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Systematic innovation strategies for enhancing cash waqf intention on crowdfunding platforms: An analytical hierarchy process-based prioritization framework

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Abstract

Cash waqf has re-emerged as a strategic instrument in Islamic social finance due to its flexibility and potential to support inclusive socio-economic development. However, despite its considerable potential, participation in digital cash waqf through crowdfunding platforms remains limited. This study aims to identify priority strategies to enhance public intention to contribute to cash waqf on crowdfunding platforms. We used the analytical hierarchy process to evaluate five decision criteria: perceived benefit, ease of use, facilitating conditions, transparency and trust, and religiosity, and three strategic alternatives. Expert judgments were collected between October and November 2025 from 11 respondents comprising academics, regulators, and practitioners. The analysis was conducted using Expert Choice software, and all pairwise comparisons satisfied the acceptable consistency threshold. The results indicate that perceived benefit is the most influential criterion, followed by ease of use and facilitating conditions. The global priority synthesis reveals that a strategy emphasizing digital transparency and real-time reporting ranks highest, followed by simplified user experience and institutionalized social campaigns. The study further highlights the potential of emerging technologies, including artificial intelligence and blockchain-based waqf systems (waqf-chain), to support transparency, accountability, user experience, and stakeholder engagement in crowdfunding-based cash waqf platforms.

Keywords: Cash waqf; Crowdfunding; Artificial intelligence; Systematic innovation; Analytical hierarchy process

1. Introduction

Despite the substantial socio-economic potential of cash waqf, its mobilization through digital platforms remains below expectations, particularly in developing Muslim

economies such as Indonesia (Berakon *et al.*, 2022; R. N. Faizi *et al.*, 2021). Based on data published by the Indonesian Waqf Board, the total collection of national cash waqf by waqf institutions in 2025 was IDR 588 billion, down from the previous year, which reached IDR 931 billion in 2024 (Badan Wakaf Indonesia, 2026). This condition indicates that the growth of cash waqf collections still faces various challenges, particularly in sustaining waqf participation and optimizing the digital waqf ecosystem. The challenges include limited public literacy, low levels of trust, less-than-optimal regulatory support, limited institutional capacity, and the ease of use of digital platforms (Purnamasari *et al.*, 2021; Rohmana *et al.*, 2024; Ryandono *et al.*, 2025).

Previous studies also reveal a gap between awareness and actual contribution behavior, as donors consider not only religiosity but also platform usability, institutional trust, and perceived impact (Nour Aldeen *et al.*, 2022; Widiastuti *et al.*, 2025). That gap indicates that potential donors do not respond to religiosity alone; they also assess platform usability, institutional trustworthiness, and the waqf program's ability to generate a visible impact. Existing studies indicate that digital cash waqf participation is influenced by multiple dimensions, including trust, accessibility, religiosity, social influence, and technology acceptance (Ab Shatar *et al.*, 2021; Asyari *et al.*, 2024; Kasri & Chaerunnisa, 2022). However, these studies mainly identify determinants rather than strategic priorities.

Digitalization creates opportunities for wider waqf participation (Asyari *et al.*, 2024; Berakon *et al.*, 2022; Widiastuti *et al.*, 2025) but also increases concerns regarding information asymmetry, transparency, and trust (Hasan *et al.*, 2025; Mohaiyadin *et al.*, 2022). Increasing technology-based waqf participation through digital platforms (such as crowdfunding) requires a systematic innovation approach to identify, design, and prioritize interventions that can increase the effectiveness of waqf collection (Athief *et al.*, 2025). This systematic innovation can be realized through strengthening governance (Ascarya & Masrifah, 2023), transparency (Maulina *et al.*, 2024; Nour Aldeen *et al.*, 2022), user experience (Berakon *et al.*, 2022), and developing strategies for both the short and long term. Therefore, this systematic innovation approach will be translated into a structured decision-making framework to help waqf managers determine the most effective innovation strategies to support the sustainability of the digital waqf ecosystem.

Waqf crowdfunding operates in a highly competitive and trust-sensitive environment where donors assess not only religious value but also platform usability, security, governance quality, and institutional credibility. Without these factors, religious intention may not translate into

actual participation. Maulina *et al.* (2024) and Nour Aldeen *et al.* (2022) further show that low trust, limited literacy, and lack of transparency remain key barriers, indicating that waqf promotion must go beyond awareness to strengthen trust and institutional transparency.

Despite the growing literature, a key gap remains unaddressed. Most prior studies explain determinants of intention or behavior through survey-based behavioral models (Asyari *et al.*, 2024; Mujahidah & Rusydiana, 2023), qualitative explorations (Qurrata *et al.*, 2021; Nofianti *et al.*, 2024), or case-specific managerial discussions (Khairani *et al.*, 2023). These studies are indispensable for identifying influential variables, but they do not directly answer a practical decision-making question faced by waqf managers and regulators: when several strategic options are available, which strategy should be prioritized first? In other words, the literature explains what matters, but practitioners still need a structured method to decide where to intervene when institutional resources are limited. This is precisely the strength of the analytical hierarchy process (AHP). The selection of AHP criteria is conceptually grounded in behavioral and technology adoption theories, particularly the Systematic Innovation Theory, the Technology Acceptance Model (TAM), and the Theory of Planned Behavior (TPB). The present study addresses that gap by transforming insights from contemporary cash waqf literature into a hierarchical strategic decision model.

This study aims to explore the prioritization of criteria and systematic innovation strategies to enhance the public's intention to contribute to cash waqf on crowdfunding platforms. This article contributes in three ways. First, it synthesizes the behavioral, technological, and governance literature on cash waqf into a systematic framework for innovation and managerial prioritization. Second, it translates the broad literature on determinants of intention into concrete strategic choices that can be adopted by waqf institutions, digital platform managers, and regulators. Third, it produces a ranked, systematic set of innovation strategies that is directly relevant to publication and policy discussions in Islamic monetary economics and finance, particularly by highlighting how institutional design and digital governance shape the mobilization of philanthropic capital.

2. Literature review

2.1. Cash waqf

The first stream of literature concerns the socio-economic significance of the cash waqf itself. Contemporary research consistently shows that cash waqf is one of the most adaptable instruments in Islamic social finance because it can be collected in relatively small amounts, managed

productively, and directed toward long-term welfare objectives. Ascarya & Masrifah (2023) argued that cash waqf is central to simple productive waqf models because it is flexible, feasible, and widely applicable. Ascarya and Masrifah (2023) further showed that cash waqf systems can support both commercial and social activities when institutions possess sound internal and external policies, a professional nazir, and appropriate governance arrangements. Rohmana *et al.* (2024) added that cash waqf can feed social entrepreneurship, but managerial professionalism and literacy remain serious constraints.

2.2. Fundamental theory: Technology Acceptance Model and Theory of Planned Behavior

A third stream examines digital waqf adoption using theories of behavioral intention (Bosnjak *et al.*, 2020) and technology acceptance (Davis, 1989). Berakon *et al.* (2022) showed that perceived ease of use strongly predicts perceived usefulness, and together with subjective norms and perceived behavioral control, these factors influence Muslim youths' decisions to use online cash waqf channels through digital Sharia banking systems. TAM theory is also used to explain the optimization of the Crowdfunding Waqf Model in developing land waqf in Malaysia (Thaker *et al.*, 2018). Widiastuti *et al.* (2025) integrated decomposed TPB and TAM variables and showed that attitudes, social environment, behavioral control, technological usefulness, technological ease, and facilitating conditions affect the intention to donate digital cash waqf. These studies are highly relevant because crowdfunding-based cash waqf is as much a digital adoption problem as it is a philanthropic one.

