

Revolutionizing Waqf Management: Harnessing the Fourth Industrial Revolution for Waqf 4.0 Transformation

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ABSTRACT

The Fourth Industrial Revolution, marked by technological advancements, is set to greatly improve the operational effectiveness of businesses and organizations globally. These developments have the potential to significantly improve waqf administration, raising its execution to a superior level. However, the existing literature has not extensively examined the potential consequences of the Fourth Industrial Revolution on waqf instruments. This study utilizes qualitative document action research to examine recurring problems related to waqf instruments and provide remedies through digitization measures. The study employed Research Rabbit AI's cutting-edge algorithms and snowball sampling approaches to identify 30 articles that address significant challenges related to waqf management. The study explores the potential application of Fourth Industrial Revolution methods to digitalize waqf management, specifically addressing these challenges. The primary challenges facing waqf instruments include inefficiencies in management, difficulties in operations, and the need to establish trust among stakeholders. This study seeks to fill the existing gaps in waqf research in the digital age by providing conceptual improvements to drive the subject ahead. The research's significance is to assist waqf stakeholders in taking proactive measures to improve and update the application of waqf in modern contexts.

Keywords: Waqf digitalization, Waqf administration, Islamic Fourth Industrial Revolution, Muslim civilization, Islamic Social Instrument

INTRODUCTION

The literature of waqf is no longer foreign in the body of knowledge. Many researchers have written about waqf in various settings and disciplines. This study diverges from the previous study aiming to understand waqf instrument from the framework of 4.0 industrial revolution. As a direct result of the rapid development of information and communications technologies, the fourth generation of industry, known as Industry 4.0, ushers in an entirely new era for various business sectors. Many people in the business world and academics are placing a significant amount of emphasis on the idea of Industry 4.0. Research on Industry 4.0 is still amid developing frameworks that link the goals of Industry 4.0 to the enabling technologies of Industry 4.0 and the impact those technologies have on businesses.

The concept of Industry 4.0 is still at an early stage, and studies about it are still in the infancy stage. It's conceptually intended to integrate many dynamic technological concepts. Industry 4.0's goals, according to Shafiq et al. (2015) are to provide IT-enabled mass customization of manufactured products; automatic and flexible adaptation of the production chain; track parts and products; facilitate communication between parts, products, and machines; apply human-machine interaction (HMI) paradigms; achieving IoT-enabled production optimization in smart factories; and providing new services and business models of interaction. Lu (2017) Industry 4.0's principles are interoperability, virtualization, decentralization, real-time capability, service orientation, and modularity. This study concludes that Industry 4.0 is a digitalization process that utilizes technological advancement to autonomous traditional practice, thereby improving the efficiency and effectiveness of processes to aid organizations in reaching their objectives.

Though Industry 4.0 is young, its application affects many sectors. For instance, autonomous mobile robots (AMRs) are automated goods-transmitting systems that can perform tasks and move around a facility without human guidance. Big data in logistics allows companies to monitor and analyze the enormous amount of data generated in their supply networks. Big data analytics benefits product manufacturing, storage, transport, distribution, and banking. 4.0—banking wherever but never at the bank; an account with a bank that uses a mobile phone, a debit card, and electronic devices that display users not only their current balance but also what they can safely spend and help them save money.

Thereby, Industry 4.0 can also have a tremendously positive effect on waqf instruments. For example, regarding the waqf collection, Baharsyah et al. (2022) discussed the implementation of the waqf digital logo, which involved professionals who have an interest and talent in design to benefit the community by utilizing their abilities and channel the income for waqf. Other good ideas were contributed such as by (Purwanto et al., 2022), about waqf YouTube content to boost waqf productivity in line with digitalization. Some studies also discussed utilizing crowdfunding, such as by (Azganin et al., 2021; Hapsari et al., 2022) utilizing a digital practice of funding via the Internet to finance social projects.

