Al-Kashaf: Research Journal for Social Sciences (Miscellaneous)
Volume: 03, No: 03. October – December 2023
ISSN: 2790 – 8798; E-ISSN: 2790 – 8801

Towards Resolving Overlapped Distribution of Waqf Funds Through Artificial Intelligence: Focusing on Educational Waqf's Beneficiaries

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KEYWORDS

Waqf distribution
Cooperation
Charity organization
Blockchain
Machine-learning systems
Decision-support systems

ABSTRACT

This study investigates the potential of artificial intelligence in eliminating corruption in the waqf sector, specifically in terms of waqf fund distributions. The research method involves a review of studies on the need for the interrelationship of waqf institutions for fair distributions of waqf funds and the significance of Artificial Intelligence's role in contemporary management integrity. Interviews with self-sponsored international students at the International Islamic University of Malaysia were conducted to examine the causes and solutions of overlapped distribution of waqf funds. The findings suggest that overlapped distribution of waqf funds is often caused by multiple applications from many individuals, which cannot be stopped due to the applicant's uncertainty about his application outcome. The duty to resolve this issue should be on waqf institutions, which may be difficult without fintech. The study concludes that implementing AI in the waqf industry will increase efficiency and end the problem of overlapped distribution of waqf funds. However, improving the existing AI to accommodate waqf features is highly required by the stakeholders in the field of technology.

INTRODUCTION

Waqf is an Islamic charitable giving system promoting social growth and public good, divided into waqf *ahli* and waqf *khayrī.* In Malaysia, waqf management involves trustees, with the Islamic Religious Council as the sole trustee. Waqfs were established for religious devotion, wealth shift, and political legitimacy (Özvar, Erol, and Sadullah Yildirim 2022).

Waqf institutions face transparency challenges in waqf distribution, potentially affecting transparency. Overlapped distribution of funds is possible due to multiple charitable institutions targeting similar beneficiaries. Integration between charitable agencies is needed to improve the efficiency of the Register, ensuring rapid and effective assistance for families (Birley, F. H. 1938; Bennett, Roger, and Anna Barkensjo, 2005).

This work examines the significance of integrating waqf institutions in reducing the overlapped distribution of waqf funds and the role of artificial intelligence in fulfilling it. The focus of the study will be on the student waqf beneficiaries. The work consists of a theoretical framework and fieldwork.

THEORETICAL FRAMEWORK

The digitalized waqf system is crucial for increasing accountability and transparency in waqf financial reporting, particularly in response to Industrial Revolution 4.0. Blockchain technology can improve waqf management and collection processes, while artificial intelligence can generate potential beneficiaries and facilitate verification. Integrating waqf and financial technology accelerates financial reporting, enhancing transparency and trust building. The

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Waqf-linked unit trust conceptual model, implemented in Malaysia, supports large-scale cash waqf fundraising for sustainable socio-economic development. Waqf managers should embrace digital technologies and fintech inclusion in waqf fund management (Sulaiman, Syahnaz, and Aznan Hasan, 2021).

Waqf is an Arabic term for Islamic charitable giving, promoting social growth and public good. Its core principles include inalienability, irrevocability, perpetuity, and the use of usufruct. Waqf is distinct from other Islamic charitable entities like zakat and Sadaqat, and its purpose transcends normal charity. Waqf is divided into two types: waqf *ahlī,* which refers to waqf property held for the family of its owner, and waqf khayri, which is the dedication of waqf property to charitable purposes. In Malaysia, waqf *ahlī* is no longer involved in public practice but is still operated by some waqf institutions. Waqf management involves the role of the trustee, which has developed since the early waqf period. The Malaysian context has a state Islamic Religious Council (SIRC) as the sole trustee for waqf, with most states placing waqf management in a department or unit. However, some states have established corporate bodies to implement corporate-style management in waqf assets and funds (Ainol-Basirah, A. W., and A. K. Siti-Nabiha 2020). The motivations for establishing waqfs in Ottoman society include religious devotion, the desire to shift wealth into the waqf sector, and the desire for political legitimacy and social prestige, particularly among officials and the ruling elite (Özvar & Sadullah, p.30-312022; Mohaiyadin, et al., 2022). Several waqf institutions face transparency challenges in their waqf management system due to difficulties in waqf distribution to *mawqūf alaihi*, which could be controlled using fintech, preventing misuse and ensuring transparency (Mohaiyadin, et al 2022).

