



## A Recent Systematic Review of Zakat Digitalization: Efficiency and Challenges

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### ABSTRACT

The digitalization of zakat, an integral concept in Islamic finance and social welfare, is rapidly gaining momentum worldwide as it has a significant impact, especially on the efficiency of the distribution and collection of zakat. This undoubtedly brings significant benefits to those in need, especially the asnaf. However, the use of technology in zakat also poses substantial challenges, particularly regarding concerns about insecure data security. This study aims to systematically examine and analyse current research on the efficiency and challenges of digital technology in zakat. The study reviews relevant literature indexed in the Scopus and Mendeley databases. As a result, two research themes were identified after a comprehensive analysis: the efficiency of digital technology on zakat and the challenges of digital technology on zakat. The findings of this study can serve as inspiration for other researchers, providing a solid foundation for further exploration and improvement of digital technology on zakat.

#### Keywords:

Zakat; digitalization; efficiency; challenges; charitable giving; islamic finance

### 1. Introduction

Zakat, an integral component of Islamic law known as one of the Five Pillars of Islam, holds significant religious importance for Muslims as it encompasses the fundamental values of benevolence, equitable treatment, and empathy [1]. Throughout history, this particular custom has played a crucial role in the equitable distribution of wealth, allowing adherents of the Islamic faith to accomplish their religious duties while simultaneously attending to the welfare of economically disadvantaged individuals. The emergence of the digital era has brought about significant changes, fundamentally altered the domain of zakat and brought novel digital tools and platforms [2]. The process of digitizing zakat, which was previously a practice deeply rooted in community and custom,

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<https://doi.org/10.37934/araset.53.2.130146>

has now become a powerful catalyst for democratizing philanthropic contributions. Moreover, the utilization of technology has provided Muslims across the globe with new opportunities to efficiently calculate, actively donate to, and actively engage with the practice of zakat. The utilization of digital platforms, such as zakat calculators, mobile applications, blockchain-based systems, and crowdfunding efforts, has significantly transformed the effectiveness and influence of zakat practices [3].

Given the significant digital transformation that has taken place, it is imperative to undertake a systematic study that thoroughly evaluates the effectiveness and obstacles associated with the digitalization of zakat. This systematic review aims to explore the extensive body of literature, thoroughly analysing the various facets of the digital transformation of zakat. The primary objective of this comprehensive investigation is to offer a nuanced comprehension of the impact of technology on the implementation of zakat. This analysis will focus on two key aspects: the enhancement of efficiency and the associated issues arising from technological advancements [4]. The concept of efficiency is a prominent focal point within this review. This study examines the various methods through which digital tools and platforms have enhanced the efficiency of zakat collecting, distribution, and management processes. Moreover, this study examines these innovations' impact on enhancing transparency, accessibility, and accountability within the zakat ecosystem. Furthermore, this study investigates the effects of data analytics and Artificial Intelligence (AI) on optimizing zakat allocation to enhance the overall welfare results of this philanthropic initiative [5].

The advent of digitalization has undeniably yielded a multitude of advantages, yet it has also presented a distinct array of obstacles and ethical deliberations. Ensuring the protection of donors' personal and financial information is a matter of utmost importance. Furthermore, it is imperative to thoroughly analyse transparency and accountability concerns due to the absence of standardized standards for digital zakat platforms [6]. In summary, this systematic analysis explores the digital transformation of zakat, examining the efficiency gains and problems associated with this paradigm shift. This study attempts to enhance comprehension of the dynamic realm of zakat digitization and its wider societal consequences by amalgamating current research discoveries and examining their implications for policy and practice.

Despite the increasing amount of literature on the digitalization of zakat, there is still a significant gap in understanding the overall impact of digital technology on the efficiency and challenges of zakat management. Existing studies have primarily focused on specific aspects of zakat digitalization, such as the adoption of digital platforms, the role of fintech in zakat management, or the socio-economic implications of digital zakat. However, there is a lack of systematic reviews that consolidate these findings to provide a comprehensive overview of the field. This study aims to address this gap by conducting a systematic examination and analysis of current research on the efficiency and challenges of digital technology in zakat. The significance of this study lies in its ability to offer a comprehensive synthesis of existing research, identify emerging trends, and highlight areas for future research. In doing so, it aims to provide valuable insights for policymakers, zakat institutions, and researchers to enhance the effectiveness and sustainability of zakat digitalization initiatives.