The potential digitalization of waqf instruments has been the subject of extensive research. The vast majority of research, however, consists of perception studies that inquire into Muslims' perceptions of and reactions to waqf digitalization, such as by (Berakon et al., 2021; Wadi & Nurzaman, 2020) adopting the Theory of Planned Behavior. Very few academic works have looked into the waqf's legal standing in the age of the 4.0 Industry (Ahyani et al., 2021). Some researchers are investigating waqf fintech (Ismaliyanto & Basri, 2021; Zakariyah et al., 2023), but they do so from a purely behavioural vantage point. So far, there is scarce literature discussing and examining the role of the 4.0 Industrial Revolution in transforming the waqf instrument from aspects of management to building trust with stakeholders. As mentioned, many studies focused on waqf application and collection aspects. To obtain a rich understanding of the impacts of the new era of digitalization of waqf, the study will adopt action research and stay away from the behavioral perspective of the waqf revolution. The study aims to understand the positive impacts of the 4.0 industry on waqf instruments from various aspects of management, operations, and governance. Therefore, the study will carry out qualitative action research to discover recurrent issues with waqf instruments and link the solution with the 4.0 Industrial Revolution.

LITERATURE REVIEW

Concept of 4.0 Industrial Revolution

Industry 4.0, also known as the Fourth Industrial Revolution, is based on the strategic forecasts of advanced economies such as Germany, France, the United Kingdom, the United States, Japan, and China (Kowalikova et al., 2020). These nations operate in a globalised competition and must sustain their political-economic standing. To reduce production costs, developed nations promote innovation, research, and the implementation of new technologies. Roblek et al. (2016) the terminology of 4.0 Industry first appeared in Germany in 2011 at the Hannover Fair to help the country's economy remain competitive and relevant in the manufacturing sector. Since 2012, the phrase has been mentioned in official German documents (Bartodziej, Christoph J, 2016). It was introduced as a "smart manufacturing" idea to help them plan and improve their manufacturing industry by implementing new rules and standards, increasing productivity, and cutting costs. However, it is essential to remember that this idea is not one that scientists came up with but rather one that industrialists did (Kroh, Michael, 2016).

Industry 4.0 aims to achieve a higher level of operational efficiency and productivity, as well as a greater degree of automation. Combining information and communication technology with intelligent technology can optimise resource use, enhance capacity efficiency, and significantly decrease rejects and waste. These new manufacturing techniques and equipment pave the way for exploring renewable raw materials, using renewable energy sources, and optimising resources. Cyber-Physical Systems (CPS) and the Internet of Things connect manufacturing with resources and services as part of Industry 4.0. As Industry 4.0 plays a vital role in the production and service sectors, it directly correlates with performance (Imran et al., 2018). In addition, the concept is specified to include technical procedures for value addition and efficient knowledge management

practises (Haseeb et al., 2019).

With the advent of Industry 4.0, digitalization and traditional industrial processes have been fused, creating a bridge between the real and virtual worlds and unleashing opportunities for business expansion that were previously unimaginable. The idea involves the combination of advanced hardware, including sensors and software, to enable better business and societal outcomes through forecasting, control, and planning. As a result, it pushes the world towards greater digitalization, which has transformative effects on all areas of society. Then, Industry 4.0 can effectively promote overall development by fostering long-term social, ecological, and economic growth.

Waqf Instrument and Digitalization

The Islamic concept of philanthropy, known as waqf, dates to the century and emphasises comprehensiveness. The benefit of waqf encompasses many facets, including economic, social, and nation-state development (Awalluddin, 2023). The practice is regarded highly as a significant Islamic financial instrument and constitutes one of the primary support structures for the Islamic economic system. Waqf is one of the instruments to overcome poverty and fight the usury system (Alshater et al., 2022). The urgency arises because waqf is one of the instruments to overcome poverty and combat the usury system. Waqf is the transfer of ownership from the possession of personnel to the possession of Allah S.W.T, where this transfer process is expected to be utilised by many parties and expect eternal reward because a waqf will continue to flow even after the founder/contributor has died.

