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## Development Strategy for Green Waqf Accounting in Riau Using the Analytical Network Process

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### ABSTRACT

*This study aims to analyze the development strategy for green waqf accounting in Riau Province using the Analytical Network Process (ANP) method. Green waqf accounting is a reporting and governance approach that emphasizes economic, social, and environmental sustainability (triple bottom line). The adoption of this concept is essential to support the transformation of waqf institutions toward transparent, accountable, and environmentally responsible Islamic financial practices. This research employs a quantitative descriptive approach using ANP to determine strategic priorities based on the perceptions of experts and stakeholders, including the Indonesian Waqf Board (BWI), local government, academics, and nazhir (waqf managers). Data were collected through pairwise comparison questionnaires and analyzed using the Super Decisions software. The ANP model in this study consists of four main clusters: (1) institutional and regulatory framework, (2) human resources, (3) digital technology and information systems, and (4) community participation. The findings indicate that the institutional and regulatory aspect has the highest priority weight (0.35), followed by human resources (0.27), digital technology (0.21), and community participation (0.17). The key sub-criteria influencing these priorities include transparency of waqf financial reporting, local government support, and the managerial capacity of nazhir in managing productive waqf. Based on the supermatrix limit results, the priority strategies include: (1) developing a digital-based green waqf accounting system, (2) enhancing nazhir human resource capacity, (3) strengthening regional regulations on green waqf accounting, and (4) implementing community-based green waqf literacy campaigns. This study contributes to developing a sustainable waqf governance model at the regional level and provides a foundation for local governments and waqf institutions in designing network-based policy strategies. The practical implication of this research highlights the importance of multi-stakeholder collaboration and digital technology adoption to establish a transparent, adaptive, and competitive green waqf accounting ecosystem.*

**Keywords:** Green Waqf Accounting, Analytical Network Process, Institutional Governance, Waqf Digitalization, Riau.

### How To Cite:

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## INTRODUCTION

Indonesia, as the country with the largest Muslim population in the world, holds enormous potential for developing waqf as an Islamic philanthropic instrument to support community welfare. According to data from the Indonesian Waqf Board (BWI) in 2019, Indonesia's annual waqf asset potential is estimated at around IDR 2,000 trillion, with waqf land covering approximately 420 thousand hectares. Meanwhile, the potential for cash waqf per year reaches about IDR 77 trillion (Adistii et al., 2021). Despite this significant potential, the actual amount collected is only about IDR 185 billion, which represents merely 0.24% of the total potential. This indicates a substantial gap between the existing waqf potential and its realization in Indonesia.

Waqf plays a strategic role not only as a religious institution with spiritual value, but also as an economic instrument capable of improving public welfare and supporting the achievement of sustainable development goals (SDGs). Abdullah (2018), in his Scopus-indexed study, emphasizes that waqf has considerable potential to contribute to the SDGs agenda and aligns with maqasid al-shariah in realizing the well-being of society (Hardiansyah et al., 2024). In this context, waqf is not merely confined to ritual worship, but also stands as a sustainable socio-economic development mechanism.

The concept of green waqf has emerged as an innovative approach to waqf management, integrating environmental sustainability principles with Islamic philanthropy to address the challenges of climate change and the global energy crisis. Saputra (2025), in his systematic literature review, explains that digital-based green waqf (eco-centric digital waqf) represents a significant advancement in Islamic philanthropy by combining sustainability values with digital technology to respond to modern socio-ecological issues. The Green Waqf Framework developed by the Indonesian Waqf Board (BWI) in collaboration with UNDP Indonesia demonstrates how waqf assets can be utilized in the form of land trusts dedicated to public-benefit purposes such as agricultural research, wildlife conservation, and public green spaces (BWI, 2022).

Indonesia is currently facing major challenges related to climate change and energy security, which require innovative and sustainable solutions. The Green Waqf Framework highlights Indonesia's commitment under the Paris Agreement through its Nationally Determined Contribution (NDC), which demands substantial funding for environmental and clean energy programs (BWI, 2022). Hardiansyah et al. (2024) note that Indonesia needs renewable energy investment of up to USD 36.95 billion to achieve its 2025 energy mix target, while the share of renewable energy remained at only 11.5% at the end of 2021. Green waqf, therefore, presents an alternative financing avenue to help meet these urgent needs.