2.3. Systematic Innovation Theory

Beyond explaining individual adoption behavior, the present study also draws upon the perspective of systematic innovation. Systematic innovation emphasizes a structured and evidence-based process for identifying, evaluating, and prioritizing organizational interventions that generate value for stakeholders (Lindhult, 2023). According to Johannessen (2013), systematic innovation explains how innovation exists from the interaction among stakeholders (institutions, organizations, and wider systems) rather than from a single firm or technology. Furthermore, aspects of innovation based on Lindhult (2023) include innovation objects and their environment; governance and infrastructure innovation; system and institutional innovation; innovation agency and dynamics; and innovation process and design/methodology.

The development of strategic alternatives in this study is grounded in the concept of innovation in organizational and digital service contexts. Innovation is not limited

to technological advancement but also encompasses governance, process, and social innovation (Palmié *et al.*, 2023). In digital waqf platforms, governance innovation is represented by digital transparency and real-time reporting mechanisms that enable donors to monitor fund utilization and social impact (Kaharuddin *et al.*, 2025). Since digital waqf participation requires users to interact with online systems, simplified user interfaces and integrated Sharia-compliant payment channels represent process innovations that reduce barriers and improve user convenience (Bonang *et al.*, 2024). In crowdfunding-based cash waqf, social campaigns and institutional collaboration represent social innovation by strengthening donor awareness, collective action, and engagement with waqf initiatives (Sarea *et al.*, 2021).

Based on these theoretical dimensions, the initial alternatives identified from the literature were organized and refined through expert validation to develop the final AHP hierarchy. In conclusion, while TAM and TPB explain why individuals intend to participate in digital cash waqf, a systematic innovation perspective helps determine which strategic interventions to prioritize to improve participation outcomes.

2.4. Theoretical integration and conceptual framework

The present study integrates TAM, TPB, and Systematic Innovation Theory into a unified prioritization framework (Figure 1). TAM and TPB provide the behavioral foundation for identifying the key determinants of cash waqf intentions in digital environments. TAM explains how users evaluate technological characteristics of crowdfunding platforms through perceived usefulness and perceived ease of use (Davis, 1989), while TPB explains how attitudes shape participation intention (Bosnjak *et al.*, 2020). However, these theories primarily explain why individuals decide to participate and offer limited guidance on which institutional interventions to prioritize to strengthen participation.

Most studies investigating the determinants of digital cash waqf adoption employ comprehensive behavioral models by incorporating the full or extended constructs of the TAM and the TPB (Ab Shatar & Hanaysha, 2021; R. N. Faizi *et al.*, 2021; Rohmana *et al.*, 2024). Nevertheless, among the behavioral determinants identified in TAM and TPB, the present study retains only those constructs that can be translated into actionable institutional and platform-level interventions, particularly attitude towards benefits and ease of use (Thaker *et al.*, 2018; Berakon *et al.*, 2022), as well as facilitating conditions, trust, and religiosity (Widiastuti *et al.*, 2025). The subjective norms

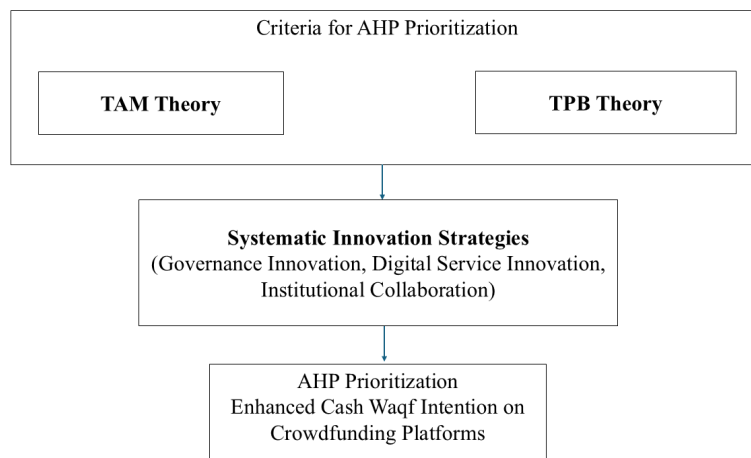


Figure 1. Conceptual framework

Abbreviations: AHP: Analytical hierarchy process; TAM: Technology Acceptance Model; TPB: Theory of Planned Behavior.

and perceived behavioral control were not incorporated into the AHP hierarchy, not because they lack theoretical significance, but because they primarily capture individual social and cognitive characteristics rather than strategic intervention domains that can be directly prioritized through expert-based multi-criteria decision analysis. Accordingly, the present study complements, rather than contradicts, existing TAM-TPB research by shifting the analytical focus from behavioral prediction to the strategic prioritization of institutional innovation.

To address this limitation, Systematic Innovation Theory is incorporated as a complementary perspective that focuses on innovation at the organizational, governance, and ecosystem levels. The theory suggests that participation outcomes can be enhanced through systematic improvements in governance structures, transparency mechanisms, stakeholder collaboration, service design, and digital infrastructure (Johannessen, 2013). Therefore, TAM and TPB inform the selection of intention-related evaluation criteria, while Systematic Innovation Theory informs the development of strategic alternatives to improve those criteria. The AHP subsequently integrates these perspectives by prioritizing the relative importance of determinants of intention and identifying the most effective innovation strategies to enhance cash waqf participation on crowdfunding platforms.

3. Methodology

3.1. Research design

This study employs the AHP by using Expert Choice software

(Version 11, Expert Choice LLC, USA) to determine the priority innovative strategies for increasing public intention to perform cash waqf through crowdfunding platforms. The AHP was originally developed by Thomas L. Saaty as a decision-making methodology that decomposes complex problems into hierarchical structures consisting of goals, criteria, and innovative strategic alternatives. Through systematic pairwise comparisons, AHP allows decision makers to derive ratio-scale priority weights that reflect the relative importance of each element in the hierarchy (Saaty, 2004).

The use of AHP is appropriate because the decision problem involves multiple criteria that combine both quantitative and qualitative dimensions, including technological usability, institutional governance, and religious motivation. It also aligns with the underpinning theory of systematic innovation, which includes governance, process, and social innovation within the AHP framework. In the context of Islamic social finance, strategic policy decisions are rarely determined by a single factor; rather, they emerge from interactions among behavioral, institutional, and technological determinants. Therefore, a structured multi-criteria decision-making method is necessary to translate theoretical insights from the literature into operational strategic priorities. However, the methodological contribution of this study is not the application of AHP alone, but the adaptation of AHP as a strategic decision-support tool to convert multidimensional determinants of digital waqf adoption into prioritized innovation actions.

Furthermore, AHP provides a rigorous framework for integrating tangible and intangible factors into a unified decision model. According to Saaty and Vargas (2006), the AHP is particularly suitable for social science and policy research because it allows researchers to quantify subjective judgments regarding institutional credibility, social trust, and value-based motivations that are not easily measured with conventional statistical methods. More recent developments also emphasize that AHP can be effectively applied in economic and governance contexts where decision-makers must evaluate competing policy alternatives based on multidimensional criteria (Saaty & Vargas, 2006). AHP has some shortcomings in addition to its advantages. AHP results are sensitive to expert judgments and may be influenced by subjective preferences (Tanjung & Devi, 2013). Therefore, in the discussion section, we also present sensitivity results as a robustness check for this study.