The Waqf fund's contributions can be used for a wide variety of non-religious purposes, such as the construction of schools, the improvement of infrastructure, the welfare of people experiencing poverty, and the promotion of sustainable entrepreneurial endeavours. Furthermore, waqf is a tool for distributing wealth fairly, which can help even out economic and social disparities (Amaliyah et al., 2022). Though waqf is considered significant to Muslims, waqf issues remain exist and must be addressed. Apart from the legal issues, waqf faces management, collection, and trust issues. A peer-reviewed study by Abd. Jalil (2020) found that waqf has seven issues and challenges: legal issues, awareness and knowledge, lack of funds, idle assets, management inefficiency, incomplete record data, and illegal invasion. The weakness of waqf's management was confirmed by (Noor Aimi, Puaad et al., 2014), based on their case study on the State Council of Selangor, which manages and acts as nazir for waqf institution. They emphasized waqf marketability and unproductive assets, issues of waqf management, and lack of Muslim awareness about waqf.

As a result, researchers have tried to find out if waqf can bring about social and economic changes in poor emerging economies (Mohsin, 2013), and find ways to strengthen waqf instruments. Today, the 4.0 Industry has impacted the world of social services by affecting the management, application, and collection of charitable activity. There are numerous social service platforms to facilitate donations. Despite this, waqf platforms are still extremely scarce. The existing waqf platform is regarded as ineffective at cultivating waqf. Besides, the ever-increasing number of waqf assets necessitates a good, efficient, and productive management arrangement to contribute maximally to promoting the well-being of the people. As a result, waqf management is not optimal at present, particularly regarding competence (Bashari, 2021). It is undoubtedly an impediment to maximising the role of waqf in enhancing the welfare of the populace. Utilising digitalization to manage waqf is one of the measures taken to maximise its contribution. The application of digitalization will expedite enhancing service quality and accessibility for those involved in waqf management.

The current era of disruption has altered the habits and lifestyles of individuals. Diverse groups of people always utilise devices and gadgets that facilitate their activities. This shift in patterns and practises is also evident in giving patterns. In instances where individuals prefer contributing via digital platforms for the sake of convenience. Among the types of online contributions are zakat, sadaqah, alms, and waqf. This phenomenon demonstrates the evolution of human behaviour in the digital era, which necessitates an evolution of waqf management through the optimisation of digitalization. Wan Musyirah (2020) stressed the importance of implementation of effective technology to encourage cash-waqf contribution. Utilizing blockchain technology can be a great solution to creating a smart contract linked to the waqf project, raising funds, and controlling and transferring ownership of waqf contributions (Rabbani & Khan, 2020).

Acceptance of technology for waqf instruments could be a reality, given that acceptance of digitalization, such as the Internet and social media usage, is relatively high. Adeyemi et al. (2016) concurs that using social media platforms such as Facebook, YouTube, Instagram, and mobile applications to educate the public is currently highly effective. Therefore, it demonstrates that Waqf instrument version 4.0 could incorporate the current widespread acceptance of technology. Finally, it helps Muslims to achieve a balance of using *aqli* and *naqli* in managing Muslims' welfare, as mentioned by (Awalluddin, 2019b) about Islamic Systemology, utilizing reasoning such as digitalization technology and centered belief in Allah in developing Muslim civilization.

METHODOLOGY

Research Design

This study utilizes qualitative action research to explore how the roles of the 4.0 industrial revolution could influence and provide a solution for waqf instruments. It is an ideal study methodology to solve the long-standing challenges related to waqf instruments. Action research often relies on document analysis as a fundamental stage, as emphasized by (Greenwood & Levin, 2007). This methodical procedure entails systematically examining pertinent current documents related to the study subject, such as reports, surveys, internal data, or previous research publications (Greenwood & Levin, 2007). This analysis serves multiple essential functions. Firstly, it assists in recognizing persistent concerns or obstacles in the specific context, as highlighted by scholars such as Greenwood & Levin (2007) who stressed the significance of problem identification in the action research process. Secondly, document analysis offers a historical context for the issue, enabling scholars to comprehend its evolution and previous efforts to tackle it. Document analysis can illuminate current procedures and regulations about the topic, potentially identifying possibilities for enhancement or uncovering obstacles to advancement (Bowen, 2009). This knowledge informs the creation of tailored treatments for the action research cycle (Greenwood & Levin, 2007). The information obtained from analyzing documents serves as a starting point for evaluating how effective the adjustments that have been made are (Greenwood & Levin, 2007). Document analysis is a crucial step in the action research process, providing a foundation for well-informed interventions and enabling the assessment of their effectiveness (Kemmis et al., 2014).