The problem of overlapped distribution of waqf funds is feasible due to the availability of several charitable institutions with similar targets among the beneficiaries. For instance, In 2003, England and Wales had 620 cancer care charities, including 55 for breast cancer. In Southwest London, there were 12 domestic violence charities, nine alcoholism charities, six bereavement organizations, ten drug abuse charities, and six eating disorder charities. Consequently, a beneficiary may attract multiple charitable institutions and get their offer simultaneously (Bennett, Roger, and Anna Barkensjo, 2005).

The proper administration of charity funds is a matter of public policy, and its fulfilment requires the coaction of all charitable agencies. Since 1869, the charity organization has aimed to promote cooperation and encourage charitable givers to work hand in hand. Despite opposition from old-established charities, the society has met with great success and inspired workers to join hands in charity work. Mutual registration was started to encourage cooperation among charitable agencies, but it has not been as successful as planned. The organization aims to improve the condition of people experiencing poverty by bringing all charitable agencies and donors into contact (Woollcombe, H. L 1915).

Integrating nationally centralized data is crucial for managing a nation's Islamic social finance (ISF). For instance, in Indonesia, The BAZNAS Information Management System (SIMBA) is an integrated platform for zakat database management, but it only integrates data from national zakat collections. Financial integration is also essential for ensuring long-term funds' viability and the depth of benefits and financial independence. The government must revise the law to accommodate the rapid growth of ISF instruments, socialize revised laws, and encourage ISF management institutions to implement the law. Expert judgments suggest that the strategy with the highest priority is optimizing digital technology. However, the quality of human resources is considered the most important aspect, both in the short and long term. The cost of optimizing technology use is higher than the cost of improving human resources. To integrate sustainable ISF, stakeholders must prioritize solutions and strategies by considering each priority solution and strategy's benefits,

opportunities, costs, and risks (BOCR)(Widiastuti, et al 2022).

The British Legion and other bodies have the highest potential overlap in providing public assistance to families. However, the actual overlap is likely much less. Even though registration exists primarily to prevent rather than cure, registration's purpose is constructive, not merely preventive. There is a need for further development of conferences between principal officers of cooperating agencies to discuss better use of the Register and the principle that statutory services should be responsible for basic needs. At the same time, voluntary societies should be responsible for basic needs. The ideal is for Public Authorities and Voluntary Agencies to work harmoniously and complement each other without rigid barriers. The Register's efficiency depends on the societies providing information, and if societies are lax in providing it, the work of the Registrar is nullified (Birley, p.172 - 173.1938).

Fintech has revolutionized finance by utilizing artificial intelligence and robots as financial advisors. Blockchain and artificial intelligence have revolutionized finance, particularly in Islamic financial services like waqf, crowdfunding, and zakat. These innovations make financial services more transparent, efficient, attractive, and user-friendly Hassan, et al., 2020). The issue of overlapping beneficiaries in zakat and waqf distribution is crucial, as the same applicants may apply for funds under different categories. Blockchain can reduce operational risk and errors by implementing a systematic technological ledger. This increases efficiency and reduces human errors, allowing beneficiaries to benefit instantly. Additionally, blockchain can reduce transaction restrictions, ensuring transactions are conducted securely and efficiently (Nor, et al., 2021). Blockchain solutions can address overlapping beneficiaries in zakat distribution, reducing operational risk and human errors. They can also increase efficiency and transaction time, attracting more waqf givers. Blockchain can be used as a public ledger to prevent misuse, document fraud, and interference with the system. It can also facilitate data sharing between humanitarian agencies at a low cost, protecting information and reducing transaction restrictions (Mohaiyadin, et al, p.68.).

