2019 for the Gulf area. This organization aims to foster innovation and improve its offerings by safely leveraging leading distributed ledger technology.
4	Malaysia	Blockchain	The implementation of blockchain technology in zakat is currently prevalent in Malaysia, although its application in waqf has only recently commenced. Malaysia seeks to utilize blockchain technology in zakat management to ensure security, transparency, and traceability of each zakat transaction, encompassing fund distribution and collection operations. The primary objective of the proposed cash waqf blockchain platform concept is to assist madrasahs in identifying a sustainable solution to their financial challenges.
		Digital Platforms	Bank Muamalat Malaysia Berhad (BMMB) has successfully boosted its cash waqf collection. Utilizing technology through online digital platforms can enhance the accessibility of the general population, enabling them to actively participate in implementing cash waqf equitably.
		Multi-sensor technologies and Geographic Information Systems (GIS)	Utilizing multi-sensor technologies and Geographic Information Systems (GIS) in Malaysia's waqf administration represents a progressive and visionary innovation. This method optimizes operations and establishes the

			foundation for more effective and evidence-based management of waqf holdings.
5	Thailand	Crowdfunding	Crowdfunding platforms propelled by technology could be a predominant avenue for revitalizing waqf and sustaining philanthropic endeavors.

Source: Hasbulah et al. (2024), Napitupulu et al. (2023), Kosmon et al. (2023)

CONCLUSION

The primary objective of this study is to systematically review and synthesize the existing literature on the implementation of advanced technology in waqf management. This study identifies and maps the main themes that have emerged in recent research on technology in waqf management by conducting a comprehensive literature review. Based on the literature, the key themes include adopting blockchain technology to enhance transparency and accountability, using artificial intelligence to improve efficiency and risk management, and the application of digital platforms to increase accessibility and public participation. The literature also highlights opportunities, such as increased efficiency, transparency, innovative fundraising, and challenges, including regulatory uncertainty, resistance to change, and limited technological infrastructure. Given the rapid development of digital technology and its growing relevance in waqf management, future research should focus on empirical studies that measure the actual impact of technology adoption on waqf performance and stakeholder trust, especially in diverse regional contexts. For stakeholders such as the Indonesian Waqf Board (BWI), regulators, and waqf institutions, it is recommended to prioritize capacity building, develop clear regulatory frameworks, and foster collaboration with technology providers to accelerate digital transformation in waqf management. These steps will help ensure that technology adoption improves operational efficiency and strengthens public trust and accountability in waqf institutions.

REFERENCES

Abdulquadri, A. O., & Quadri, Y. O. (2025). Zakat and Waqf: Developmental Role of Modern Approaches to Islamic Philanthropy and Endowments. In *International Journal of Sukuk and Waqf Research* (Vol. 6, Issue 1, pp. 1–11). Sukuk and Waqf Society, USA. https://doi.org/10.46281/ijswr.v6i1.2268

Ahmadi, A. Z., Afifah, A. M., Qarar, W., & Atiqi, H. (2024). Understanding Islamic Economics as an Islamic Moral Economy. *COMSERVA : Jurnal Penelitian Dan Pengabdian Masyarakat*, *4*(5), 1080–1088. https://doi.org/10.59141/COMSERVA.V4I5.2172

Akhter, S., Ahmad, M. R., Chibb, M., Zai, A. F., & Yaqoob, M. (2024). Artificial intelligence in the 21st Century: Opportunities, Risks and Ethical Imperatives. *Educational Administration: Theory and Practice*. https://doi.org/10.53555/KUEY.V30I5.3125

Alam, M. M., Shahriar, S. M., Said, J., & Monzur-E-Elahi, M. (2018). Waqf as a Tool for Rendering Social Welfare Services in the Social Entrepreneurship Context. *Global Journal Al-Thaqafah*, *2018*, 87–98. https://doi.org/10.7187/GJATSI2018-06

Almomani, M. A.-A., AbuAlhoul, M. A., Alqudah, M. T. S., & Al-Khalidi, I. K. S. (2024). Exploring Digital Waqf Management: Opportunities and Challenges. *International Journal of Religion*, *5*(12), 20–30. https://doi.org/10.61707/AX7VD794

Anas, A., Syakirunni'am, L., Sadali, A., Surur, A. T., & Adinugraha, H. H. (2024). Welfare in Islamic Economics Perspective: Literature Review. *Affective Development Journal*, *1*(1), 21–32. https://doi.org/10.32585/AFFECTIVE.V1I1.24