3.2. Mathematical formulation of the analytical hierarchy process

In this study, each decision element is compared using Saaty's fundamental scale, which ranges from 1 (equal importance) to 9 (extreme importance) (Saaty & Vargas, 2006).

Let Equation 1:

$$A = (a_{ij}) \quad (1)$$

represent the pairwise comparison matrix, where (Equation 2):

$$a_{ij} = \frac{w_i}{w_j} \quad (2)$$

and w_i represents the relative priority weight of element i .

The priority vector w is obtained from the principal eigenvector of the matrix A (Equation 3):

$$Aw = \lambda_{max} w \quad (3)$$

where w is the priority vector and λ_{max} is the maximum eigenvalue of the matrix A .

The normalized eigenvector represents the relative weights of decision criteria. To obtain a synthesis representing the overall assessment of the 11 expert respondents, each expert first completed the pairwise comparison matrices independently. Following Expert Choice's Group Decision Support procedure, the individual pairwise comparison judgments were then aggregated using the geometric mean to construct a consensus

pairwise comparison matrix, rather than averaging the individual priority vectors. The use of the geometric mean is widely recommended in AHP because pairwise comparison judgments are expressed on a ratio scale, making geometric aggregation more appropriate than the arithmetic mean (Saaty & Vargas, 2006). The aggregated pairwise comparison matrices were subsequently analyzed using Expert Choice software to compute the final priority weights and consistency ratios (CRs).

3.3. Consistency measurement

One of the key advantages of AHP is the ability to measure the logical consistency of expert judgments.

Consistency is evaluated through the consistency index (CI) (Equation 4):

$$CI = \frac{\lambda_{max} - n}{n - 1} \quad (4)$$

where n is the number of criteria and λ_{max} is the principal eigenvalue. The CR is then calculated as Equation 5:

$$CR = \frac{CI}{RI} \quad (5)$$

where RI is the random index (Saaty benchmark value).

According to the AHP methodological guidelines, a CR below 0.10 indicates acceptable consistency in the judgment matrix (Saaty, 2004). In this study, the aggregated pairwise comparison matrix generated a CR of 0.091, indicating that the expert judgments were sufficiently consistent and reliable.

3.4. Sensitivity analysis

To further evaluate the reliability of the prioritization results, a sensitivity analysis was conducted using the dynamic sensitivity function available in Expert Choice. Unlike the CR, which assesses the logical coherence of pairwise comparisons, sensitivity analysis examines the stability of the ranking results when the relative importance of the decision criteria is varied (Saaty, 2002). This procedure is widely recommended in AHP studies to determine whether the final prioritization is robust against reasonable changes in expert judgments and weighting assumptions.

3.5. Respondent's background

The AHP criteria and strategic alternatives were developed through a two-stage process. First, a comprehensive review of the literature on digital cash waqf, crowdfunding platforms, fintech adoption, and technology acceptance was conducted to identify key factors and potential innovation strategies. This process generated an initial set

of strategic initiatives related to platform transparency, user accessibility, payment integration, donor engagement, and institutional collaboration. Second, semi-structured interviews with experts from academia and the waqf sector were conducted to validate and refine the proposed hierarchy. The experts reviewed whether the selected criteria and alternatives reflected the key challenges and strategic needs of crowdfunding-based cash waqf platforms. Based on their feedback, overlapping concepts were consolidated, terminology was adjusted to better reflect the waqf context, and the final alternatives were refined into governance-oriented transparency strategies, process-oriented user experience improvements, and social-oriented collaboration strategies. Therefore, the expert validation process ensured that the final AHP model was both theoretically grounded and contextually relevant.

Expert judgments were obtained from 11 respondents, consisting of four academics, two regulators, and five practitioners (Table 1). Consistent with the principles of the AHP (Saaty, 2002), AHP does not require a large sample size because the quality and expertise of the respondents are more important than the number of participants.

Accordingly, the panel was selected purposively to ensure that all participants possessed substantial knowledge and practical experience in waqf, Islamic finance, crowdfunding, and digital innovation. The involvement of experts from diverse institutional backgrounds ensures that the evaluation process incorporates both theoretical perspectives and practical insights related to waqf governance and Islamic financial institutions.

For ethical considerations, respondents are identified only by respondent codes (R1–R11), and their personal names and institutional affiliations are not disclosed. Instead, deidentified descriptions of their expertise and professional experience are provided to demonstrate the diversity and relevance of the expert panel.

4. Results and discussion

4.1. Analytical hierarchy process criteria and innovative strategic model decomposition

These criteria constructs are reorganized from behavioral and technology adoption literature into decision criteria to support the multi-criteria prioritization of strategic

Table 1. Respondent's background (ordered by the time of questionnaire submission)

No.	Respondent code	Stakeholder group	Description (professional experience)
1.	R1	Academic	Professor with extensive expertise in Islamic economics, particularly in Islamic economic development and policy.
2.	R2	Academic	An academic expert with extensive expertise in Islamic social finance, waqf, zakat, and Islamic economic development.
3.	R3	Regulator	A waqf expert with substantial experience in governance, regulation, institutional development, and national waqf policy.
4.	R4	Academic	An academic expert in Islamic finance and financial technology, with academic and research experience in Islamic banking, digital finance, and Islamic social finance.
5.	R5	Practitioner	An Islamic philanthropy practitioner with extensive practical experience in managing waqf, zakat, and charitable programs.
6.	R6	Practitioner	An expert in waqf management and community empowerment, with significant experience in implementing productive waqf programs.
7.	R7	Practitioner	A waqf practitioner with practical experience in waqf fundraising, asset management, and the implementation of community-based waqf projects.
8.	R8	Practitioner	An expert in waqf education with extensive experience in public awareness campaigns, and capacity-building programs.
9.	R9	Academic	An academic researcher in Islamic banking and Islamic finance, with extensive research experience and publication in Islamic economics.
10.	R10	Practitioner	An experienced practitioner in Islamic social finance, with extensive experience in managing waqf, zakat, and sustainable community development initiatives.
11.	R11	Regulator	An expert in waqf governance, regulation, and institutional oversight, with extensive experience in policy development and strategic initiatives to strengthen the Indonesia's waqf sector.

interventions in digital cash waqf platforms. To confirm the AHP criteria and strategies in the initial model, we conducted interviews with experts to validate the AHP model. Within this digital adoption literature, perceived benefit emerges as a central criterion. Donors are more likely to use digital channels when they perceive greater effectiveness and social impact. In the cash waqf setting, perceived benefit encompasses not only private convenience but also social usefulness. Donors must believe that the crowdfunding channel enhances distribution efficiency, project reach, or societal benefit. This idea is strongly supported by Berakon *et al.* (2022) and Widiastuti *et al.* (2025), all of whom linked technology-related usefulness with intention. It also resonates with Pitchay *et al.* (2023), who showed that perceived donor effectiveness motivates contribution. Thus, the perceived benefit in waqf crowdfunding is both a platform-level construct and a philanthropic-impact construct.