The present study intends to undertake an exhaustive literature review pertaining to waqf. Document analysis will be conducted utilizing snowball purposive sampling. By commencing with a compilation of pertinent studies and subsequently extracting supplementary references from their bibliographies, this methodology facilitates a more comprehensive examination of the research terrain. The document analysis will center on previous research that has examined the difficulties encountered by the waqf instrument through reviews or empirical analyses. Through the examination of these studies, the researchers endeavor to discern recurring patterns of problems. In a dedicated section, these identified concerns will be detailed and presented to furnish a comprehensive outline of the present obstacles in waqf administration. After conducting a document analysis, an action analysis will be applied to discern and elaborate on the primary themes that arise from the literature review. Through the utilization of this analysis, a comprehensive framework can be constructed to comprehend the primary impediments that impede waqf.

Reporting Standards for Systematic Evidence Syntheses

The current investigation utilised the RepOrting Standards for Systematic Evidence Syntheses (ROSES) process. It was explicitly created for doing systematic reviews and mapping in the field of management (Haddaway et al., 2018). The objective of ROSES is to ensure that researchers provide a suitable type and quantity of information. The researchers formulated effective research inquiries for the Systematic Literature Review (SLR) by strictly following the review process. The systematic searching strategies consist of three primary sub-processes: identification, screening (based on inclusion and exclusion criteria), and eligibility assessment. Following the description of the methodology employed to ensure the articles' quality, the writers proceed to assess the quality of the selected articles. However, this study has made modifications by utilising Research Rabbit App tools to examine existing literature when employing ROSES.

Formulating Research Question

The research question for this study was formulated utilising the PICO framework. It helps authors in determining suitable research inquiries for reviews (Mohamed Shaffril et al., 2020). PICO is founded on the principles of population, which refers to the group of individuals being studied, and the factors of Problem, Interest, and Context that shape the research question (Awalluddin & Maznorbalia, 2023). This review examines three key factors related to the notions of waqf: utilization of waqf management (population/problem), administration concerns pertaining to waqf (interest), and waqf institution/organization (context). The authors utilise these notions to develop their primary research inquiry and suggest potential solutions: What are the problems associated with waqf administration?

Identification

Identification involves searching for synonyms, related terms, and variants of the principal keywords used in the study. The goal is to improve the searchability of the selected database so that more relevant articles can be found for review. The study used Research Rabbit to discover publications related to waqf management. The keywords were derived from the research topic (Okoli, 2015), and were determined through the use of expert suggestions and keywords employed in prior studies. By inputting keywords, the Research Rabbit assists in identifying relevant articles for research purposes. The application offers the capability to compare similar work, previous work, and subsequent work, enabling researchers to access pertinent information powered by Semantic Scholar. However, the study restricts its consideration of prior studies to only those conducted from 2014 onwards.

Screening

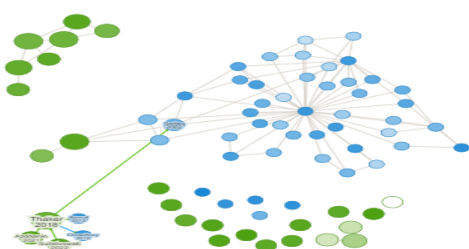
This analysis identified 1993 papers that were comparable in nature, 68 articles that were published prior to the current work, and 907 articles that were published after the current work. Brereton et al. (2007) selection criteria are determined by the study question. Given the vast number of published studies, Okoli (2015) proposed that researchers establish a specific timeframe during which they can conduct their reviews. Hence, the period from 2014 to March 2024 was chosen as one of the conditions for input. In addition, to guarantee the review's quality, only publications published in reputable journals and reliable conference proceedings are considered. Furthermore, the review only includes papers that have been published in English.

Using appropriate keywords enables researchers to discover multiple pertinent articles. Subsequently, the tools aid researchers by employing pertinent papers as benchmarks to exclude irrelevant ones. Researchers were able to narrow down their search to 177 articles. The remaining 177 articles were utilised for the third stage: deciding eligibility.