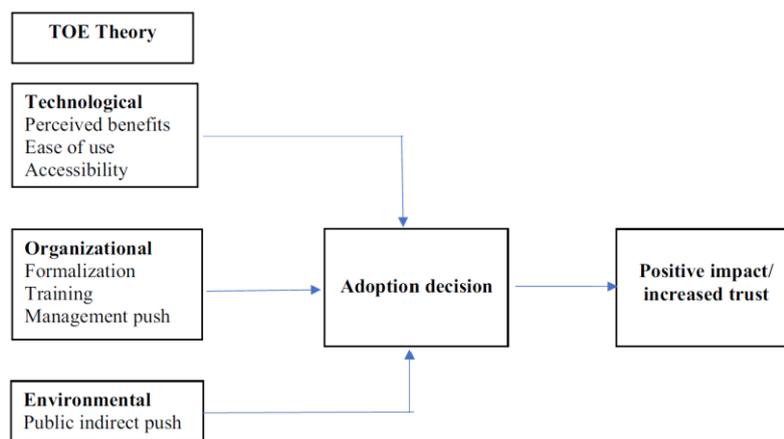
## **2. Literature Review**

The rapid advancement of digital technology is revolutionizing various facets of the global financial landscape, and the realm of Islamic finance and social welfare is no exception. This critical literature review assesses and synthesizes recent studies related to the digitalization of zakat, focusing on its efficiency and the associated challenges. Note that the selected articles span a spectrum of aspects related to zakat digitalization, ranging from adoption factors to its

socioeconomic impact. Each study contributes valuable insights into the evolving landscape of Islamic finance and social welfare.

### 2.1 Adoption Factors and Perceived Benefits

Several studies delve into the factors influencing the adoption of digital zakat platforms. Kasri and Sosianti [8] integrate the Unified Theory of Acceptance and Use of Technology (UTAUT) model to examine adoption factors among Muslims in Indonesia. Their findings highlight the significance of performance expectancy, trust in zakat institutions, social influence, zakat literacy, and facilitating conditions in driving the intention to make online zakat payments. The study underscores the importance of building trust and educational efforts to foster digital zakat acceptance. In a related context, Abdullah *et al.*, [7] identify perceived benefits, ease of use, accessibility, formalization, training, management support, and indirect public encouragement as critical determinants. These factors operate within the contexts of technology, organization, and the environment, following the Technology, Organization, and Environment (TOE) framework, emphasizing the multifaceted nature of digital zakat adoption. The proposed framework for zakat Institutions' Social Media Adoption in Malaysia is displayed as the following in Figure 1.



**Fig. 1.** Theoretical framework (TOE) for zakat institutions' social media adoption in Malaysia [7]

Meanwhile, Muflih [9] explores the use of mobile zakat services among Muzakki (Islamic taxpayers), incorporating the Technology Acceptance Model (TAM), perceived trust, and religiosity. The study reveals that perceived ease and religiosity positively influence the adoption of mobile zakat services, underscoring user perception as a critical factor. On the other hand, Musa *et al.*, [10] examine the implementation of a digital zakat management information system in NTB and Aceh, finding that system effectiveness depends on factors such as IT resources and user interest. Additionally, Ghofur & Utami [11] emphasize the role of the younger generation in collecting zakat in the digital society 5.0 era and its contribution to achieving Sustainable Development Goals (SDGs).

### 2.2 Socioeconomic Impact and Financial Inclusion

Tajudin *et al.*, [12] explore how fintech startups in Finland and Malaysia facilitate inclusive finance through e-market/payment and Peer-to-Peer (P2P) financing. The study highlights the potential of Islamic fintech, driven by zakat and altruistic principles, in addressing global financial inclusion

challenges. It suggests that open innovation can enhance social finance, making it more sustainable and impactful.

Additionally, Ascary [13] offers an innovative perspective on microfinance technology models for Islamic Microfinance Institutions (IMFIs), particularly Baitul Maal wat Tamwil (BMT) in Indonesia. The research underscores the importance of transitioning from offline to online approaches, suggesting that commercial financing for micro and small enterprises can be conducted offline while promoting online social zakat and waqf fundraising. Note that such hybrid models can help bridge the financing gap for underserved communities. Ascarya and Sakti [14] also propose a microfinance technology model for IMFIs, emphasizing BMTs in Indonesia to optimize social and commercial microfinance.

### 2.3 Technology Integration and Transparency

Alternatively, Khairi *et al.*, [15] propose a blockchain-based zakat collection system to enhance transparency and efficiency. Using smart contracts, the system aims to eradicate poverty and promote shared prosperity while revolutionizing zakat management. The study highlights the potential of blockchain technology in ensuring transaction integrity. Furthermore, Ahmad & Yahaya [16] investigate the impact factors affecting the use of mobile banking for efficient zakat payments in Malaysia, employing the UTAUT2 model. They emphasize constructs such as religiosity, attitude, and trust. Structural Equation Modelling (SEM) has been utilized, with findings highlighting the potential influence of these factors in encouraging asnaf to adopt fintech solutions for efficient zakat distribution. Meanwhile, Alam *et al.*, [17] compared the perceptions of Generation Z Muslims in Indonesia and Malaysia regarding digital payments for Zakat, Infaq, and Sadaqah (ZIS), emphasizing data security and user satisfaction. Note that reputation is an inseparable part of fintech. Many indicators aid a fintech in obtaining an excellent or lousy predicate. However, what is certain is that it must have credibility in management and service to satisfy users. Following are the findings on the importance of checking the reputation of fintech according to participants in Indonesia and Malaysia to pay ZIS (see Table 1).