Ease of use is important because complex registration, payment, and navigation processes may reduce donor participation (Berakon *et al.*, 2022; Widiastuti *et al.*, 2025). Therefore, platform design becomes an important factor in waqf mobilization. In practice, ease of use includes interface simplicity, transaction speed, navigation clarity, and low cognitive burden (Asyari *et al.*, 2024). For crowdfunding institutions, this means the platform's technical design is not just an operational matter; it is a determinant of waqf mobilization.

Facilitating conditions represent the broader enabling environment around the platform. This includes secure digital infrastructure, stable connectivity, suitable payment channels, legal support, and institutional arrangements that enable participation. Widiastuti *et al.* (2025) emphasized the importance of facilitating conditions for digital cash waqf adoption, while Maulina *et al.* (2024) showed that program success also depends on regulatory harmonization, stronger institutional roles, and policy alignment supporting integrated cash waqf schemes. Therefore, facilitating conditions provide the infrastructure and institutional support required for digital waqf participation.

Transparency and trust constitute another major stream of literature and arguably the most sensitive one in the waqf context. Cash waqf is an amanah-based transaction: once funds leave the donor, the donor must trust the institution's governance, reporting, and operational integrity. Nour Aldeen *et al.* (2022) concluded that trustee transparency must be strengthened and that regulators should more strictly monitor waqf trustees. Maulina *et al.* (2024) also identified low trust and low transparency as significant obstacles to cash waqf contributions. From a strategic

perspective, this conclusion means that trust is not a vague psychological feeling; it is the output of accountable information, credible management, and visible evidence that the institution deserves confidence.

Religiosity remains important in waqf participation; however, previous studies suggest that its influence interacts with technological and institutional factors. Gustina *et al.* (2025) emphasized that the role of *ulama* is an important factor in shaping behavior, because religious influence, in many cases, is socially mediated through the authority and advice of *ulama*. Pitchay *et al.* (2023) identified moral obligation as a relevant contributor. In digital waqf, while religious commitment may serve as an initial motivator, the actual decision to donate is influenced by perceived benefits, usability, and trust.

The role of social influence and institutional collaboration is also well documented. Ab Shatar *et al.* (2021) emphasized word of mouth, and Gustina *et al.* (2025) emphasized the contribution of *ulama* as key actors in shaping behavior through social and religious legitimacy. Maulina *et al.* (2024) recommended large-scale campaigns, collaboration among institutions, and the active involvement of banks, waqf institutions, regulators, and religious leaders. These findings support the inclusion of a strategy centered on social campaigns and institutional partnerships. Such a strategy can expand awareness, legitimize platforms, and increase normative encouragement.

Although prior studies have identified additional determinants of cash waqf intention, including attitude, subjective norms, perceived behavioral control, knowledge, and financial literacy based on TPB and TAM theories (Ismail *et al.*, 2023; Rohmana *et al.*, 2024), the present study focuses on perceived benefit, ease of use, facilitating conditions, transparency and trust, and religiosity. Based on the literature review and in-depth interviews, these factors are significant and directly actionable through systematic innovation strategies. The selected criteria can be influenced through platform design, transparency initiatives, payment integration, communication strategies, and institutional collaboration. Other variables, such as attitude, subjective norms, perceived behavioral control, knowledge, and financial literacy, were excluded because they represent broader psychological or educational factors that are less directly actionable through platform-level innovation strategies. (More & Phillips, 2022). Our study prioritized determinants that can be directly addressed by waqf institutions and crowdfunding platform managers through strategic innovation initiatives.

In the context of AHP, these dimensions are operationalized as evaluation criteria for assessing and

prioritizing alternative strategic interventions to increase cash waqf participation (Table 2). Synthesizing these

streams leads to a coherent conceptual basis for the present article. The intention behind crowdfunding-based cash

Table 2. Conceptual basis of the analytical hierarchy process criteria

Construct	Operational definition	Main supporting references
Perceived benefit	Belief that crowdfunding-based cash waqf produces meaningful, visible, and efficient social impact	Ab Shatar <i>et al.</i> (2021); Pitchay <i>et al.</i> (2023); Venkatesh <i>et al.</i> (2003); Widiastuti <i>et al.</i> (2025)
Ease of use	Simplicity of registration, navigation, payment, and confirmation on the platform	Berakon <i>et al.</i> (2022); Venkatesh <i>et al.</i> (2003); Widiastuti <i>et al.</i> (2025)
Facilitating conditions	Availability of infrastructure, secure channels, and institutional support enabling digital waqf	Maulina <i>et al.</i> (2024); Venkatesh <i>et al.</i> (2003); Widiastuti <i>et al.</i> (2025)
Transparency and trust	Visible accountability, reporting openness, and credibility of the managing institution	Asyari <i>et al.</i> (2024); Nour Aldeen <i>et al.</i> (2022)
Religiosity and Islamic values	Perceived alignment of the platform and waqf process with Sharia values and worship motives	Ayuniyyah <i>et al.</i> (2022); Gustina <i>et al.</i> (2025); Pitchay <i>et al.</i> (2023)

waqf is shaped by at least five strategic criteria. First, donors assess whether the platform and its projects provide meaningful benefits. Second, they evaluate whether the platform is easy to use. Third, they depend on an enabling environment that supports access and secure execution. Fourth, they decide whether the institution is transparent and trustworthy. Fifth, they consider whether the platform and its management align with Islamic values.

Previous studies consistently emphasize that transparency remains one of the most critical determinants of donor participation because contributors increasingly expect clear information regarding fund collection, allocation, and social impact (Ahmad & Rusdianto, 2020; Widodo & Darma, 2025). In this context, the potential of technological innovations such as artificial intelligence (AI) and blockchain-based waqf systems (waqf-chain) can be offered to enhance governance quality. AI can support automated reporting, anomaly detection, predictive monitoring, and impact analytics (Sarea *et al.*, 2021; Johari, 2025), while blockchain technology enables immutable transaction records and real-time traceability of waqf funds (Kasmon *et al.*, 2023; Ghaouri *et al.*, 2021). These innovations reduce information asymmetry, improve institutional credibility, and strengthen public trust by allowing contributors to verify how funds are managed and distributed (Sarea *et al.*, 2021; Mohaiyadin *et al.*, 2022). Consequently, transparency-oriented governance innovation is not merely an administrative improvement but a strategic mechanism for increasing participation in digital cash waqf platforms. From a systematic innovation

perspective, digital transparency and real-time reporting represent a form of governance innovation aimed at strengthening accountability, trust, and stakeholder confidence within crowdfunding-based cash waqf ecosystems.

Process innovation focuses on improving the efficiency and accessibility of user interactions by reducing transaction complexity, simplifying navigation, and integrating seamless Sharia-compliant payment mechanisms (F. Faizi *et al.*, 2025; Johari, 2025). Emerging technologies such as AI-driven chatbots, intelligent recommendation systems, and personalized donor engagement tools can further enable enhancements to the user experience and facilitate participation (Johari, 2025). At the same time, social innovation emphasizes collaborative efforts among waqf institutions, Islamic banks, regulators, religious leaders, and digital communities to expand awareness and strengthen legitimacy (Sarea *et al.*, 2021). Based on expert feedback, overlapping initiatives were consolidated into three strategic alternatives: (i) digital transparency and real-time reporting, (ii) simplified user experience with integrated Sharia-compliant payment channels, and (iii) social campaigns with institutional collaboration. These alternatives were retained because they represent the most salient technological, operational, and stakeholder-oriented strategies for enhancing participation and sustainability in crowdfunding-based cash waqf systems.