Eligibility

Eligibility is the third step in which the authors carefully review the retrieved articles to verify that all the remaining articles (after the screening procedure) meet the specified criteria. This procedure was conducted by perusing the title and abstract of the articles. A total of 147 articles were removed from this procedure because they did not focus on the subject matter, were outdated, irrelevant, or focused on the development of waqf for social funding and reformation of waqf. In total, there were a mere 30 articles that were chosen.

Figure 1: Retrieved Relevant Articles Using Research Rabbit App



	development	corruption and misuse of waqf assets.
(Zakariyah et al., 2022)	Enhancing waqf management through fintech in Malaysia	The absence of clearness in financial transactions and decision-making procedures undermines trust among recipients and potential contributors.
(Mohamad Razid et al., 2021)	My-Wakaf: A waqf of property management application	The inadequate record-keeping hinders asset tracking, resource use monitoring, and ownership or usage rights establishment.
(Huda et al., 2017)	Problems, solutions, and strategies priority for waqf in Indonesia	Issues of management competencies and utilization of waqf.
(Nisa et al., 2022)	Opportunities and Challenges of waqf management in Indonesia	Issues of waqf collection not optimal, incompetent management, and lack of control.
(Muhammad Usman & Asmak, 2021)	Financing higher education through waqf in Pakistan: issues and challenges	Issues of audit, transparency, and innovation of waqf.
(Lashari & Usman, 2022)	Public Waqf in Punjab Province Pakistan: Challenges and opportunities	Issues of traditional management, lack of funding, and public trust.

RESULTS AND DISCUSSION

Action Solution Theme: 4.0 Waqf Instrument's Digitalization

The primary focus of this study is on the concept of digitalizing waqf, specifically through the use of the 4.0 Waqf Instrument. The concept of the 4.0 Waqf Instrument's Digitalization is based on the advancements of the 4.0 Industrial Revolution. It aims to utilize modern digital technologies implanted in the waqf instrument. The 4.0 Waqf Instrument will be defined by three key themes: management, application and collection, and governance. As social behavior evolves in accordance with the times, waqf institutions must adapt and respond to these changes. The term "4.0 Waqf Instrument" refers to intelligent apps designed for waqf organizations. It encompasses the use of automation and data sharing in various technological processes, such as the Internet of Things, artificial intelligence, cloud computing, cyber-physical systems, simulations, and augmented technology. The 4.0 Waqf Instrument signifies a novel phase in the waqf institution by incorporating practical and efficient elements of the industrial value chain, encompassing waqf management, operation, and transparency. In this manner, waqf institutions establish a network and engage in transparent communication with their stakeholders. They can resolve long-standing problems within the institutions, facilitating a new approach to operations, value generation, and overall optimization. This concept intends to enable autonomous and efficient decision-making by waqf management and administration.

It assists in monitoring and safeguarding waqf assets, processing and regulating waqf cash funds in real-time, promoting transparent and early engagement with waqf stakeholders, and enhancing its competitiveness. Essentially, by innovating waqf instruments and transforming their model and procedures, we may boost the collection fund, reduce the associated transactional cost, improve the contributor's experience, strengthen their loyalty, and innovate to expand and remain relevant. The concept introduces a novel approach to incorporating digitalization technology into traditional waqf management while still ensuring compliance with legal requirements. Sharia law establishes the principles that guide waqf administration. The aim is to transform the waqf institution into a quasi-market by prioritizing enhancing the experience and happiness of its contributors.

Waqf Management Digitalization

Management is a systematic approach that seeks to accomplish a specific goal by overseeing and guiding various activities. These managerial tasks involve identifying the company's strategy and guiding employees'

actions toward achieving organizational goals while optimizing the use of existing resources. For an organisation to achieve its goals, its management must guarantee that all of its many components operate in a coordinated and productive manner. An essential component of effective management is optimising the utilisation of an organisation's resources. Consequently, the organisation is more inclined to be productive and effective. Furthermore, management assumes accountability for a variety of responsibilities, including strategy formulation, resource coordination, personnel guidance, recruitment and selection, and overall administration.