**Table 1**  
 The importance of Fintech reputation [17]

Category	Indonesian Participants	Malaysian Participants
Importance of credibility	Professional Trust (YAF, NW, FKH, WAW) Financial Authority Permission (CPS, APB)  A high rating and many users (DGK, AR, LAAH)	Reliable No bad news (N, NA) Report on the distribution of funds (AZ, MF)
Not importance of credibility	Ordinary There are always disadvantages and advantages (YH)	Not the main goal The funds have been adequately disbursed (SA, A, N1) Very convenient (SZ, A1, NDI)

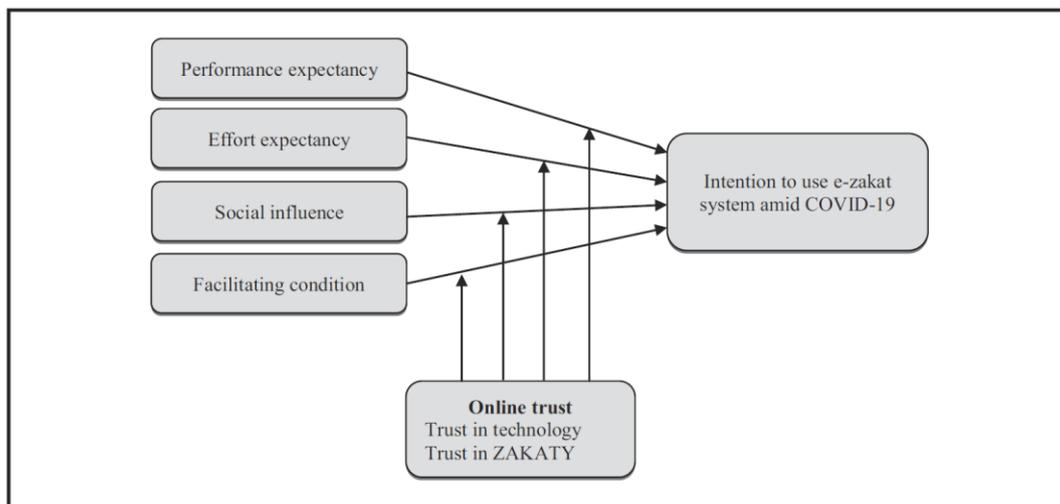
### 2.4 Emerging Challenges and Solutions

As digital zakat continues to evolve, new challenges arise. Oktavendi and Mu'ammal [18] investigate the factors influencing Generation Z's willingness to use digital zakat payments. They determine that readiness to adopt, trust, and personal innovation play significant roles, while perceived risks have minimal effects. The research highlights the need to consider the preferences and perceptions of the younger generation in shaping digital zakat platforms. Other than that, Rosele

*et al.*, [19] assess the status of digital zakat management systems in Malaysia. They reveal data collection and transparency gaps within zakat institutions, calling for improved digitalization efforts. Hence, the study outlines the potential of digitalization to enhance zakat management efficiency.

### 2.5 Responding to the COVID-19 Pandemic

The COVID-19 pandemic has underscored the importance of digital zakat systems. Piliyanti *et al.*, [20] showcase how Islamic philanthropy organizations in Indonesia adapted to the pandemic by embracing technology. Their experience demonstrates how technology can facilitate fundraising, service delivery, and coordination during crises, highlighting the resilience of digital zakat systems. On the other hand, Bin-Nashwan [21] focuses on the acceptance of the zakat e-service in Saudi Arabia, using an extended UTAUT model, as displayed in Figure 2. The study reveals the suitability of the UTAUT model in predicting zakat payers' intentions to adopt e-zakat services, emphasizing the role of online trust during the COVID-19 pandemic.



**Fig. 2.** Research model [20]

The literature on zakat digitalization reveals its potential to revolutionize Islamic finance and social welfare. Adoption factors, socioeconomic impact, and innovative models discussed in these studies contribute to a comprehensive understanding of the efficiency and challenges of digital zakat. As digitalization continues to shape the zakat management landscape, addressing these challenges and optimizing benefits will be crucial to promoting financial inclusion and social development in the Islamic world.

## 3. Material and Methods

### 3.1 Identification

The method of selecting suitable articles for this study involves three primary steps in the systematic review process. The first stage involves the identification of keywords and the exploration of associated, analogous phrases via the use of resources such as thesauri, dictionaries, encyclopaedias, and prior research. Consequently, search queries were formulated on the Scopus and Mendeley databases (see to Table 1) subsequent to the determination of appropriate keywords. During the first stage of the systematic review procedure, a total of 107 articles were successfully retrieved from the selected databases.