Based on systematic innovation theory synthesis and expert feedback, overlapping initiatives were consolidated

into three strategic alternatives (Table 3): (i) digital transparency and real-time reporting, representing governance innovation, (ii) simplified user experience and integrated Sharia payment channels, representing process innovation, and (iii) social campaigns and institutional collaboration, representing social innovation. The purpose is not to deny that all three are important, but to determine which one should be prioritized first when institutions aim

to increase cash waqf intention under limited resources. Based on the foregoing discussion, the AHP framework is shown in Figure 2.

Figure 2 illustrates the AHP model developed in this research, based on literature reviews and in-depth interviews with experts. Overall, there are three levels: the first is the goal, the second is the criteria, and the third is the alternatives. The first level represents the study's

Table 3. Conceptual basis of the analytical hierarchy process: innovative strategies

Strategic alternative	Systematic innovation perspective	Main supporting references
Digital transparency and real-time reporting	Governance innovation (blockchain [waqf-chain], AI monitoring)	Kasmon <i>et al.</i> , 2023; Lindhult, 2023; Sarea <i>et al.</i> , 2021
Simplification of the user experience with integrated Sharia payment	Process innovation (AI Chatbot, AI recommendation)	F. Faizi <i>et al.</i> , 2025; Johari, 2025; Lindhult, 2023; Sarea <i>et al.</i> , 2021
Social campaign and institutional collaboration	Social innovation (AI-driven engagement analytics)	Johari, 2025; Lindhult, 2023; Sarea <i>et al.</i> , 2021

Abbreviation: AI: Artificial intelligence.

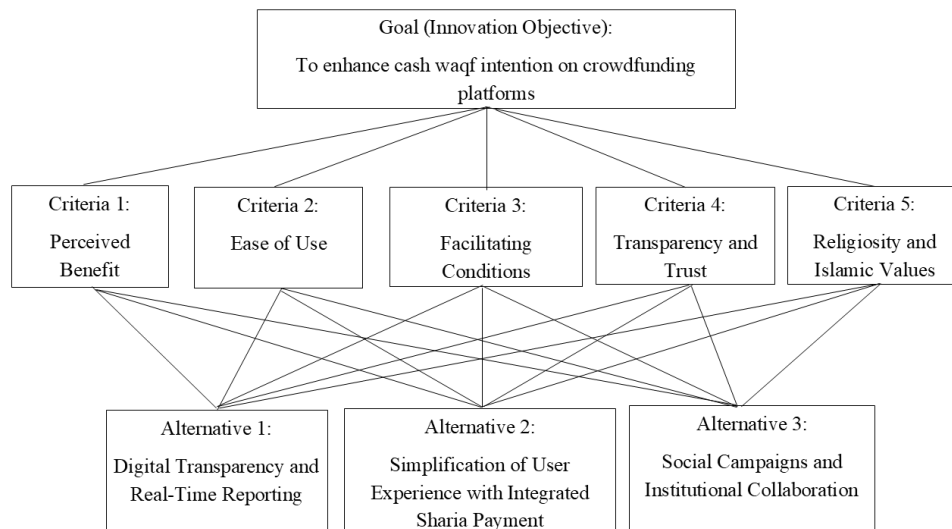


Figure 2. Analytical hierarchy process model

main objective: to identify the most effective strategy to enhance the public's intention to contribute to cash waqf through crowdfunding platforms. Based on literature synthesis, five criteria were selected: Perceived benefit, ease of use, facilitating conditions, transparency and trust, and religiosity and Islamic values. Meanwhile, the third level consists of three strategic alternatives designed to address the above criteria. First, digital transparency and real-time reporting focus on improving accountability through enhanced disclosure, reporting mechanisms,

and project monitoring. Second, the strategy focuses on improving operational efficiency and accessibility through streamlined transactions and user-centered platform design. Potential technological implementations discussed in the literature include AI-powered chatbots and intelligent recommendation systems, although these technologies were not directly evaluated in the present AHP model. Third, social campaigns and institutional collaboration focus on increasing awareness and participation through coordinated campaigns involving waqf institutions, Islamic

banks, regulators, and religious leaders. The integration of AI-driven engagement analytics may further strengthen outreach effectiveness by enabling more targeted communication and stakeholder engagement.

4.2. Analytical hierarchy process criteria and innovative strategic prioritization synthesis

4.2.1. Empirical findings

The first result concerns the relative importance of the five decision criteria (Table 4). The AHP eigenvector shows that perceived benefit (C1) received the highest weight at 0.4369. Ease of use (C2) followed at 0.2040. Facilitating conditions (C3) and transparency and trust (C4) occupied a middle position with weights of 0.1324 and 0.1306, respectively, while religiosity and Islamic values (C5) received the lowest weight at 0.0961. The group CR for the criteria matrix was 0.091, indicating acceptable collective consistency. These results suggest that the strategic problem of increasing cash waqf intention through crowdfunding institutions is first dominated by impact expectations, then by the practical experience of platform use, and only thereafter by enabling structures, trust-building architecture, and explicitly stated religious alignment. Within Islamic social finance, waqf institutions are progressively operating within a digital trust economy in which impact visibility becomes central to donor engagement (Okine *et al.*, 2023; Laksmi *et al.*, 2024).

Table 4. Priority weights of the decision criteria

Criterion	Weight	Rank
C1: Perceived benefit	0.4369	1
C2: Ease of use	0.2040	2
C3: Facilitating conditions	0.1324	3
C4: Transparency and trust	0.1306	4
C5: Religiosity and Islamic values	0.0961	5

The dominance of perceived benefit is highly significant. A weight of 0.4369 means that nearly forty-four percent of the overall decision structure is tied to whether a potential waqif believes that cash waqf through crowdfunding produces meaningful and visible outcomes. This finding is consistent with the broader literature, which repeatedly shows that people are more willing to contribute when they believe their contributions have efficacy, utility, or social impact. Pitchay *et al.* (2023) showed that perceived donor effectiveness influences contribution among millennials. Berakon *et al.* (2022) and Widiastuti *et al.* (2025) likewise underscored the importance of technology-related

usefulness and perceived benefit. In the present study, perceived benefit is not merely a technical perception of efficiency; it is a judgment about whether the platform translates worship into real social good.

From a donor perspective, their intention to use crowdfunding is waqf-based if the technology can generate tangible social impacts, such as poverty alleviation, education improvement, and community empowerment. Thaker *et al.* (2018) showed that individuals are more likely to participate in waqf crowdfunding when they believe the platform can effectively support waqf land development and generate clear benefits. Similarly, Laksmi *et al.* (2024) asserted that perceived benefits, encompassing the value and effectiveness of contributions, can increase donor intentions by reinforcing the belief that the funds provided truly impact beneficiaries. From a technology acceptance perspective, these findings suggest that perceived benefits play a strong role in shaping behavioral intentions, particularly in digital financial services, where value generated often outweighs mere ease of use (Masrizal *et al.*, 2023). Furthermore, the crowdfunding literature emphasizes that donor decisions are strongly influenced by clarity of impact, transparency of outcomes, and the credibility of the project narrative, all of which reinforce the importance of perceived benefits in encouraging participation (Megat *et al.*, 2024; Mohsin & Muneza, 2019).