Nevertheless, the primary problem in waqf institutions is the deficiency of managerial proficiency (Abd. Jalil, 2020; Noor Aimi, Puaad et al., 2014). This is due to the fact that many Muslim countries have placed waqf organisations under government control or centralized their management. From a managerial standpoint, this circumstance leads to sluggish decision-making, excessive bureaucracy, and the selection of inept individuals to head the management team. Yang & Gu (2021) the emergence of the 4.0 industry could compel waqf institutions, particularly those managed by the government, to align their initiatives and adjust to the transformations. The study suggests that the 4.0 industry has the potential to strengthen national strategy and improve government administration. Implementing AI in the waqf institution is a transformative step towards maximising its capabilities, enhancing efficiency and productivity, and fostering innovative relevance.

According to previous experts, artificial intelligence (AI) is quickly becoming one of the most influential technologies of the 21st century (Fosso Wamba et al., 2021). Application is one of the key determinants of an organisation's performance (Wamba-Taguimdje et al., 2020). AI can aid in waqf management by emulating problem-solving and decision-making abilities. AI, or artificial intelligence, refers to the process of enabling robots to imitate and simulate human actions and cognitive processes (Berente et al., 2021). Artificial intelligence (AI) seeks to emulate human intellect by imitating its problem-solving and decision-making capabilities through the use of computers and other electronic devices. Additionally, it facilitated the organisation's growth by leveraging its expertise in fields such as big data analysis, efficient information gathering, and swift decision-making.

Waqf initiatives can leverage AI to create risk profiles. The waqf administration can utilise this data to more accurately assess the level of risk that various dangers represent to waqf-funded programmes. By implementing effective waqf management, organisations can prevent the undertaking of initiatives that are irrelevant and pose a significant level of risk. The completion of waqf projects, as stated by (Ismail & Fuadah, Johari, 2022) is a time-consuming process due to challenges related to financing and inadequate management competency. In addition, AI technology excels at assessing data and accurately anticipating project completion timelines and required funding, eliminating the need for approximate estimations from management or contractors. Lengthy waqf project completion times and inaccurate contractor estimations may lead to higher project costs, ultimately benefiting profit-oriented entities. Utilising artificial intelligence, it can deliver precise predictions by analysing vast quantities of data from previous experiences or projects, identifying trends, and generating forecasts with a far greater level of accuracy compared to humans.

AI enables waqf institutions to enhance efficiency by utilising specialist digital technologies that automate jobs and processes. Waqf administrators gather valuable information by monitoring the progress of various projects, which they can use to determine strategies to reduce expenses. Through digitalization, management can utilise data to enhance their ability to plan, organise, and implement effective strategies for project funding, innovation, and adaptation to environmental changes such as shifts in contributor behaviour, legal matters, productive assets, and projects. Additionally, digitalization can help address any shortcomings in management competence

Waqf Operational Digitalization

An organization's operations refer to the daily activities that firms undertake to enhance their value and produce profits. The operations can be optimised to create enough money to pay both the organization's operational expenses and profit for its shareholders. As a non-profit organisation, a waqf institution's main objective is to raise funds or acquire legal waqf assets. The primary objective of the waqf institution is not to generate financial gains but rather to promote the well-being of the community following the founder's

specified conditions. The article discusses the waqf cash fund as an operational aspect of an organisation, suggesting that if the funds collected are not enough, the waqf institution may cease to exist.

The problem of insufficient waqf funding is well-documented in earlier research, which has highlighted the lack of public awareness (Sulistiyowati et al., 2022; Yusoff et al., 2021), or the absence of effective marketing strategies from a management standpoint. The study suggested that the process of digitalization has the potential to improve waqf operations by actively searching for and securing money. Non-profit groups extensively utilise digitalization through social media platforms for fundraising. Research has shown that in affluent nations, utilising social media for fundraising purposes is a successful strategy for non-profit organisations to raise funds (Di Lauro et al., 2019). To enhance the waqf collection, it is imperative to move beyond traditional methods like door-to-door visits and online donations, and instead embrace digitalization. Presently, the utilisation of "QR code" in Muslim nations like Malaysia and Indonesia has expanded the scope of waqf contribution beyond its conventional form. This is achieved by facilitating the payment of contributions through banking institutions. Furthermore, there is a growing trend in utilising crowdfunding for waqf, as suggested by (Hapsari et al., 2022 ; Mohd Thas Thaker & Allah Pitchay, 2018), to enhance the development of unproductive waqf land. Simultaneously, numerous waqf organisations utilise various social media platforms, including YouTube, Instagram, Twitter, and Facebook, to actively solicit contributions for waqf purposes.