Ascarya, A., Hosen, M. N., & Rahmawati, S. (2022). Designing simple productive waqf models for Indonesia. *International Journal of Ethics and Systems*, *38*(3), 380–401. https://doi.org/10.1108/IJOES-07-2020-0101

Asra, A., & Savitri, A. (2023). Optimization of Productive Waqf for Improving Community Economic Welfare. *Jurnal Akuntansi Muhammadiyah*, *13*(2), 35–45. https://doi.org/10.37598/JAM.V13I2.1895

Awalluddin, M. A., Maznorbalia, A. S., & Arshad, M. R. (2024). Revolutionizing Waqf Management: Harnessing the Fourth Industrial Revolution for Waqf 4.0 Transformation. *International Journal of Research and Innovation in Social Science*, *VIII*, 2270–2283. https://doi.org/10.47772/ijriss.2024.8080171

Aysan, A. F., & Al-Saudi, H. A. (2023). Blockchain technology and the potential of waqf (Islamic endowment) sector revival. *Journal of AI, Robotics & Workplace Automation*, *2*(4), 317–326. https://ideas.repec.org/a/aza/airwa0/y2023v2i4p317-326.html

Bakar, M. A., Ahmad, S., Salleh, A. D., & Salleh, M. F. M. (2020). The Implementation of Good Governance in Sustaining Waqf Fund: An Experience of Indonesian Waqf Board (BWI). *Advanced International Journal of Banking, Accounting and Finance (AIJBAF)*, *2*(2), 46–65. https://gaexcellence.com/aijbaf/article/view/937

Belahouaoui, R., & Attak, E. H. (2024). Digital taxation, artificial intelligence and Tax Administration 3.0: improving tax compliance behavior – a systematic literature review using textometry (2016–2023). *Accounting Research Journal*, *37*(2), 172–191. https://doi.org/10.1108/ARJ-12-2023-0372

Blau, P. M. (2017). *Exchange and power in social life*. Taylor and Francis. https://doi.org/10.4324/9780203792643/EXCHANGE-POWER-SOCIAL-LIFE-PETER-BLAU

Bonang, D., Ismail, S., & Sukmana, R. (2024). Empowering The Future of Cash Waqf Through Digitalisation: An Insight Into The Philanthropic Intention of The Indonesian Muslim Community. *ISRA International Journal of Islamic Finance*, *16*(S1), 94–117.