The second-ranked criterion, ease of use, also deserves close attention. Its weight of 0.2040 is less than half of the perceived benefit, yet still large enough to indicate that digital frictions matter greatly. Crowdfunding institutions compete within an environment where users expect rapid, simple, and secure transactions. If users encounter confusion, excessive steps, or unclear payment procedures, intention may dissipate, and it can become an indicator of weak institutional capability (Berakon *et al.*, 2022; Okine *et al.*, 2023). The ranking of ease of use aligns closely with findings from Berakon *et al.* (2022) and Widiastuti *et al.* (2025), which show that technology adoption in the waqf context depends on the quality of the user experience. From a managerial standpoint, this means that digital waqf should be treated as much as a service design issue as a religious outreach issue. Based on TAM theory, ease of use factors, which include system simplicity and user-friendly interfaces, can encourage a person's acceptance of technology, where technology adoption is highly dependent on reducing cognitive and transactional efforts (Okine *et al.*, 2023; Laksmi *et al.*, 2024).

Facilitating conditions, as well as transparency and trust, were weighted at 0.1324 and 0.1306, respectively. Their similar weights indicate that these factors were considered

nearly equally important. It suggests that a potential waqf needs both an enabling system and a credible institution, and that neither can be ignored. Facilitating conditions capture structural readiness: secure systems (Masrizal *et al.*, 2023), payment availability (Thaker *et al.*, 2018), and institutional support (Maulina *et al.*, 2024). Transparency and trust capture visible accountability and credibility (Kassim *et al.*, 2025). The current ranking implies that trust is important. Rather, it indicates that in the aggregate decision frame, donors may first ask whether a digital waqf channel offers useful outcomes and a manageable process, then use transparency and structural support to confirm their willingness to proceed. This interpretation is consistent with Nour Aldeen *et al.* (2022), Asyari *et al.* (2024), and Maulina *et al.* (2024), all of whom show that trust and transparency are crucial for converting positive attitudes into action.

Religiosity and Islamic values received the smallest weight, 0.0961. This finding should not be misunderstood as evidence that religiosity is irrelevant. Rather, it indicates that within a digitally mediated waqf decision, religious commitment may operate as a necessary background condition rather than the dominant differentiator among strategic options. Widiastuti *et al.* (2025) report that perceived religiosity does not significantly drive intentions to use digital cash waqf in their model. The present result suggests that when all criteria are considered together, explicitly religious alignment remains important but is overshadowed by considerations of benefit, usability, and institutional design. In practical terms, many Muslim donors may already assume the religious legitimacy of waqf; what ultimately determines their decision is whether the platform appears impactful, manageable, and credible.

The criteria ranking indicates that the strongest strategic driver is the donor's judgment that the platform can generate concrete benefits, while the second-strongest driver is the practical ease of performing the transaction. The middle-ranked criteria indicate that structural support and trust architecture remain highly relevant, but in this expert model, they serve as enabling conditions rather than as the first trigger of intention. Religiosity remains important as a normative basis, yet the experts judged that, in digital waqf participation, it does not differentiate strategic priorities as strongly as perceived benefit and platform design do.

An important theoretical implication of this study is that perceived benefit takes precedence over religiosity in determining the strategic priorities of crowdfunding-based cash waqf platforms. This finding offers an interesting perspective on digital waqf participation, suggesting that contemporary waqf engagement may be driven not only

by religious obligation or spiritual motivation but also by the perceived effectiveness and impact of digital platforms.

The second main result concerns the local priorities of the alternatives for each criterion (Table 5). Across all five criteria, Alternative A1, digital transparency and real-time reporting, occupied the first rank. Under perceived benefit (C1), the local weights were 0.535 for A1, 0.279 for A2, and 0.186 for A3. Under ease of use (C2), the weights were 0.503, 0.276, and 0.221. Under facilitating conditions (C3), they were 0.475, 0.277, and 0.248. Under transparency and trust (C4), they were 0.566, 0.245, and 0.189. Under religiosity and Islamic values (C5), Table 5 again ranked A1 (0.498) first, followed by A2 (0.262) and A3 (0.240), with all local matrices meeting the consistency requirement. This pattern is striking because it shows that transparency is not merely a trust-related tactic; it also improves perceived benefit, usability, institutional support, and even the sense of Islamic alignment.

Table 5. Local priorities of strategic alternatives under each criterion

Criterion	A1	A2	A3	CR
C1: Perceived benefit	0.535	0.279	0.186	0.018
C2: Ease of use	0.503	0.276	0.221	0.024
C3: Facilitating conditions	0.475	0.277	0.248	0.029
C4: Transparency and trust	0.566	0.245	0.189	0.031
C5: Religiosity and Islamic values	0.498	0.262	0.240	0.022

Abbreviation: CR: Consistency ratio.

The most important result is the global priority synthesis. Combining criterion weights with local alternative priorities produces the following ranking: A1 receives a global weight of 0.521, A2 receives 0.272, and A3 receives 0.207 (Table 6). In other words, digital transparency and real-time reporting account for roughly 52% of the total strategic priority, making them by far the most effective option. Simplified user experience and integrated Sharia payment channels account for about 27%, while social campaigns and institutional collaboration account for about 20%. The large distance between A1 and A2 is analytically meaningful. It shows that better disclosure, reporting, and accountability are not marginal improvements; they are the central institutional level for increasing cash waqf intention through crowdfunding.

The robustness of the prioritization results was further assessed through CR and sensitivity analysis using Expert Choice. The analysis indicates that reasonable variations in

Table 6. Global priority of strategic alternatives

Innovation strategic alternatives	Global weight	Final rank
A1: Digital transparency and real-time reporting	0.521	1
A2: Simplification of the user experience with integrated Sharia payment	0.272	2
A3: Social campaigns and institutional collaboration	0.207	3

the weights of the decision criteria did not alter the overall ranking of the proposed innovation strategies, confirming the stability of the prioritization framework.

The consistency of expert judgments was confirmed by acceptable CR values, with the aggregated criteria matrix yielding a CR of 0.091 and all local alternative matrices ranging from 0.018 to 0.031, well below Saaty (2004)'s recommended threshold of 0.10. To assess the robustness of the AHP results, a sensitivity analysis was conducted by systematically varying the weights of the five decision criteria while observing changes in the global ranking of strategic alternatives. Sensitivity analysis is commonly employed in AHP studies to assess whether the final prioritization is robust to alternative weighting assumptions (Figure 3).

Sensitivity analysis was conducted by increasing each criterion weight by 20% while maintaining normalization. The results indicate that the ranking of strategic alternatives remained unchanged across all tested scenarios. Digital transparency and real-time reporting (A1) consistently

ranked highest globally, followed by simplification of user experience with integrated Sharia payment channels (A2) and social campaigns and institutional collaboration (A3). The stability of the ranking can be explained by A1's dominant performance across all decision criteria. As shown in Table 5, A1 achieved the highest local priority under perceived benefit, ease of use, facilitating conditions, transparency and trust, and religiosity. Consequently, moderate variations in criterion weights do not substantially alter the overall ranking structure. These findings suggest that the prioritization framework is robust and that governance-oriented innovation through digital transparency and real-time reporting remains the preferred strategy even under alternative decision scenarios. Therefore, the study's policy recommendations are not highly sensitive to reasonable changes in expert judgments.