**Table 3**

The search strings

Scopus	TITLE-ABS-KEY (zakat AND (digital OR technology OR digitalization)) AND PUBYEAR > 2018 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO ( LANGUAGE, "English")) AND (LIMIT-TO (PUBSTAGE, "final"))
Mendeley	zakat AND digital OR technology OR digitalization

### 3.2 Screening

In the preliminary round of screening, redundant articles were excluded. In the first phase of the research, a total of 54 publications were excluded, while in the subsequent stage, 53 papers underwent screening based on the academics' predetermined criteria for inclusion and exclusion. The primary criteria used was the utilisation of literature in the form of research papers, which serves as a significant source of practical guidance. Additionally, this resource encompasses a range of scholarly materials such as systematic reviews, reviews, meta-synthesis, meta-analyses, monographs, book series, chapters, and conference proceedings that have been omitted from the most recent body of study. Additionally, the scope of the review was restricted to articles written in the English language. It is crucial to consider that the aforementioned strategy was established over the preceding biennial period spanning from 2019 to 2023. To fulfil the analytic purpose, only research conducted inside the territorial boundaries of Malaysia was selected. Therefore, a total of 25 articles were excluded based on specific criteria.

### 3.3 Eligibility

In the third phase, referred to as the eligibility assessment, a compilation of 53 articles has been assembled. The titles and main content of all papers were carefully examined to verify that they met the inclusion criteria and aligned with the research objectives of the current study. Hence, a total of 26 publications were excluded from the analysis due to their lack of relevance to the subject, insignificant titles, and abstracts that did not align with the study's objectives. A total of 25 papers are now accessible for examination, as shown in Table 4.

**Table 4**

The selection criterion is searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2019 – 2023	< 2019
Literature type	Journal (Article)	Conference, Book, Review
Publication Stage	Final	In Press

### 3.4 Data Abstraction and Analysis

This study used an integrative analysis as a way of evaluation to investigate and combine several research approaches, including quantitative, qualitative, and mixed methodologies. The objective of the scholarly investigation was to ascertain pertinent subjects and subcategories. The data collection phase served as the primary step in the formulation of the subject. As seen in Figure 3, the authors conducted a thorough examination of a collection of 25 publications to identify statements or content that are pertinent to the subject matter of the current research. As a result, the writers evaluate the process of digitalizing zakat by identifying and developing relevant categories in the second phase. The strategy has given rise to two primary areas of focus, namely efficiency and

obstacles. The writers thereafter proceeded to further explore each established topic, together with its accompanying themes, conceptions, or ideas, from this juncture forward. The author collaborated with other co-authors to establish thematic frameworks based on the findings within the context of this study. During the process of data analysis, a log was maintained to document any analyses, perspectives, puzzles, or any other relevant ideas related to the interpretation of the data. Ultimately, the writers conducted a comparative analysis to identify any discrepancies within the thematic design process. It is noteworthy to emphasise that in the event of any inconsistencies between the notions, the writers engage in discussions between themselves. Ultimately, the generated themes were modified in order to assure their coherence. Following this, a comprehensive investigation was undertaken by specialists with specialised knowledge in the areas of zakat and digitization, in order to ascertain the legitimacy of the identified issues. The expert review process serves to establish the validity of the domain, therefore ensuring the clarity, significance, and appropriateness of each sub-theme. Based on feedback and expert evaluations, the author revises their assessment.