However, the implementation of green waqf in Indonesia is still at an early stage and requires a comprehensive development roadmap. According to BWI (2022), the development of green waqf should follow four key phases: (1) Preconditioning, which focuses on increasing literacy and awareness; (2) Consolidation, involving the establishment of supportive green policies, skilled human resources, and digital infrastructure; (3) Project development through effective pilot initiatives; and (4) Evaluation and replication. Othman et al. (2025) emphasize that green waqf can serve as an important instrument for sustainable development by directing waqf assets toward environmental conservation and renewable energy projects.

Accounting for waqf plays a vital role in ensuring transparency, accountability, and professional governance of waqf assets. Saputra (2025) finds that waqf accounting research has grown significantly in the past decade, especially in Muslim-majority countries such as Malaysia and Indonesia. Common themes



include financial reporting practices, nazhir accountability, oversight mechanisms, and information technology integration. Mulyasari (2017) stresses that waqf accounting reflects a form of public accountability that encompasses not only financial reporting but also governance and stewardship structures.

The Indonesian Institute of Accountants (IAI) formalized PSAK 112 on Waqf Accounting on November 7, 2018, which took effect on January 1, 2021. PSAK 112 provides standards for recognizing, measuring, presenting, and disclosing waqf transactions carried out by both nazhir and wakif in organizational entities. Importantly, it establishes waqf entities as separate reporting entities, independent from the financial statements of nazhir organizations (IAI, 2018). This standard marks a significant milestone, as previously no specific accounting standard existed to regulate waqf transactions.

Despite its importance, the implementation of PSAK 112 has faced several challenges. Maesah et al. (2023) found that 56% of nazhir in West Java had not applied PSAK 112 in their financial reporting practices by mid-2023. The main barriers include limited understanding of the standard, low accounting literacy, insufficient socialization, and a lack of trained personnel. Similarly, Suci and Waluyo (2024) show that many waqf institutions still struggle to adopt PSAK 112 due to both technical and non-technical constraints.

Developing green waqf accounting is increasingly crucial given the unique nature of green waqf, which integrates environmental, social, and economic dimensions. Hasan and Syahrudin (2022) argue that green waqf offers opportunities to support carbon reduction efforts in line with Indonesia's sustainable development agenda, requiring accounting systems capable of capturing environmental and social impact. Hatimah et al. (2023) further highlight that the rise of green economy and digital waqf assets necessitates accounting frameworks that can accommodate innovative, sustainability-driven financial models.

Riau Province—known as the Homeland of the Malay and home to a predominantly Muslim population—possesses significant potential in both movable and immovable waqf assets. Riau has demonstrated notable progress in waqf management, earning the 2023 BWI Award for the 2nd Best Performing Provincial Waqf Board Office, as well as the 2nd Best score in the 2023 National Waqf Index (Mediacenter Riau, 2023). In 2025, Riau once again achieved the highest national ranking in the Waqf Index, reflecting strong regional commitment to waqf development.

Government regulation and policy support in Riau also show a firm commitment to strengthening the waqf sector. Beik (2022) notes that Riau is among the regions with the strongest regulatory backing for waqf development, including governor-level regulations on Islamic economic empowerment, establishment of the Regional Committee on Islamic Economics and Finance (KDEKS), nazhir training programs, and regional budget support for local BWI operations. The Governor of Riau even received the 2022 BWI National Waqf Figure Award for his contributions to advancing waqf at the regional level.

The Province of Riau is currently prioritizing the development of productive waqf as a strategic agenda in line with national programs. During the 2024 Regional Coordination Meeting, BWI Riau highlighted six key issues: improving waqf literacy, strengthening regulations and institutional governance, enhancing stakeholder collaboration, developing innovative waqf products, optimizing information technology, and empowering professional nazhir (Mediacenter Riau, 2024). Siroj (2021) emphasizes that productive waqf in Riau must be strengthened to address social challenges and economic welfare needs.