Artificial Intelligence is a computer technology that enables machines to perform tasks and make decisions without human assistance, continuously studying and analysing data and predicting outcomes (Nurjanah, Siti, and Uswatun Hasanah 2021). AI refers to technologies that imitate human sensory or cognitive processes and is an evolving concept with rich cultural meanings. It may be robotics, such as robots in a library context. AI is fundamentally about making decisions autonomously, involving computer programs that exhibit intelligence. Decision-making is core to understanding AI's role in organizations. AI's emulation capability presents both managerial opportunities and challenges. On the one hand, it has the potential to increase labor productivity, but it has limitations in innovation. On the other hand, AI's emulation capability raises concerns about security and ethics. Through emulation, AI also codifies human biases and errors. To outperform humans, AI must achieve a type of high-performance, rational action that humans cannot. This type of rationality is an instrumental, means-end approach to problem-solving, prioritizing the codifiable aspects of organizational activity (Cox, Andrew M., and Suvodeep Mazumdar, 2022). Artificial intelligence (AI) refers to the behaviour of a machine that is considered intelligent if a human behaves in the same way. The field has made numerous claims and promises, including the prediction of computers beating humans at chess within ten years. However, the rapid progress in AI has been in two broad areas: perception and cognition. Speech recognition has significantly improved, with millions of people using Siri, Alexa, and Google Assistant. Image recognition has also seen significant improvements, with apps like Facebook and self-driving cars recognizing faces in photos. Machine learning systems have also improved in cognitive and

problem-solving tasks, with an error rate of about 5% on the ImageNet database being at or better than human-level performance. However, the applicability of AI-based systems is still relatively narrow, as their remarkable performance on the ImageNet database only sometimes translates into similar success in the wild (Brynjolfsson& Mcafee, p. 10-11). AI machines are rapidly evolving, capable of mimicking human behaviour, exhibiting curiosity, self-recognition, learning from mistakes, being creative and purposeful, reproducing themselves, and having an unbounded life span. However, whether these machines can be considered 'alive' remains. Critics argue that computers are complex and autonomous enough to be considered an 'organism' with self-consciousness and socialization. Cyberneticists believe that human equivalency is becoming a reality due to the structural limitations of the human brain and the lack of true creativity (Lehman-Wilzig, Sam N, 1981).

Contemporary AI forms differ from previous generations in three interrelated aspects: autonomy, learning, and inscrutability. Autonomy allows AI to act autonomously without human intervention, with examples like autonomous vehicles and AI underwriters. Learning allows AI to improve through data and experience, enabling more complex decision-making settings. Inscrutability generates algorithmic models and outputs that are intelligible only to a select audience, causing challenges like the black-box problem (Berente et al., 2021). This shift in management requires managers to be informed and aware of the relevant facets of AI technologies. Since its inception, AI learning has been a central issue but has faced limitations due to human data analysis, available data, corporate boundaries, and computing performance. With the widespread availability of digital trace data, AI technologies now learn from all kinds of data, raising managerial issues such as privacy, trust, and intellectual property rights. Understanding the relationship between tacit knowledge and machine learning is crucial for managers. Technological advancements have accelerated AI learning capacity, reducing human oversight and removing human mediation from many domains. Management of AI requires reflexivity of learning, deliberation, correction, and adjustment of both AI and human elements (Ibid, p.1438 -1442).

As AI autonomy improves, it becomes increasingly inscrutable, referring to deficiencies in the intelligibility of its procedures and outputs. This inscrutability is challenging to assess as human understanding varies with different purposes. Inscrutability now carries four interdependent emphases: opacity, transparency, explainability, and interpretability. These emphases are crucial for managing human understanding of algorithmic activity. Inscrutability is a managerial issue, as organizational responsibility varies for AI algorithms. Addressing inscrutability is crucial in addressing ethical issues associated with AI. Managers must understand the liability, accountability, culpability, and fiduciary responsibility associated with their decisions (Ibid, p.1438 -1442).