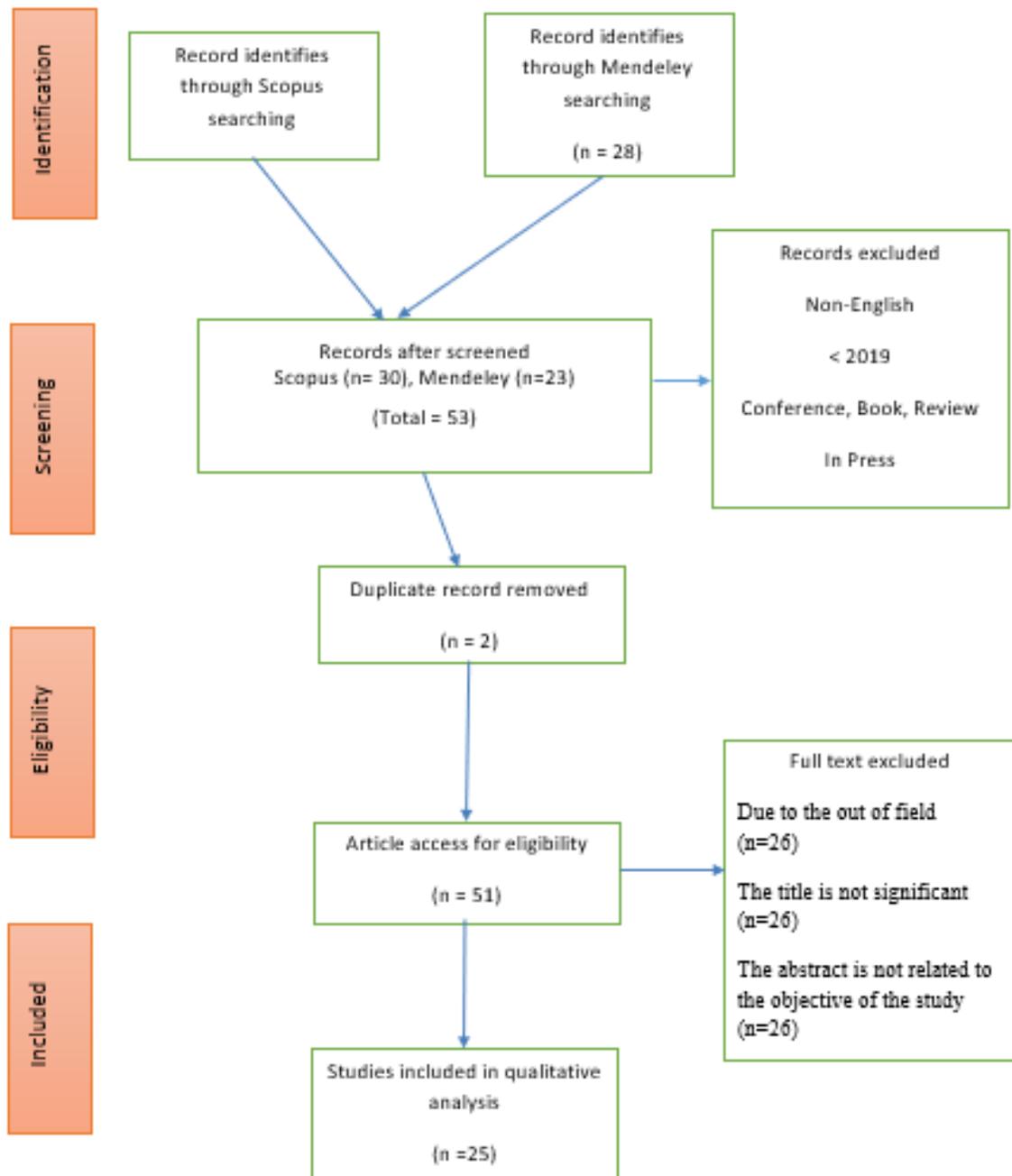


Fig. 3. Flow diagram of the proposed search study [22]

#### 4. Result and Finding

The digitalization of zakat, an integral concept in Islamic finance and social welfare, is rapidly gaining momentum worldwide, as it has a significant impact, particularly on the efficiency in the distribution and collection of zakat. At the same time, it also presents significant challenges, especially in terms of the risks associated with excessive use of technology. With the increasing use of technology in zakat instruments, it becomes important to assess the efficiency and challenges of digital technology on zakat. Thus, 25 articles were extracted and analysed employing the search technique. All papers were classified into two categories: efficiency of digital technology on zakat and challenges of digital technology on zakat.

#### 4.1 The Efficiency of Digital Technology in Zakat

In this theme, articles regarding the efficiency of digital technology on zakat will be explored and summarized below.

**Table 5**  
 The efficiency of digital technology in zakat

Authors & Year	Title	Methodology	Finding
[23]	Determinants of digital zakat payments: lessons from Indonesian experience	The study utilized the extended UTAUT, incorporating zakat literacy into its main components. Data was collected from 223 Indonesian Muslims using online channels to pay zakat and analysed using SEM.	The study discovers that performance expectancy, effort expectancy, facilitating condition, and zakat literacy significantly impact the intention to use online platforms for zakat payments in Indonesia, with social influence insignificant.
[24]	ICT-based collaborative framework for improving the performance of zakat management organizations in Indonesia	The paper utilized the 3 C model to develop a framework for zakat management. It assessed ICT usage and collaborative expectations through interviews and questionnaires and validated the model through a focus group discussion.	Information and Communication Technology (ICT) is being used for the purpose of managing zakat administration, facilitating online services, and enabling public reporting. The 3C paradigm posits that collaboration may be achieved by means of effective communication, coordination, and cooperation. The findings from the focus group discussion provide empirical evidence supporting the efficacy of the ICT-based cooperation framework in enhancing zakat management.
[25]	Muzakki's adoption of mobile service: Integrating the roles of Technology Acceptance Model (TAM), perceived trust and religiosity	A 209 Muzakkis questionnaire was distributed to evaluate the relationship between TAM, perceived trust, religiosity, and mobile zakat service adoption using partial least square analysis.	The study reveals that perceived easiness and religiosity significantly increase mobile zakat adoption, while usefulness and trust do not significantly influence Muzakki adoption behaviour.
[26]	The development and application of the zakat collection blockchain system	The study followed a four-stage waterfall model process, starting with interview sessions and analysing standard operating procedures at the Zakat Collection Centre (PPZ-MAIWP). Design requirement specifications were then used after approval by PPZ-MAIWP.	The study demonstrates that blockchain technology in the zakat collection system can alleviate extreme poverty and promote shared prosperity. This technology provides a transparent, reliable environment for exchanging data and transactions, ensuring transparency, reliability, trust, and traceability in zakat transactions.