https://doi.org/10.55188/ijif.v16iS1.586
Entezari, A., Aslani, A., Zahedi, R., & Noorollahi, Y. (2023). Artificial intelligence and machine learning in energy systems: A bibliographic perspective. *Energy Strategy Reviews*, *45*, 101017. https://doi.org/10.1016/J.ESR.2022.101017
Fachrurrazy, M., Siliwadi, D. N., & Herlina, N. (2022). Potential for Digital-Based Productive Waqf Development (Case Study of Datuk Sulaiman ModernIslamic Boarding School and Muhammadiyah Boarding School) in Palopo City, South of Celebes. *AL-FALAH : Journal of Islamic Economics*, *7*(1), 141. https://doi.org/10.29240/alfalah.v7i1.3840
Fikriyah, K., & Alam, W. Y. (2021). Perkembangan Keuangan Syariah dalam Realitas Politik di Indonesia. *Jurnal Ilmiah Ekonomi Islam*, *7*(3), 1594–1601. https://doi.org/10.29040/JIEI.V7I3.2687
Haneef, M. A., Pramanik, A. H., Mohammed, M. O., Bin Amin, M. F., & Muhammad, A. D. (2015). Integration of waqf-Islamic microfinance model for poverty reduction: The case of Bangladesh. *International Journal of Islamic and Middle Eastern Finance and Management*, *8*(2), 246–270. https://doi.org/10.1108/IMEFM-03-2014-0029/FULL/XML
Hasbulah, M. H., Shuib, M. S., Asni, F., Ahmad, K. A., Hashom, H., Mustafa, W. A., & Syamsuri. (2024). Implementation of Technology in Cash Waqf: A Structured Literature Review. *Journal of Advanced Research in Applied Sciences and Engineering Technology*, 89–103. https://doi.org/10.37934/araset.54.2.89103
Hatimah, H., Sukoharsono, E. G., Djamhuri, A., & Adib, N. (2024). Exploring Waqf Management Transformation: Opportunities and Challenges (case study in Ismuhu Yahya Foundation Pontianak). *Journal of Ecohumanism*, *3*(8), 58–68. https://doi.org/10.62754/joe.v3i8.4712
Herindar, E., & Rusydiana, A. S. (2022). The Measuring Efficiency of Waqf Fund. *Al-Awqaf: Jurnal Wakaf Dan Ekonomi Islam*, *14*(2), 107–122. https://doi.org/10.47411/AL-AWQAF.VOL14ISS2.149
Ibrahim, D., Ibrahim, H., & Masron, T. A. (2021). Waqf efficiency and its transformative technology in improving the waqf system in Malaysia. In *Artificial Intelligence and Islamic Finance*. Routledge. https://doi.org/10.4324/9781003171638-3
Ismail, W. M. W. (2020). Significance of Technology to Cash Waqf Collection: Application of Unified Theory Acceptance and Use of Technology (UTAUT). *International Journal of Academic Research in Business and Social Sciences*, *11*(1). https://doi.org/10.6007/ijarbss/v11-i1/8994
Janom, N., Izham, M. Z., Mansor, F. S., Aris, S. R. S., Bashah, N. S. K., & Arshad, N. H. (2019). Review on success factors of waqf information management system in Malaysia. *Indonesian Journal of Electrical Engineering and Computer Science*, *16*(1), 412–419. https://doi.org/10.11591/IJEECS.V16.I1.PP412-419
Kalkavan, H., Dinçer, H., & Yüksel, S. (2021). Analysis of Islamic moral principles for sustainable economic development in developing society. *International Journal of Islamic and Middle Eastern Finance and Management*, *14*(5), 982–999. https://doi.org/10.1108/IMEFM-07-2019-0271/FULL/XML
Kosmon, B., Ibrahim, S. S., Sharip, S. M., Rahman, A. A., & Abidin. Nurul Fadly. (2023). Potential Blockchain Applications in Waqf for Sustainability: A Middle East and Asia Perspective. *Islamiyyat*, *45*(2), 47–64. https://doi.org/10.17576/islamiyyat-2023-4502-04
Latifah, N. A., & Jamal, M. (2019). Analisis Pelaksanaan Wakaf di Kuwait. *ZISWAF : Jurnal Zakat Dan Wakaf*, *6*(1), 1–18. https://doi.org/10.21043/ZISWAF.V1I1.5607
Mohaiyadin, N. M. H., Aman, A., Palil, M. R., & Said, S. M. (2022). Addressing Accountability and Transparency Challenges in Waqf Management Using Blockchain

Technology. *Journal of Islamic Monetary Economics and Finance*, *8*(Special Issue), 53–80. https://doi.org/10.21098/JIMF.V8I0.1413

Napitupulu, R., Sukmana, R., Ali, S., Ahmad, H., & Padangsidimpuan, A. (2023). A Review of Fintech and Waqf Intersections in Academic Debates. *ZISWAF: Jurnal Zakat Dan Wakaf*, *10*(1), 44–64.

Nazir, P., Studi, W. :, Wakaf, M., Di, P., Wakaf, L., & Munawar, W. (2021). Profesionalitas Nazir Wakaf: Studi Manajemen Wakaf Produktif di Lembaga Wakaf Daarut Tauhiid. *Journal of Islamic Economics and Finance Studies*, *2*(1), 17–33. https://doi.org/10.47700/JIEFES.V2I1.2731

Ningsih, F. M., Gilar Yulianto, J., Muarrifah, S., Islam, U., Saifuddin, N. K. H., & Purwokerto, Z. (2023). Accountability and Transparency of Wakf in the Management of Social Funds and Empowerment of the People. *Munazzama: Journal of Islamic Management and Pilgrimage*, *3*(2), 109–122. https://doi.org/10.21580/MZ.V3I2.18582

Nugroho, A. J., Doktoralina, L., & Ali, C. M. (2023). Contemporary Issues of Waqf in Indonesia. BILTURK. *The Journal of Economics and Related Studies*, *5*(3), 187–198. https://doi.org/10.47103/bilturk.1260151

Nurfattah, A., & Bachtiar, R. (2023). Optimizing Waqf Management For Social Impact. *Islamic Business and Management Journal*, *6*(2), 120–131. https://doi.org/10.21111/IBMJ.V6I2.11376

Pakpahan, Z. A., Abstrak, K. K., Kajian, S., & Serentak, S. P. (2019). Pelaksanaan Pemilihan Umum Serentak Pada Pemilihan Presiden Dan Wakil Presiden, Anggota DPR, Anggota DPD, Dan Anggota DPRD Sebagai Implementasi Pelaksanaan Sistem Demokrasi Pancasila (Suatu Kajian Terhadap Format Sistem Pemilu Indonesia Ke Depan Yang Tepa. *Jurnal Sosial Ekonomi Dan Humaniora*, *5*(2), 161–185.