Furthermore, to assess the degree of consensus among experts, Kendall's coefficient of concordance (W) was calculated from the rankings derived from individual

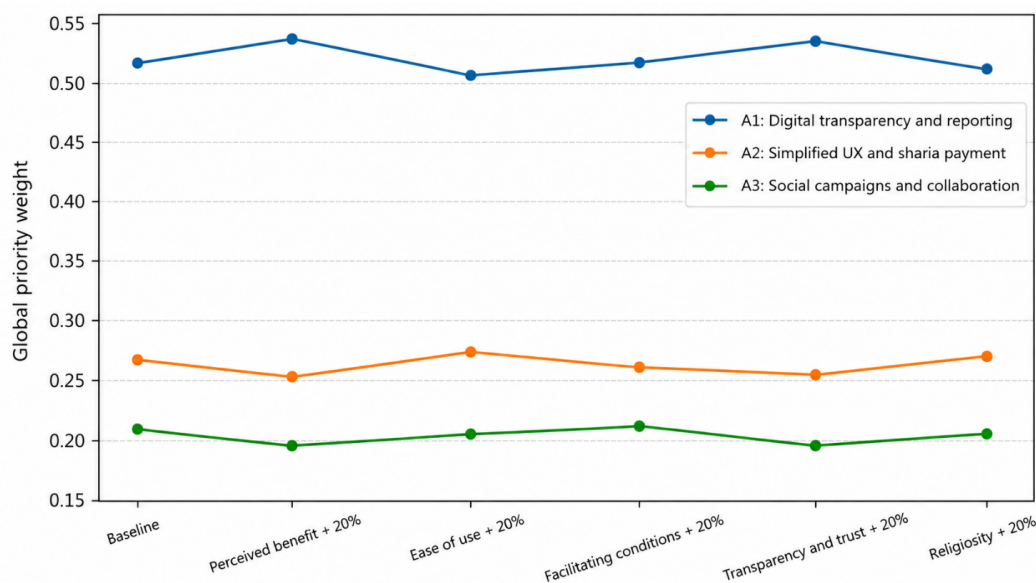


Figure 3. Sensitivity analysis of analytical hierarchy process strategic alternatives

pairwise-comparison judgments. The analysis yielded a Kendall's W of 0.460, indicating a moderate level of agreement among the 11 experts on the relative importance of the five decision criteria. The associated chi-square statistic was 20.218 ($df = 4$, $p < 0.001$), demonstrating that the agreement was statistically significant. These results suggest that the prioritization structure obtained from the AHP analysis reflects a meaningful collective judgment rather than random variation among respondents, thereby strengthening the reliability of the study findings.

4.2.2. Practical implications and future technological applications

The following discussion focuses on the practical implications of the empirical findings. Based on the empirical findings, the highest-ranked strategy (A1), digital transparency and real-time reporting, carries important practical implications for waqf crowdfunding institutions. The dominance of this strategy suggests that transparency functions as a meta-strategy, simultaneously strengthening multiple determinants of donor intention. When donors can observe real-time project progress, financial flows, and evidence of impact, they perceive a stronger benefit because the waqf outcome becomes tangible. They also perceive greater ease because transparent information reduces uncertainty, lowers cognitive burden, and makes the platform feel more navigable. Trust obviously increases because accountability is documented rather than merely promised. This multi-criteria influence explains why (A1) digital transparency and real-time reporting consistently remain at the top across the local comparison.

Although AI and blockchain were not evaluated directly in this study, prior studies suggest that these technologies may support implementing digital transparency and real-time reporting in waqf institutions. AI in waqf crowdfunding can facilitate automated reporting, anomaly identification, predictive monitoring, and impact analysis, which can enhance transparency (Sarea *et al.*, 2021; Johari, 2025). Meanwhile, blockchain-based systems allow for permanent records of transactions, the tracking of money flows in real time, and the decentralized confirmation of project results, which can also support real-time reporting (Alam & Ali, 2021; Atif *et al.*, 2021). In this way, blockchain does not replace transparency as a strategy; instead, it makes it more practical at a higher technological level. These technologies may strengthen transparency by improving traceability and accountability (Mohsin & Muneeza, 2019; Mohaiyadin *et al.*, 2022). They also boost donors' sense of benefit by letting them check for themselves how their donations are helping society (Mohaiyadin *et al.*, 2022). In practical terms, within the context of innovative theory, emerging technologies such as AI and blockchain-based

waqf may serve as important enablers of governance innovation to establish digital transparency and real-time reporting practices in waqf crowdfunding. These technologies were not evaluated empirically in the present study but are proposed as future implementation options.

Alternative A2, with its simplified user experience and integrated Sharia payment channels, consistently ranked second. A2 directly addresses transactional friction and service convenience, both of which are critical in digital environments. Although not examined empirically in this study, previous literature suggests that AI-driven chatbots and intelligent support systems may facilitate the implementation of simplified user experience strategies (Johari, 2025). AI can mitigate human error in waqf management, hence decreasing complaints from waqif (Ibrahim & Isa, 2024). This finding is consistent with the view that ease of use plays a critical role in reducing transactional friction in digital waqf environments (Berakon *et al.*, 2022; Okine *et al.*, 2023; Thaker *et al.*, 2018). Integrated Sharia payment channels increase practical comfort and religious confidence at the point of transaction (Berakon *et al.*, 2022), yet without strong disclosure and reporting, donors may still hesitate. The consistent second-place ranking of A2 suggests that institutions should absolutely improve usability, but should not assume that usability alone can solve the trust and benefit perception problem.

Alternative A3, social campaigns and institutional collaboration, ranked third across the criteria and in the global synthesis. This result means that campaigns and partnerships are important. On the contrary, the literature strongly supports the role of social influence, word of mouth, institutional endorsement, and ulama in strengthening donor intention and trust formation (Ab Shatar *et al.*, 2021; Asyari *et al.*, 2024; Maulina *et al.*, 2024). The AHP result instead indicates that A3 is a supporting strategy rather than the primary one. Campaigns can raise awareness, build legitimacy, and widen reach, but they are less effective if the platform itself is not transparently governed and easy to use. Campaigning may attract attention, yet sustained participation depends on whether the institutional experience validates the message.

This global ranking refines and extends the behavioral literature. Many prior studies have identified trust, convenience, knowledge, social influence, and religiosity as explanatory variables. The present article shows how these explanatory variables translate into strategic priorities. Trust is strengthened through transparent reporting and accountable platform governance. Ease-of-use application remains crucial, but it should be developed after or alongside accountability architecture, not instead

of it. Social campaigns are valuable, but they should communicate and amplify an already credible system rather than attempt to substitute for it. In this sense, the article moves from explanation to prioritization. It shows practitioners where to intervene first.

The findings also carry broader implications for Islamic monetary economics and finance. Cash waqf is often discussed as a source of socially oriented capital that can complement public finance, Islamic banking, and productive investment programs. If crowdfunding institutions can strengthen participation, they can widen the mobilization base for waqf funds and improve the continuity of philanthropic resource flows (Ab Shatar *et al.*, 2021; Thaker *et al.*, 2018). The current results suggest that the institutional economics of cash waqf mobilization are deeply shaped by information architecture. Transparency reduces perceived risk, increases confidence in social returns, and enhances the legitimacy of digital Islamic finance mechanisms (Hasan *et al.*, 2025; Nofianti *et al.*, 2024). In this sense, digital reporting is not merely a managerial feature; it is a mechanism that can lower transaction uncertainty in faith-based giving.