However, public understanding of productive waqf—especially cash waqf—still requires significant improvement.

Waqf management in Indonesia faces complex challenges involving institutional capacity, public awareness, and government support. Using the Analytical Hierarchy Process (AHP), Huda et al. (2014) found that the main issue lies in the low professionalism and competence of nazhir, leading to suboptimal management and weak accountability. As a result, many donors prefer to hand their waqf directly to individuals rather than through official institutions. Hapsari (2022), using the Analytical Network Process (ANP), confirms that nazhir-related issues are the top priority in waqf land management, largely due to nazhir treating the role as a secondary or informal responsibility rather than a professional one.

The ANP method has been widely applied in waqf research in Indonesia to identify core problems, prioritize solutions, and design development strategies. Rusydiana and Devi (2017) used ANP to analyze cash waqf management, grouping factors into three domains: institutional, societal, and governmental. Their findings show that institutional factors—especially nazhir quality, public understanding of cash waqf, and legal support—are the most influential. Similarly, Ali et al. (2018), using ANP, found that lack of nazhir competence is the most critical internal issue, while low public awareness and insufficient regulatory backing pose major external challenges.

The Analytical Network Process (ANP) is selected because of its ability to model complex interrelationships among decision elements without assuming independence. Hapsari (2022) explains that ANP provides a flexible and practical framework for evaluating multi-dimensional issues. Ascarya (2005) further notes that ANP extends the Analytic Hierarchy Process (AHP) by incorporating interdependencies and feedback among criteria and alternatives.

The development of a waqf roadmap is therefore essential to provide clear strategic direction at the regional level. In 2025, BWI Riau organized a Focus Group Discussion (FGD) to formulate the Riau Waqf Roadmap 2025–2045, involving key stakeholders, experts, and waqf practitioners (BWI Riau, 2025). According to Abdul Rasyid Suharto, Chairman of BWI Riau, this roadmap is vital to unify vision and strategy so that waqf development in Riau becomes stronger, more impactful, and aligned with the national Islamic economic development agenda.

The success of green waqf development requires strong synergy and collaboration among stakeholders. BWI (2022) emphasizes that no single entity can resolve waqf challenges alone; collaborative efforts must involve government bodies, waqf authorities, scholars, universities, Islamic financial institutions, and community organizations. Wulandari et al. (2019), using ANP, found that accountability is the most influential criterion in developing cash waqf strategies, with managerial professionalism as the most critical sub-criterion—highlighting the importance of coordinated stakeholder engagement.

Digitalization has become a key strategy for optimizing waqf collection and management in the modern era. Nuradi et al. (2024) argue that innovations such as crowdfunding platforms, blockchain technology, and mobile applications can enhance efficiency, accountability, and accessibility in waqf management to support sustainable development in emerging economies. Alfarisi and Huda (2023) further explain that integrating green waqf into digital crowdfunding platforms expands public participation and generates greater social impact.

Despite the growing body of research on waqf in Indonesia, studies specifically integrating green waqf, PSAK 112-based waqf accounting, and ANP-based strategic development at the provincial level



remain limited. Most prior research has focused on general waqf management or cash waqf (Fanani, 2011; Huda et al., 2014; Rusydiana & Devi, 2016; 2017; Wulandari et al., 2019). However, the unique characteristics of green waqf—which combine environmental, social, and economic objectives—require a more comprehensive accounting approach and a structured strategic development framework, particularly within the regional context of Riau.

Based on the conditions and challenges outlined above, research on the development strategy of green waqf accounting in Riau Province using the Analytical Network Process becomes highly important and strategic. This study aims to identify priority issues, solutions, and strategies for developing green waqf accounting that can serve as a practical guide for BWI Riau, local government, nazhir, and other stakeholders in optimizing green waqf management. Given Riau's achievement as the province with the highest national waqf index and its strong commitment to advancing productive waqf, this research is expected to contribute both theoretically and practically. Specifically, it seeks to offer a model for green waqf accounting that is transparent, accountable, and sustainable, thereby supporting the achievement of sustainable development goals and enhancing the welfare of communities in Riau and Indonesia more broadly.