Artificial intelligence technology is categorized into three layers: the basic support layer, the platform framework layer, and the domain technology layer. The basic support layer relies on big data, computing power, and new models, with deep learning being a key component. The platform framework layer includes companies like Google, Facebook, Microsoft, Baidu, and Amazon, as well as universities like the University of California at Berkeley and the University of Montreal. The domain technology layer includes computer vision and natural language processing technologies, with more mature applications like face recognition in airports and payment systems (Jia, et al., 2018).

The AI revolution is rapidly progressing, powered by deep learning algorithms that train complex programs known as neural networks. Today's AI systems can recognize faces, transcribe spoken sentences, spot financial fraud, find relevant web pages, map driving routes, beat human grandmasters at chess and go, and translate between hundreds of languages. However, the challenge of creating human-like intelligence in machines still needs to be addressed (Mitchell, Melanie 2019). AI systems need to gain the essence of human intelligence: understanding situations and grasping their meaning. Recent cracks in the foundations of modern AI have shown that deep-learning systems can be unreliable in unhuman-like ways. For example, a study showed that adding small amounts of noise to a face image can harm face-recognition programs, and programs that have learned to play a particular video or board game can be lost when the game is slightly modified. The most dangerous aspect of AI systems is that we may trust them too much and give them too much autonomy without being fully aware of their limitations (Ibid, p. 27-28.). Further, machine learning systems, like deep neural networks, can have hundreds of millions of connections, making it difficult for humans to understand their decisions. Additionally, neural network systems deal with statistical truths, making it difficult to prove their effectiveness in all cases. When ML systems make errors, diagnosing and correcting them can be difficult due to the complex structure of the solution. Despite these risks, the advantage of machine-based systems is their ability to be improved over time and provide consistent answers. AI and machine learning can perform in various areas, but they still need to be capable of assessing emotional or social states. AI is an enormous opportunity for human smarts in this new age of super-powerful ML, which lies in figuring out what problems to tackle and persuading people to embrace solutions. Companies that stick with the status quo face a competitive disadvantage compared to those that integrate ML with humanity's capabilities. Artificial intelligence, especially machine learning, is our era's most crucial general-purpose technology, impacting business and the economy through its direct contributions and the ability to enable and inspire complementary innovations (Brynjolfsson, et al 1988).

Decision support systems (DSS) are computer technology solutions for complex decision-making and problem-solving. They use artificial intelligence, information, and communication technologies to ensure precise, timely, and accurate decisions. DSS is relevant in various medical, dietary, and drug detection domains. They offer speed, efficiency, and systematic decision-making, allowing managers to focus on tasks requiring human intelligence. Adopting knowledge management and DSS systems can lead to superior organizational performance (Bin Abdullah, et al, 2022). Decision Support Systems (DSS) are computer systems that facilitate precise decision-making using AI and other technologies. DSS applies to Islamic banking and finance, particularly in Shariah decision-making. The potential benefits include convenience, speed, and efficiency. However, challenges include the complex *fiqh* ruling process, the need for skilled Shariah scholars, and the limited supply of DSS in the market (Ibid, p. 27-28). AI is increasingly used in enterprise management to speed up repetitive tasks and provide powerful analytical support. It can help managers focus on more valuable work, such as coordination, governance, problem-solving, collaboration, employee and community management, strategy, and innovation. AI can also improve human resource management, including recruitment, training, performance management, compensation, employee mobility, relationship management, and safety and health management. This trend is expected to bring more excellent economic benefits to the future development of human resource management.[i] Artificial intelligence (AI) is used in Human resources management to aid in strategic planning, recruitment, and deployment. It collects global information, uses data mining and knowledge discovery, and uses statistical and

modification functions to provide necessary information. AI can automatically screen candidates, reduce bias, and recommend suitable positions. Ideal Corp uses AI to automate recruitment tasks, reducing costs and increasing efficiency. AI can also improve interview efficiency by converting video interviews into data points and using natural language processing technology to select suitable interviewers. AI can also help managers identify new employees with potential success, recommend learning opportunities, and re-match jobs for those willing to change jobs (Ibid, p.109-110).[ii]

Overall, these studies emphasized the availability of irregularities and overlaps in the distribution of waqf funds in many nations and the instrumentality of the integration of waqf institutions in ending the dilemma. The evidence presented in this section on the qualities of artificial intelligence – including its autonomy, learning, inscrutability, and ability to process big data - and its role in enhancing management and human resources indicates its ability to integrate waqf institutions. This work will investigate the role of artificial intelligence in reducing overlapped beneficiaries.