These results also help explain why some innovative waqf programs underperform relative to their potential. When institutions emphasize socialization, branding, or even Sharia labeling without building robust reporting systems, donors may remain unconvinced. Maulina *et al.* (2024) argued that low transparency and trust remain serious barriers even in bank-linked waqf programs. Nour Aldeen *et al.* (2022) likewise stressed the importance of stricter monitoring and greater transparency. The present AHP analysis offers a structured confirmation of those concerns: if institutions want to increase participation, their first investment should be in visible, verifiable, donor-facing transparency. Only then will ease-of-use improvements and social campaigns achieve their full effect.

This creates an important theoretical tension. Although technological advancement offers opportunities to improve accessibility and efficiency, digital waqf platforms cannot rely solely on technological availability, as participation in waqf is also influenced by ethical considerations, religious motivation, and trust in institutional management. Therefore, the most effective innovation strategy may not be the adoption of advanced technology alone, but rather the integration of technological solutions with governance mechanisms that enhance transparency and accountability.

Based on the prioritization results, a staged implementation strategy is recommended. Stage one should build a strong transparency backbone, and stage two should streamline the user journey through simpler

navigation, fewer transaction steps, and integrated Sharia payment channels. Stage three should expand campaigns and collaborations through ulama, regulators, community organizations, and partner institutions. The order matters because later stages will be more credible and more effective when they rest on the foundation established in stage one.

The findings suggest that digital transparency should become the primary strategic priority for waqf crowdfunding institutions. Governance innovation requires regulators to support this initiative by encouraging standardized reporting frameworks for digital waqf platforms. In addition, collaboration between Islamic financial institutions and crowdfunding platforms may enhance accessibility and public trust in cash waqf initiatives. Therefore, this study extends the systematic innovation perspective by addressing governance, process, and social innovation as strategic alternatives for creating sustainable value.

4.3. Limitations and future research

This study has several limitations that should be acknowledged. First, the prioritization results are derived from the collective judgments of a relatively small panel of 11 Indonesian experts representing academia, industry, and regulatory institutions. Although this panel is appropriate for the AHP methodology and achieved acceptable consistency, the resulting priorities reflect expert perspectives within the Indonesian context rather than a statistically representative population. Accordingly, the findings should be interpreted as context-specific and should not be generalized directly to other countries or institutional settings, where differences in regulatory frameworks, technological readiness, governance structures, and socio-cultural conditions may lead to different strategic priorities. Second, the study relies exclusively on expert judgments and does not incorporate empirical evidence from actual waqf contributors or crowdfunding platform users. Consequently, the identified priorities represent institutional and strategic assessments rather than observed donor behavior, user preferences, or actual technology adoption experiences. The findings, therefore, provide guidance for strategic prioritization but should not be interpreted as evidence of users' behavioral responses. Finally, although the AHP framework provides a systematic and robust approach for prioritizing innovation strategies, its external validity would be strengthened through broader empirical validation. Future studies are encouraged to replicate the framework with larger and more diverse expert panels, including actual waqf contributors and crowdfunding platform users, and to conduct comparative cross-country analyses to examine whether the strategic priorities remain consistent

across different regulatory, institutional, and cultural environments. Additional studies may also compare the results using alternative multi-criteria decision-making techniques, such as the Analytic Network Process (ANP), to assess the robustness of the prioritization framework.

5. Conclusion

The study found that perceived benefit is the most influential criterion, followed by ease of use, facilitating conditions, transparency and trust, and religiosity and Islamic values. The global priority synthesis shows that digital transparency and real-time reporting are the leading strategic alternatives, substantially outperforming simplified user experiences, integrated Sharia payment channels, and social campaigns with institutional collaboration. Viewed through a systematic innovation perspective, these findings suggest that governance innovation should receive priority, followed by process and social innovation, to strengthen participation in crowdfunding-based cash waqf platforms.

Several managerial and policy recommendations follow. First, waqf crowdfunding institutions should prioritize donor-facing transparency infrastructure. Public dashboards, periodic financial updates, project milestones, impact documentation, and audit-linked disclosures should become standard features rather than optional additions. Second, institutions should improve the user journey by simplifying interfaces and integrating Sharia-compliant payment options, ensuring the technical experience aligns with donor expectations in the digital economy. Third, campaigns and collaborations should be used strategically to amplify a credible system, not to compensate for weak governance. Endorsements by ulama, regulators, and partner institutions will be more persuasive when donors can immediately verify the institution's claims through transparent reporting. Fourth, regulators and sectoral authorities should support disclosure standards and platform governance guidelines to reduce variation in reporting quality across waqf crowdfunding institutions.

Overall, this study concludes that transparency represents the highest-leverage strategy for increasing public participation in crowdfunding-based cash waqf. In the context of digital Islamic philanthropy, institutional credibility is built not only through religious legitimacy but also through visible accountability and measurable social impact. Although AI and blockchain-based waqf systems were not directly evaluated within the AHP hierarchy, these emerging technologies may serve as potential enablers of transparency-oriented governance innovation by supporting more accountable, efficient, and sustainable digital waqf ecosystems. Consequently, transparency

should be positioned as the strategic foundation of modern waqf mobilization in the digital economy.

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Conflict of interest

The authors declare that they have no competing interests. The research was conducted independently, and there are no financial, institutional, or personal relationships that could influence the integrity of the results or the objective interpretation of this study.

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Ethics approval and consent to participate

This study involved human subjects and received ethical approval from the Human Research Ethics Committee of IPB University (Komite Etik Penelitian yang Melibatkan Subjek Manusia, Institut Pertanian Bogor). The research protocol entitled “An Integrated Model of Cash Waqf Intention on Crowdfunding Platforms” was reviewed and approved under Ethical Approval Number 1975/IT3. KEPMSM-IPB/SK/2025, issued on October 8, 2025.

The ethical approval granted permission to conduct research involving human participants, including data collection through in-depth interviews with experts in waqf, digital finance, crowdfunding, and relevant regulatory institutions. The approval covered the protection of participants' rights, welfare, and confidentiality, as well as ethical conduct throughout the research process.

Prior to participation, written informed consent was obtained from all participants. The participants were informed about the purpose of the study, the voluntary nature of their participation, their right to withdraw, and the intended use of the collected data for academic publication. All participant information was kept

confidential, and no personally identifiable information was disclosed in this manuscript.

Consent for publication

Written informed consent was obtained from all participants involved in this study. Participants agreed to the use and publication of data obtained through the interviews for research purposes. All identifying information has been removed to ensure participant confidentiality and anonymity.

Availability of data

The data used in this study were obtained through in-depth interviews with 11 experts in the fields of waqf, digital finance, crowdfunding, and relevant regulatory institutions. Due to the confidential nature of the interview data and ethical considerations related to participants' privacy, the full interview transcripts are not publicly available. However, the data supporting the findings of this study may be made available from the corresponding author upon reasonable request.

Further disclosure

During the preparation of this work, the authors used QuillBot to refine the language's clarity and improve the academic tone. After using this tool/service, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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