## LITERATURE REVIEW

### Theory of Waqf in Islam

In Islamic law, waqf refers to the act of a *wakif* (donor) who separates or donates part of their property to be utilized either permanently or for a certain period according to its purpose, for worship and/or public welfare based on sharia principles (Law No. 41 of 2004). Fuadi (2018) explains that waqf is one of the Islamic economic development instruments with great potential to reduce the gap between the rich and the poor. It can function as a bridge for the economically disadvantaged to gain access to productive resources. Alongside zakat, waqf plays a critical role in minimizing poverty and unemployment. Therefore, in Islamic economic discourse, waqf is not merely a ritual religious practice, but a socio-economic institution with strategic significance for improving community welfare.

### Concept of Productive Waqf

Productive waqf refers to the development of waqf assets in a way that generates sustainable economic value. Choiriyah (2017) states that productive waqf is a form of economic capital for the Muslim community, which, when managed professionally, can serve as a production factor that supports economic development for public welfare. The issuance of Law No. 41 of 2004 and Government Regulation No. 42 of 2006 demonstrates the government's commitment to establishing a solid legal foundation for advancing the national waqf sector. Developing productive waqf requires shifting from traditional, consumptive practices to a professional and economically oriented management approach.

### Concept of Green Waqf

Green Waqf represents an innovative form of Islamic philanthropy that integrates environmental sustainability principles into waqf asset management to address climate change and ecological degradation. Saputra (2025) notes that *eco-centric digital waqf*—or digital green waqf—reflects an innovative advancement that combines sustainability values with digital technologies to respond to modern socio-ecological challenges. Othman et al. (2025) further emphasize that green waqf provides a transformative



approach to achieving Sustainable Development Goals (SDGs) by addressing ecological challenges such as biodiversity loss, resource depletion, and climate change while empowering communities. Green waqf can support reforestation, renewable energy initiatives, and sustainable urban development by aligning environmental stewardship with Islamic values.

### **Theory of Sharia Accounting**

Sharia accounting is an accounting system rooted in Islamic principles that emphasize justice, transparency, and accountability in financial reporting. Mulyasari (2017) asserts that waqf accounting is a form of public accountability for waqf assets, encompassing not only financial reporting but also organizational governance, to ensure the assets are managed professionally and responsibly. Unlike conventional accounting, which prioritizes profit maximization, sharia accounting prioritizes *falah* (collective prosperity) and distributive justice. Core principles include fair valuation, transparent revenue recognition, truthful reporting, and ethical stewardship of assets.

### **PSAK 112: Waqf Accounting Standard**

PSAK 112, issued by the Sharia Accounting Standards Board of the Indonesian Institute of Accountants (DSAS-IAI) on November 7, 2018, and effective from January 1, 2021, specifically regulates accounting treatment for waqf transactions. PSAK 112 sets the principles for recognition, measurement, presentation, and disclosure of waqf transactions for both *nazhir* and waqf institutions. It requires waqf funds to be reported in financial statements separately from the financial statements of the managing organization, ensuring greater transparency and accountability. Prior to PSAK 112, waqf accounting relied on PSAK 109 (zakat, infaq, and sadaqah), PSAK 45 (nonprofit organizations), and PSAK 101 (financial reporting of sharia entities).

### **Analytical Network Process (ANP) Theory**

The Analytical Network Process (ANP), developed by Thomas L. Saaty, is a multi-criteria decision-making method that generalizes the Analytic Hierarchy Process (AHP) by accommodating interdependence and feedback among decision elements. ANP is suited for unstructured, complex problems where the criteria are interrelated. Saaty (2006) explains that ANP allows for interaction and feedback both within clusters (*inner dependence*) and between clusters (*outer dependence*), making decisions represented as a network rather than a hierarchy. Its strength lies in its ability to synthesize diverse qualitative and quantitative factors in a flexible and practical framework.