While these operations involve the use of digitalization, the new 4.0 Waqf Instrument places a strong emphasis on advanced digitalization technologies to enhance involvement and foster open communication among essential parties and waqf administration. Their publication, Rana & Cordery (2023) elucidate the optimal use of digitalization by non-government organisations (NGOs) as a means of marketization, to enhance their performance and accountability. According to the report, NGOs have challenges such as communicating negative information about the use of funds and facing public criticism, both of which influence public trust. Hence, it is arguable to assert that enhancing public knowledge is crucial to augment waqf funding.

The notion of 4.0 Waqf Instrument of Digitalization should encompass all previously discussed digitalization approaches and incorporate new technologies like virtual reality and augmented reality. Both technologies have the potential to enhance stakeholder trust and transparency in waqf operations. These technologies can generate simulated, interactive, and custom-designed waqf projects that can be marketed to stakeholders. For instance, Augmented Reality (AR) enables clients to virtually participate in events like fashion shows and catwalks inside the retail fashion business. Retail stores offer consumers the opportunity to utilise virtual fitting rooms, smart mirrors, and social try-on rooms (Hilken et al., 2017). By implementing the concept to the operation of the waqf fund, the operational team can create the waqf project concept using augmented reality or virtual reality and showcase it to potential stakeholders. This method generates efficient conservation and delivers superior customer service quality at the frontline, resulting in increased productivity and customer satisfaction (Marinova et al., 2017). The marketing of products by the waqf institution is a social project aimed at promoting social development. To secure adequate money, it is imperative to sell the waqf projects in a manner that is of superior quality. Augmented and virtual reality have been identified as emerging technologies with significant potential for marketing purposes. They have been shown to effectively enhance branding efforts and persuade and motivate potential consumers to make a purchase (Rauschnabel et al., 2022).

Finally, prompt communication and feedback are crucial for improving the operation of waqf funds. Insufficient communication can lead to uncertainty for individuals who contribute to waqf funds. Thus, utilising the AI algorithm helps the waqf operational team effectively engage with its potential stakeholders. Chatbots and sentiment analysis technologies can expedite the resolution of stakeholders' concerns in waqf management. The programme enables prompt responses from stakeholders, hence optimising customer service interactions. To encourage funding for waqf, individuals need to have clear communication about the project and any obstacles they may encounter throughout the payment process. Additionally, the waqf institution must show appreciation by taking into account comments from contributors, including complaints and opinions.

Waqf Governance Digitalization

Organisational governance of transparency refers to the act of disseminating information regarding the

functioning of the organisation to its employees and other stakeholders. The objective is to elucidate matters, establish confidence, and ensure individuals are held responsible. Transparency enhances the strength of relationships between stakeholders and the individuals in positions of authority within an organisation. It enhances an organization's reputation for reliability and trustworthiness and strengthens both internal and external relationships. Furthermore, it facilitates the acquisition of crucial information by stakeholders, hence enhancing their ability to make informed decisions regarding the company. The issue of openness is not a recent concern in non-profit organisations, including waqf institutions.

Several studies, including those (Gultom & Soemitra, 2022 ; Kamaruddin et al., 2022; Mohaiyadin et al., 2022), have thoroughly examined and criticised the hesitancy of waqf institutions to reveal waqf reporting. Paradoxically, trust and openness have a crucial role in enhancing the credibility and legitimacy of charity institutions (Sargeant & Lee, 2004). The waqf system described by Habidin et al. (2017) might be deemed favourable when the waqf institution demonstrates accountability and transparency. Mansor et al. (2018) introduced an innovative proactive reporting system for waqfs known as the integrated waqf reporting system. They clarified that this technique enhances the financial accountability of the waqf fund's reporting. To improve the transparency of waqf, certain studies have proposed the utilisation of blockchain technology for the management of waqf money (Zulaikha & Rusmita, 2018; Zulkarnaen et al., 2021).