Purbasari, H., Dwi, A., Bawono, B., Handika, R., & Triyono, T. (2023). Bibliometric Waqf Management in Indonesia. *Riset Akuntansi Dan Keuangan Indonesia*, *8*(2), 195–201. https://doi.org/10.23917/REAKSI.V8I2.3054

Putri, F. I. (2022). Performance of Waqf Fund Efficiency Managed by Zakat Institutions in Indonesia. *International Journal of Waqf*, *2*(1). https://doi.org/10.58968/IJF.V2I1.149

Qurrata, V. A., Yusida, E., Hussain, N. E., Merlinda, S., Purnamasari, V., & Seprillina, L. (2021). Effectiveness of Cash Waqf Management in Improving Community Welfare: Challenges and Opportunities. *Review of Integrative Business and Economics Research*, *10*(1), 342–359.

Ramdani, R., Tri Ratnasari, R., & Mawardi, I. (2022). Management And Strategy In Waqf Institution: A Systematic Literature Review. *Perisai : Islamic Banking and Finance Journal*, *6*(2), 135–145. https://doi.org/10.21070/PERISAI.V6I2.1614

Rohim, A. N., Priyatno, P. D., & Sari, L. P. (2022). Transformation of Waqf Management in The Digital Era: A Meta Synthesis Study. *AL-FALAH : Journal of Islamic Economics*, *7*(2), 209. https://doi.org/10.29240/alfalah.v7i2.5421

Sakina, W., Sanusi, A., Fairuz, M., Salleh, M., & Yaacob, S. E. (2023). The Management and Implementation of Zurri Waqf in Malaysian Waqf Instituition (Pengurusan dan Pelaksanaan Wakaf Zurri dalam Institusi Wakaf Malaysia). *Jurnal Pengurusan*, *67*, 43–54. https://doi.org/10.17576/pengurusan-2022-67-04

Sudirman, & Ramadhita. (2020). Kesadaran Hukum Masyarakat dalam Akselerasi Sertifikasi Tanah Wakaf di Kota Malang. *De Jure: Jurnal Hukum Dan Syar'iah*, *12*(1), 35–50. https://doi.org/10.18860/J-FSH.V12I1.9087

Supanto, F. (2019). *Manajemen Strategi Organisasi Publik Dan Privat*. Empatdua Media Intrans Publishing.

Syaifullah, H., & Idrus, A. (2019). Inovasi Pelayanan Wakaf Produktif Era Digital: Studi Kasus Di Yayasan Wakaf Bani Umar 2018. *ZISWAF : Jurnal Zakat Dan Wakaf*, *6*(2),

114. https://doi.org/10.21043/ZISWAF.V6I2.6415
Ulfa, N. N., & Mustafa, M. I. (2023). Finding Solutions for Productive Waqf Management in Indonesia. *Fara'id and Wealth Management*, *3*(2), 1–12. http://journals.smartinsight.id/index.php/FWM
Wan Ismail, W. M., & Abdul Rasool, M. S. Bin. (2021). Roles of Technology Usage in Cash Waqf Contribution: Factors to Enhance Collection of Cash Waqf in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *11*(8). https://doi.org/10.6007/ijarbss/v11-i8/10803
Wildana, M. D. A., & Imamia, T. L. (2022). Waqf in the 21st Century: The Implementation of Blockchain and Smart Contract Technology. *Journal of International Conference Proceedings*, *5*(1). https://doi.org/10.32535/jicp.v5i1.1774
Zulkarnaen, D., Mukhlisin, M., & Eko Pramono, S. (2021). Can Blockchain Technology Improve Accountability and Transparency of Cash Waqf in Indonesia? *Journal of Economic Impact*, *3*(3), 158–166. https://doi.org/10.52223/jei3032105