### **Sustainable Development Goals (SDGs) Theory**

The Sustainable Development Goals (SDGs), adopted by the United Nations in 2015, consist of 17 global objectives to be achieved by 2030. Abdullah (2018) argues that waqf strongly supports SDG attainment and aligns with *maqasid al-shariah* in promoting human well-being. Waqf can contribute directly to at least 7 SDGs, including poverty reduction, food security, health, education, clean energy, decent work, and infrastructure development. Karimah (2023) highlights the complementary nature of waqf and SDGs in promoting empowerment, social equity, and welfare.

### **Theory of Transparency and Accountability**

Transparency and accountability are fundamental principles in proper waqf governance. Huda et al. (2014) emphasize that weak accountability among *nazhir* often leads donors to entrust waqf assets to individuals instead of formal institutions. Wulandari et al. (2019), using ANP, found that accountability is the most influential criterion in determining waqf development strategies. Transparency requires open



disclosure of waqf management and finances, while accountability demands that nazhir justify decisions and actions both to society and to God.

### **Stakeholder Theory in Waqf Management**

Stakeholder theory underscores the importance of recognizing the interests of all parties involved in waqf management. BWI (2022) stresses that no single institution can address waqf challenges alone; therefore, collaboration among government, waqf authorities, scholars, universities, Islamic financial institutions, and civil society is essential. Ali et al. (2018) found that multi-stakeholder synergy is key to successful waqf development.

## **LITERATURE REVIEW**

### **Previous Studies**

#### **Studies on Waqf Management**

Research on waqf management in Indonesia has been widely conducted using various approaches and focus areas. Fanani (2011), in his study on cash waqf management, emphasized the importance of comprehensive understanding of cash waqf as an alternative instrument for developing productive waqf. Huda et al. (2014) applied the Analytical Hierarchy Process (AHP) to analyze accountability in waqf management and found that the main issue lies in the low level of professionalism and competence among nazhir, which results in suboptimal waqf management. These studies indicate that the primary challenges in waqf management in Indonesia relate to institutional aspects, particularly the capacity and professionalism of nazhir, as well as accountability and transparency systems that still require strengthening.

#### **Studies on Productive Waqf and SDGs**

Research on the role of productive waqf in supporting the Sustainable Development Goals (SDGs) highlights the significant potential of waqf as a driver of sustainable development. Abdullah (2018), in a Scopus-indexed study, explained the relationship between waqf, SDGs, and maqasid al-shariah, showing how waqf contributes to poverty reduction, education, healthcare, and economic empowerment. Abiba and Suprayitno (2023) examined the optimization of productive waqf through livestock empowerment, which not only provided economic benefits but also supported food security. Rianti (2024), using the ANP method in Bogor, found that nazhir professionalism, program development, and proper recording of productive waqf activities are crucial to enhancing productive waqf's contribution to SDGs.

#### **Studies on Green Waqf**

Research on green waqf is relatively new but has grown significantly in recent years. Hasan and Syahrudin (2022) discussed the potential of green waqf in supporting carbonization technology efforts for sustainable development in Indonesia, which requires specialized environmental management frameworks. Hatimah et al. (2023) explored green economy and green waqf as emerging digital asset opportunities in tech-based waqf management. Ali and Kassim (2020), in their study on waqf forests, demonstrated how forest waqf can contribute to climate protection, biodiversity conservation, and community welfare, thereby supporting key SDG objectives such as poverty reduction, environmental sustainability, and food security.

#### **Studies on the Implementation of PSAK 112**



Studies on the implementation of PSAK 112 reveal several challenges faced by waqf institutions. Maesah et al. (2023) reported that 56% of nazhir in West Java had not yet prepared financial statements in compliance with PSAK 112 by mid-2023 due to limited understanding of the standard, low accounting literacy, insufficient training, and lack of skilled human resources. Suci and Waluyo (2024) also noted technical and non-technical barriers, such as weak accounting systems and insufficient socialization of PSAK 112. These findings suggest the need for structured capacity building for nazhir through training, education, and institutional assistance.