METHODOLOGY

This research adopts a qualitative research method to investigate the role of artificial intelligence in reducing overlapped beneficiaries. Qualitative research offers vivid and insightful results due to its dynamic interview process, which actively engages respondents and allows researchers to reach beyond initial responses and grounds. This research is exploratory with the objectives to investigate the challenges of overlapped beneficiaries in the waqf sector and how to reduce them through artificial intelligence. This research involved data collection through a Non-Structured Interview. The interview session aims to identify the causes of overlapped beneficiaries in the waqf sector, which can be reduced through artificial intelligence. Five waqf beneficiaries among the international students at International Islamic University, Malaysia, were interviewed to reach a good outcome in this research.

FINDINGS AND ANALYSIS

This section reports the following findings:

1. The implication of overlapped beneficiaries in the waqf sector.
2. The reason for multiple applications for waqf fund.
3. Dealing with overlapped offers of waqf funds.

Discussions on the first finding show that there are harmful consequences of overlapped beneficiaries on waqf developments. All participants agree that all waqf institutions are uncomfortable with their beneficiaries' overlapped reception of waqf funds. They support these claims with their experience on announcements of scholarships or assistantships from many waqf institutions as they always contain conditions of application, which always include that the applicant must not be the recipient of any scholarship during the time of application.

Further, they also agree that the overlapped reception of the waqf fund is dangerous to its fair distribution among people in need. They established this with common sense, implying that the waqf fund's overlapped reception will restrict it from reaching more people, which is unfair to the deprived.

Participant 2 added that the waqf fund's overlapped reception violates Islamic law's objectives as *maqasid* fluctuates with the need's fluctuations. Winning an offer of waqf fund will make the offeree out from the needy group. Consequently, he will lose his eligibility for getting another offer.

Participant 4 also added that the donors would not be pleased with the overlapped reception of the waqf fund. It may appear to them as mismanagement of their wealth, discouraging them from subsequent contributions to waqf funds. Accordingly, the overlapped reception of

the waqf fund is dangerous to the safety of the waqf sector.

Participant 5 emphasized that he will not be pleased with overlapped beneficiaries, especially when he has been deprived of benefits from the waqf fund. Hence, her emotion proves that such a situation may cause enmity between people. Avoiding overlapped reception of waqf funds with any lawful means is better.

Discussions on the second finding show that, despite the participants' knowledge of the destructive consequences of the overlapped distribution of waqf fund, they still consider making multiple applications for waqf fund.

All participants agree that making multiple applications for the waqf fund can lead to overlapped beneficiaries. With that, they made multiple applications for the reasons best known to them.

Participants 1, 2, and 4 reiterate that there is only one way to avoid multiple applications for waqf funds other than the certainty of the success of one's application, which is unusual. Participant 2 added that another reason that prompted him to make multiple applications is that his earlier applications were partial and lower. Therefore, he will need to make another application when he discovers preferred or full scholarships.

The 3 participants do not have less than three applications for assistantship, and they still wish to have more applications due to their uncertainty about the outcome of their applications. Participants 3 and 5 give another reason for their multiple applications: to maximize their income and be among the overlapped beneficiaries.

Discussions on the third finding show that most beneficiaries will always feel reluctant to correct their overlapped reception of waqf funds after the multiple applications' success.

Participants 1, 3, and 5 demonstrated that they will accept all offers because it is an opportunity for them to accumulate wealth. Participant 4 believes that he will only accept the offer because of the destructive consequences of the overlapped reception of the waqf fund.

Only Participant 2 agreed that he could withdraw from the less preferred application if the more preferred one would be enough to cater to his needs. Otherwise, he will also accept all offers.