[27]	Financing with heart and intelligence: augmenting intimacy and sustainability through Islamic fintech	This research explores fintech startups in Finland and Malaysia's e-marketplace/payments and crowdfunding/P2P financing sectors, focusing on financial inclusion through literature review, conceptual analysis, and qualitative case study methodology.	Open innovation in fintech services enhances social finance to a sustainable outcome-based funding model, transforming capital mobilization for social impact. Islamic fintech provides an efficient alternative for financing underserved individuals and enhances customer-service provider intimacy, guiding future social finance decisions.
[28]	The role of Islamic social finance during the COVID-19 pandemic in Indonesia's economic recovery	The study utilizes qualitative content analysis to develop programs and policy actions for economic recovery in Indonesia, focusing on poverty alleviation in Islam, integrated Islamic commercial and social finance, and Umar bin Khattab's crisis management model.	The study reveals that Islamic Financial Institutions (ISF) can aid the government and economy in recovering from the crisis. Solutions include saving lives through medical assistance, creating social safety nets, supporting households through social safety nets, supporting businesses, and supporting financial institutions, particularly micro-small enterprises, through digital marketing and IICSF adoption.
[29]	A global Zakat game: Application of technology in teaching and learning for global peace agenda	A qualitative methodology was employed to analyse data using the inductive and deductive approaches.	The GZG application effectively helps students understand charity values in zakat, even when played online. It covers the entire zakat syllabus, including types, rates, calculations, and related questions. The education system should adapt to technology and upgrade teaching methodologies to keep up with the increasing sophistication of technology.
[30]	Zakat administration in times of COVID-19 pandemic in Indonesia: a knowledge discovery via text mining	A qualitative study using text mining aims to understand zakat administration during the COVID-19 pandemic using BAZNAS RI's situation report on its virtual website. The data comprises 40 digital pages with 19,812 characters, 3,004 words, and 3,003 white spaces. The study uses R packages networkD3, igraph, ggraph, and ggplot2 for topic modelling.	Machine learning analysis using RStudio reveals 16 topics related to Education, Sadaqah, and Health Services. This helps understand BAZNAS RI's assistance for COVID-19 relief and zakat administration during the pandemic. This may contribute to the socioeconomic theory of zakat, which emphasizes the religious obligation's impact on a Muslim community's social and economic processes, particularly during the COVID-19 pandemic.
[31]	The Regulation of Zakat Digital Technology In Creating Community Welfare Impact On Economic Development	A research study investigates the impact of digitizing zakat on people's welfare in Indonesia. The study explores the role of digital zakat technology in BAZNAS, focusing on the Islamic economic approach and the relationship between humans and the social environment.	Studies prove that digital zakat can increase the potential for receiving zakat significantly. Other than that, the public also supports implementing digital zakat technology as alternative management of zakat.

[32]	Toward diffusion of e-Zakat initiatives amid the COVID-19 crisis and beyond	A quantitative survey obtained 479 responses from zakat payers using snowball sampling and SmartPLS software, analysing their responses for zakat payments.	The UTAUT model is suitable for predicting zakat payers' intention to adopt the e-zakat system and its services, with 72% predictive capability. All UTAUT constructs, except effort expectancy, were statistically significant. Online trust moderates the relationship between UTAUT constructs and users' intentions to adopt the system's online services during COVID-19.
[33]	Developing a Systematic Edu-Pro Model to Jet-Boost Participation and Sustainability of Islamic Philanthropy in Education IR 4.0 from the Maqasid Shariah Framework	A qualitative method analyses literature and document reviews to develop a model based on Maqasid Shariah, combining rapid global technology growth and digitalization.	This study analyses Quranic verses and scholars' theories to support an education model, ensuring systematic and professional development.
[11]	The Role of Muslim Generation Community at Zakat Collection on Realizing Sustainable Development Goals (SDGs) in the Era of Digital Society 5.0	The study uses content analysis techniques to analyse content on the human generation, the Muslim community, zakat collection, and SDGs.	The study reveals that two generations of Muslims can potentially increase zakat collection. Maqasid Shariah, the essence of Islamic law, values justice, freedom, and human rights. Building the strength and glory of BAZNAS in digital society 5.0 requires strong social ties from the entire Muslim generation, especially the younger generation.
[19]	Imposing zakat on cryptocurrency (Bitcoin): a Shariah appraisal	This study is conducted based on the qualitative research method following the inductive method and explanatory research approach.	Bitcoin is recognized as a digital asset in many countries, making it zakatable. Taxes are imposed on it, making it a regulated digital currency. Note that imposing zakat on Bitcoin would increase the collectable amount of zakat, benefiting needy people.
[18]	Acceptance model for predicting adoption of Zakat, Infaq, and Sadaqah (ZIS) digital payments in Generation Z	AR, PR, PI, TR, and BI were assessed using an SEM with a smart PLS analysis tool, focusing on facilitating conditions, social influence, ease of use, and usefulness.	AR and BI are influenced by PI. In addition, BI is also influenced by TR, where TR will increase if risk can be minimized. This study was not able to prove the role of risk on BI.