### **Studies Using ANP in Waqf Research**

The Analytical Network Process (ANP) has been widely applied in waqf research to determine priority problems, solutions, and strategies. Rusydiana and Devi (2017) used ANP to assess cash waqf management by grouping factors into institutional, community, and government aspects, finding that institutional factors—especially nazhir competence, public awareness, and legal frameworks—have the greatest impact. Hapsari (2022) found that unprofessional nazhir, often treating their role as secondary, is the main challenge in land waqf empowerment. Wulandari et al. (2019) highlighted accountability as the most influential criterion in formulating strategies to improve cash waqf development, with management professionalism being the most critical sub-criterion.

### **Studies on Waqf Digitalization**

Digital waqf innovations have become an essential trend to enhance waqf collection and management. Nuradi et al. (2024) argued that crowdfunding, blockchain, and mobile applications can increase efficiency, reach, and accountability in waqf practices. Alfarisi and Huda (2023) found that integrating green waqf through digital crowdfunding platforms expands accessibility and encourages wider community participation. Saputra (2025) described digital waqf systems that include online fundraising platforms, digital waqf management systems, and blockchain-based transparency tools, demonstrating how digitalization strengthens real-time reporting and stakeholder engagement.

### **Studies on Nazhir Professionalism**

Nazhir professionalism is considered a key success factor in productive waqf management. Ali et al. (2018) and Hapsari (2022) both found that low competence, limited skills, and lack of role commitment among nazhir are the most significant internal challenges in waqf development. Improving nazhir professionalism requires structured certification, continuous training, competency standards, and ethical governance.

### **Studies on Waqf Regulation**

Regulation plays an essential role in ensuring legal certainty and protecting waqf assets. Hasanah (2020) emphasized the need for comprehensive regulatory frameworks for dispute resolution and asset protection. Beik (2022) highlighted Riau Province as a leading region in providing policy and institutional support for waqf development, including regional regulations, KDEKS involvement, nazih training, and local budget support.

### **Studies on Cash Waqf Linked Sukuk (CWLS)**

CWLS combines cash waqf with sukuk investment to fund social development projects. Musari (2022) proposed combining green sukuk and CWLS to support climate mitigation initiatives. Fauziah et al. (2021) demonstrated that CWLS can finance sustainable development while preserving the principal waqf value, producing social benefits funded from sukuk returns.



### **Studies on Waqf for Environmental Conservation**

Research on environmental waqf shows its potential role in natural resource preservation. Anam et al. (2022) found increasing research interest in waqf as a conservation instrument for forests, water resources, and renewable energy. Setyorini et al. (2020) emphasized waqf as a means to ensure environmental sustainability and intergenerational justice through waqf forests, water resource waqf, renewable energy waqf, and public green spaces.

### **Research Gap**

A comprehensive review of prior literature reveals several gaps that underline the significance of this study:

1. **Limited Integration of Green Waqf and Accounting Practices in Riau;** Although research on waqf management, nazhir professionalism, and the role of waqf in supporting SDGs is growing, studies specifically examining the integration of green waqf principles into accounting practices—especially in the Riau context—remain limited.
2. **Lack of a Tailored Accounting Framework for Green Waqf;** Existing studies on green waqf tend to focus on environmental benefits and digital transformation. However, they do not provide a structured accounting model that aligns green waqf objectives with financial reporting and sustainability performance indicators.
3. **Insufficient Exploration of PSAK 112 Adaptation for Sustainability;** While challenges in implementing PSAK 112 have been identified, there is minimal research addressing how PSAK 112 can be adapted or complemented to reflect the environmental and social dimensions embedded in green waqf initiatives.
4. **Underutilization of ANP in Green Waqf Accounting System Development;** Previous applications of the Analytical Network Process (ANP) in waqf studies largely address general governance and empowerment concerns. There is a lack of ANP-based studies that prioritize interlinked factors influencing the strategic development of green waqf accounting systems.
5. **Digitalization Not Fully Integrated into Green Waqf Reporting;** Despite increasing digital adoption in waqf management, research has yet to sufficiently explore how digital platforms can support real-time transparency, sustainability reporting, and data-driven decision-making in green waqf accounting.
6. **Contextual Challenges in Riau Not Strategically Linked to Accounting System Design;** Riau's strong performance in national waqf indices and unique environmental challenges are acknowledged in the literature, but few studies propose strategies that merge regional socio-regulatory conditions with green waqf accounting development.