RESULTS

The study discusses the negative consequences of overlapped beneficiaries in the waqf sector, including unfair distribution of funds, violating Islamic law objectives, and causing enmity between people. Participants agree that waqf institutions are uncomfortable with this, as it restricts the reach of funds to people in need. Additionally, donors may be dissatisfied with the overlapped reception of funds, as it may appear as a mismanagement of wealth and discourage future contributions. Despite these concerns, participants still consider multiple applications for waqf funds. Some do so for certainty of success, while others do so to maximize their income and be among the overlapped beneficiaries. After multiple successful applications, most beneficiaries feel displeased to correct their overlapped offers of waqf funds resulting from their multiple applications. Participants 1, 3, and 5 accept all offers as an opportunity to accumulate wealth, while participant 4 only accepts one offer due to the negative consequences of overlapped reception. There is a need to prevent people from overlapping the reception of waqf. This necessitates the integration of waqf institutions globally, which may only be possible with fintech.

It can be inferred from the above assertion that the overlapped reception of the waqf fund is a wrongful act with ingredients of breach of trust because a beneficiary has implicitly agreed not to receive funds from other institutions by accepting to apply for the fund with stipulated conditions. Moreover, it may lead to enmity and unrest in society.

It is not feasible to stop multiple applications for waqf funds from occurring because the uncertainty of applicants about their

application always prompts them to be involved in multiple applications, which may result in overlapped offers. Moreover, some beneficiaries may like to apply for another fund due to the insufficiency of their current offer and in order to replace it with a preferred one.

Not all beneficiaries who made multiple applications in good faith will resort to correct overlapped offers resulting from the applications. Moreover, some beneficiaries are greedy to the extent that their multiple applications are to get overlapped offers and accumulate more wealth.

Waqf institutions have a duty to consider taking several measures to stop issuing overlapped offers of waqf funds. This can only be feasible through integrating waqf institutions and ensuring their cooperation. This integration may only be efficient with the introduction of contemporary financial technology. There is a need for artificial intelligence to assemble all waqf institutions together to share information. This AI can be enhanced with the potentiality to decline applications from current recipients of waqf funds from another waqf institution. The AI should also have the potential to sustain worthy overlapped beneficiaries due to the insufficiency of their current grants. Likewise, it should allow the applicant with multiple offers to choose his preferred one and withdraw from others. Precisely, he should be allowed to withdraw from his current offer, which is not sufficient to get a new offer, which is better. For instance, an applicant for a full educational scholarship who currently receives a partial scholarship should be allowed to withdraw from the partial scholarship.

This implies that a special AI should be developed for the use of waqf institutions as a data bank for all their current beneficiaries in terms of the nature of their needs, the actual needed value, and what they are being offered. Similarly, it will also serve as a platform to screen out current recipients of funds for the same purpose from another waqf institution.

The above model will be a lasting solution to the overlapped offering of waqf funds without denying the needy from getting their actual need.

CONCLUSIONS

The study highlights the negative consequences of overlapped beneficiaries in the waqf sector, including unfair distribution of funds, violating Islamic law objectives, and causing enmity. Participants agree that waqf institutions are uncomfortable with this, as it restricts the reach of funds to those in need and may appear as mismanagement of wealth. Despite these concerns, many participants still consider multiple applications for waqf funds, either for the certainty of success or to maximize their income. The majority of beneficiaries feel displeased to correct their overlapped reception. The duty to resolve overlapped reception of waqf funds should be of waqf institutions.

Consequently, there is a need for global integration of waqf institutions, which may only be possible with fintech. To prevent overlapped offers, waqf institutions must consider integrating institutions and introducing contemporary financial technology. This work proposes the fitness of artificial intelligence for such purpose due to its autonomy, learning, inscrutability natures, and ability to process big data. An artificial intelligence could be designed to gather information among all waqf institutions, make decisions on applicants, and allow applicants to withdraw from their current offers when necessary. This would provide a lasting solution to overlapped waqf fund offerings without denying those in need from receiving their actual needs.

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