[34]	Digital zakāh campaign in time of COVID-19 pandemic in Indonesia: a netnographic study	This qualitative research study examines BAZNAS RI, a zakat organization, using a case study and a netnographic approach to analyse 549 posts on social media platforms. Here, NVivo 12 Plus software is used for qualitative analysis.	This study examines the digital zakat campaign of BAZNAS RI during the COVID-19 outbreak. It analyses 64 child nodes using NVivo 12 Plus, including "donation," "infaq," "Ramaḍan matters," "sadaqah," "virtual events," and "zakat." The analysis highlights the importance of inclusive marketing in digital content, as it effectively promotes zakat as a religious obligation. This contributes to social and financial benefits.
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#### 4.2 Challenges of Digital Technology in Zakat

In this theme, articles regarding the challenges of digital technology on zakat will be explored and summarized below.

**Table 6**  
 Challenges of digital technology in zakat

Authors & Year	Title	Methodology	Finding
[35]	Designing micro-fintech models for Islamic micro-financial institutions in Indonesia	The study employs analytic network process and Delphi methods, involving academicians-regulators, BMT practitioners, and fintech practitioners as respondents.	The micro-fintech tools required by IMFI/BMT include digital banking, payment, P2P financing, social, and e-commerce. These tools can be developed by a BMT alone or with an APEX or Association, collaborating with a fintech company specializing in micro-fintech. Commercial funding and social fundraising of zakat and waqf will be conducted online. In contrast, commercial financing for micro and small enterprise customers and zakat and waqf disbursement will be conducted offline.
[36]	Model of Radar Zakat (RAZAR) Application using Community Approach Integrated to Digital Map	This paper uses a qualitative research approach.	ZIS are the responsibility of Muslims to ensure justice for others. There are several institutions overseeing ZIS, either directly from the state or from the community. Each institution has a system for recording Muzakki (givers) and Mustahiq (receivers). However, the current system has disadvantages, such as a gap between zakat receipts and distribution numbers, unintegrated data between institutions, limited Mustahiq data searching, and high operational costs for many Muzakki who give ZIS without going through the institution.

[8]	Determinants of the Intention to Pay Zakat Online: The Case of Indonesia	The study employs primary data gathered from 734 respondents and uses the SEM method for data analysis.	The study reveals that facilitating conditions, performance expectancy, trust in zakat institutions, social influence, and zakat literacy influence online zakat payment intention. However, effort expectancy and Islamic religiosity are insignificant determinants. To increase online zakat collection, stakeholders must enhance trust, intensify education, improve online system quality, highlight benefits, and optimize social media usage.
[37]	The Influence of Internal and External Factors Towards Zakat Collection of Indonesia National Board of Zakat	This paper uses a qualitative research approach.	The study discovers no significant impact of the zakat collection unit, digital payment, or gold price on the BAZNAS zakat collection. However, shocks like publication and documentation costs, Industrial Production Index (IPI), and Bank Indonesia's rate positively affect BAZNAS zakat collection. The Consumer Price Index is the most significant external factor affecting Central BAZNAS' collected zakat funds.
[10]	Digital-Based Information System of Zakat Management in Indonesia: Strategies for Increasing Revenue in Fiqh Muamalah Perspectives	This is a mixed-method study to obtain more comprehensive, reliable, and objective data.	The study discovered that SimBaznas implementation in Baznas, NTB, relied on proper zakat collection, while Aceh Province's features were ineffective. Quantitative analysis revealed that facility availability and ease of use do not guarantee a correlation with SimBaznas implementation in the two provinces.
[17]	Generation Z perceptions in paying Zakat, Infaq, and Sadaqah using Fintech: A comparative study of Indonesia and Malaysia	The study uses a qualitative approach with phenomenological methods involving 43 Generation Z students in Indonesia and 25 from Malaysia to determine appropriate criteria for ZIS payments using financial technology.	The study reveals similar perceptions of awareness of use, professionalism, reliability, multifunction, usability, and data security among Generation Z Muslims in Indonesia and other countries. However, there are still suspicions about data security among Indonesian participants. The study confirms the importance of increasing personal data security when using fintech, resulting in a sense of security and comfort for Generation Z, who donated to ZIS.
[38]	Implementing the Blockchain Technology in the Islamic Financial Industry: Opportunities and Challenges	This paper uses a qualitative research approach.	This paper highlights the potential of blockchain technology in Islamic financial applications like waqf, zakat, and sukuk. However, challenges include the complexity of Islamic finance products, unclear regulations, and a lack of standards in the application.

[39]	Optimizing zakat governance in East Java using analytical network process (ANP): the role of zakat technology (ZakaTech)	Qualitative research on zakat governance involved ten respondents from practitioners, academicians, associations, and regulators using Excel and the analytical network process method.	This study highlights priority issues in optimizing zakat governance, including a lack of information on Mustahiq's needs and development and low motivation. To address these issues, a priority strategy is to improve Amil's technology skills through intensification and extensification, aiming to increase their mastery of technology.
[20]	Technologizing Islamic Philanthropy During the COVID-19 Pandemic in Indonesia	This paper uses a qualitative research approach.	The use of technology has accelerated philanthropic practices, particularly in urban areas like Jakarta, Indonesia. Islamic philanthropy organizations, BAZNAS and <i>Dompot Dhuafa</i> , have adopted changes and innovations during the COVID-19 pandemic in Indonesia. This study highlights the significant role of Islamic philanthropy in mitigating the pandemic's impact on society's vulnerabilities and economic problems through technological support.