To align with the process of digitalization, the study proposed the utilisation of the Internet of Things, including various gadgets and devices, as a method for waqf institutions to improve their transparency, particularly regarding contributors and waqf institutions. As a waqf contributor, individuals are entitled to know the specific allocation and utilisation of the funds they donate. Contributors are typically given advance information about the projects they will be working on. Hence, waqf institutions must furnish precise information, ensure information accessibility, and foster transparent contact with waqf contributors, enabling them to ascertain the allocation of monies. Although multiple authors have emphasised the significance of waqf institutions following standardised accounting reports (Kamaruddin et al., 2022; Sulaiman et al., 2016), this analysis contradicts that notion. Many stakeholders, particularly individuals who are not experts in the field, struggle to comprehend the format of a conventional accounting report. Nevertheless, the study acknowledges the need for regular accounting reporting to ensure transparency inside waqf institutions. The paper proposes the use of 4.0 Industry methods to improve transparency in a manner that is uncomplicated, convenient, and accessible to individuals of all educational backgrounds.

The Internet of Things (IoT) has various applications, including mobile phones, which can improve transparency in waqf by sending timely emails to contributors regarding the progress of financed projects. Additionally, waqf institutions can develop software applications to track these projects. Contributors can verify and monitor the status of the project, including its completion, any delays, or any issues related to finance. Mobile phones may potentially replace waqf certificates with e-certificates in the context of the Internet of Things. By utilising IoT, waqf institutions can actively involve their contributors and provide them with regular updates and information regarding the operations and activities of the institution.

CONCLUSION AND RECOMMENDATION

The Fourth Industrial Revolution will continue to facilitate enhanced organisational efficiency and effectiveness. It will be at the forefront of this millennium, leading the globe into a new era of globalised digitalization. The study aimed to examine the impact of the 4.0 Industry on the development of the new concept of waqf, known as the 4.0 Waqf Instrument. The digitalization of waqf is an imperative that should be embraced by all waqf institutions in Muslim nations. Waqf institutions must not adhere to traditional practices alone, as human behaviour is always evolving owing to technological advancements. To stay pertinent, user-friendly, and available to all Muslim contributors, these institutions must adjust and accommodate these developments.

The 4.0 Waqf Instrument offers multiple benefits to all parties concerned. Digitalization has the potential to enhance the effectiveness and efficiency of waqf management by automating its processes. If the waqf institution can successfully secure a substantial pooling of funds, the beneficiaries will be able to get a greater number of waqf advantages. Furthermore, the management of waqf will experience a rise in public acceptance

of waqf through the utilisation of different digital channels. Moreover, the 4.0 Waqf Instrument will have the capacity to reach a broader community and offer advantages to a greater number of recipients. The integration of technology in all types of transactions has bestowed the community with convenience and adaptability. In essence, the process of digitalization would enhance the quality of services offered by waqf institutions. The general population would easily be able to participate in waqf by employing technology through different digital platforms such as crowdfunding, social media, and augmented and virtual reality to evaluate waqf projects before making any donations. Furthermore, the modification of the waqf instrument also enhances the probability of the waqf institution acquiring proficient employees who possess the necessary skills and capabilities, commonly referred to as human capital, to lead the organization's sustainability and performance (Awalluddin, 2019a).

The study has numerous strengths and contributions. The study distinguishes itself from past research by providing a comprehensive analysis of the effects of the 4.0 Industry on the waqf instrument, specifically focusing on its strength. The study also employed managerial insights to examine the vulnerabilities of waqf institutions. The study's main contribution is in the development of the 4.0 Waqf Instrument, which is founded on the principles of digitalization. Stakeholders can employ the insights provided in this study to improve waqf institutions in their respective nations. Consequently, the study introduces a novel idea called the 4.0 Waqf Instrument of Digitalization, which paves the way for more research opportunities.

The study exhibits multiple limitations. The study relies on a qualitative examination of action research documents, which has limited applicability to a broader context. Thus, certain elements may be deemed unreliable for countries lacking technological capabilities or grappling with diverse waqf challenges. The fundamental arguments in the waqf context are not well established, but they are not as universally applicable as in other economic contexts. Therefore, additional research is required to examine if the process of digitalization has a favourable effect on waqf instruments. To conduct future research, it is recommended to undertake a qualitative study that examines the viewpoints of waqf institution management on the creation of the 4.0 Waqf Instrument of Digitalization.

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