## 5. Discussion and Conclusion

Zakat management and collection are crucial for ensuring the effective distribution of funds to those in need and achieving social and economic goals. The integration of digital technology and innovative approaches has significantly improved zakat-related processes. Key drivers of user intention and adoption of online platforms for zakat payments include performance expectancy, effort expectancy, facilitating conditions, and zakat literacy. Moreover, the ease of use, perceived benefits, and support for online zakat payments are crucial in improving efficiency. The adoption of Information and Communication Technology (ICT) has introduced effective collaboration models, such as the 3C model, which streamlines processes, reduces duplication, and improves overall efficiency.

Mobile applications that simplify zakat calculations and payments have proven effective in increasing efficiency. Perceived ease and religiosity significantly increase mobile zakat adoption, highlighting the importance of user experience and personal beliefs in driving efficiency. User-friendly mobile applications aligned with religious principles not only make zakat payments more accessible but also encourage greater participation, enhancing the efficiency of zakat collection. Furthermore, blockchain technology has emerged as a transformative tool for zakat collection, ensuring transparency, reliability, trust, and traceability in zakat transactions. This addresses concerns about accountability and efficiency in the distribution of zakat funds. Open innovation in fintech services contributes to sustainable zakat collection and distribution outcomes. Other than that, Islamic Financial Institutions (IFIs) have demonstrated agility and efficiency in supporting governments and economies during crises such as the COVID-19 pandemic.

Digital technology in education, such as the GZG application, efficiently imparts zakat values to students, promoting awareness and understanding. Machine learning analysis provides zakat organizations with data-driven insights into the socioeconomic impact of zakat administration, enabling them to allocate resources more efficiently to those in need. Moreover, adopting digital platforms for zakat campaigns has significantly increased the potential for receiving zakat contributions. The public's support for these digital initiatives underscores the efficiency and effectiveness of using technology for zakat collection.

Digital technology has ushered in transformative changes in zakat management and collection, making processes more efficient, transparent, and accessible. As technology advances, further improvements in zakat efficiency are expected, contributing to the betterment of society and the fulfilment of zakat's noble objectives. The integration of digital technology in zakat management has revolutionized the practice of Islamic charity. However, it also presents challenges that require careful consideration. Additionally, micro-fintech tools like digital banking, payment systems, and P2P financing offer promising avenues for enhancing efficiency. They also present the dilemma of balancing online and offline operations. A robust cybersecurity framework is essential to protect financial transactions. However, certain aspects of zakat, particularly the disbursement of commercial financing and zakat, still require offline mechanisms.

ZIS institutions are pivotal in zakat management, acting as intermediaries between donors (Muzakki) and receivers (Mustahiq). However, these institutions grapple with inefficiencies, such as a gap between zakat receipts and distributions, unintegrated data systems, limited Mustahiq information, and high operational costs. Therefore, overcoming these hurdles requires holistic digital solutions, such as integrating databases and developing user-friendly platforms for tracking zakat transactions.

Critical factors influencing online zakat payment intentions include facilitating conditions, performance expectancy, trust in zakat institutions, social influence, and zakat literacy. To bolster online zakat collection, stakeholders must focus on building trust among donors, intensifying educational campaigns, enhancing the quality of online platforms, emphasizing the benefits of online contributions, and harnessing the power of social media for outreach.

External factors, such as the gold price, IPI, and interest rates, also impact zakat collection. Unexpected factors such as publication and documentation costs positively influence zakat collection, requiring zakat institutions to adapt to evolving economic conditions and embrace flexibility. The study unravels regional disparities in the effectiveness of SimBaznas implementation, highlighting the need for an all-encompassing approach that factors in each region's unique challenges and prerequisites. Thus, addressing data security concerns is crucial to fostering donor confidence, especially among Generation Z Muslims.

Blockchain technology holds immense promise in revolutionizing Islamic finance applications like waqf, zakat, and sukuk. However, the intricacies of Islamic finance products and the lack of clear regulations and standards pose formidable challenges. Hence, collaboration between policymakers and Islamic finance institutions is pivotal in forging a conducive regulatory environment that stimulates innovation while upholding Islamic principles.

The integration of digital technology has catalysed philanthropic practices, particularly during crises like the COVID-19 pandemic. Other than that, Islamic philanthropy organizations have emerged as pivotal players, mitigating the pandemic's impact through technological support. As technology continues to advance, zakat institutions must remain agile and innovative, harnessing the full potential of digitalization to fulfil the principles of zakat for the collective betterment of society.

### **Acknowledgement**

This research was supported by the Ministry of Higher Education (MoHE) of Malaysia through the Fundamental Research Grant Scheme (Ref: FRGS/1/2022/SSI13/KUIPS/02/1). The authors also thank the management of Kolej Universiti Islam Perlis for supporting the research work.

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