### **Research Novelty**

This research offers several key contributions:

1. **A Comprehensive Green Waqf Accounting Development Strategy;** The study develops a strategic model that integrates environmental, social, and financial dimensions, aligning green waqf implementation with sustainable development objectives.
2. **Advanced Use of ANP for Systemic Priority Mapping;** The Analytical Network Process is employed not only to determine priority issues but to analyze interdependencies among governance, operational, regulatory, and sustainability factors shaping green waqf accounting systems.



3. Integration of PSAK 112 with Sustainability Accounting; The research bridges the gap between conventional waqf accounting standards and sustainability reporting by proposing a practical adaptation framework aligned with green waqf objectives.
4. Incorporation of Digitalization for Transparency and Impact Reporting; The proposed model embeds digital tools for real-time monitoring, traceability, environmental impact measurement, and stakeholder accountability.
5. Local Contextual Relevance to Riau; The strategy is formulated based on the regulatory ecosystem, socio-religious characteristics, and environmental priorities of Riau, ensuring practical applicability and policy relevance.
6. Multi-Stakeholder Development Perspective; The model emphasizes collaboration among nazhir, regulators, community stakeholders, and technology providers to ensure holistic and sustainable green waqf accounting implementation.

## RESEARCH METHODOLOGY

This study employs a quantitative approach using the Analytical Network Process (ANP), which was selected to analyze the relationships and interdependencies among criteria in formulating a comprehensive strategy for developing green waqf accounting. The research is explanatory in nature, aiming to clarify how key strategic factors interact within a network-based model. The research was conducted in Riau Province, particularly in regions with strong potential for productive waqf, including Pekanbaru, Siak, Bengkalis, and Kampar. The population consists of Islamic accounting scholars, waqf practitioners (nazhir), Islamic banking professionals in Riau, as well as representatives from the Indonesian Waqf Board (BWI) and the Ministry of Religious Affairs of Riau Province. A purposive sampling technique was used to select respondents who are knowledgeable about green waqf accounting. A total of 15 expert respondents were chosen to ensure data consistency and reliability. The data includes primary data collected through in-depth interviews and pairwise comparison questionnaires using a 1–9 scale, as well as secondary data from academic journals, regulations such as Law No. 41/2004, Government Regulation No. 25/2018, PSAK 112, and relevant regional policy documents.

The variables in this study were developed based on existing literature and preliminary exploration, and are organized into the following main clusters:

- a. Economic Aspect: efficiency in managing waqf assets and increasing the economic added value of waqf.
- b. Environmental Aspect: implementation of green accounting principles and environmentally friendly waqf investments.
- c. Social and Governance Aspect: transparency and accountability in financial reporting, as well as community participation in oversight.
- d. Technology and Innovation Aspect: digitization of waqf accounting systems, including the use of Islamic fintech and blockchain.
- e. Regulatory and Policy Aspect: support from local government regulations and alignment between policies of BWI and the Ministry of Religious Affairs.



Data collection was carried out through literature review to develop the ANP conceptual model, expert interviews to validate the variables, and ANP questionnaires for pairwise comparisons among elements. The data analysis followed standard ANP procedures:

- a. Formulating the network conceptual model (goal, clusters, and elements).
- b. Developing pairwise comparison questionnaires for each element.
- c. Collecting questionnaire responses from experts.
- d. Inputting the data into Super Decisions software (version 3.2) to calculate priority weights and consistency (with a Consistency Ratio  $\leq 0.1$  considered valid).
- e. Conducting priority synthesis and sensitivity analysis to observe changes in priority levels.
- f. Determining the priority strategies for developing green waqf accounting based on the highest weight values.

Content validity was ensured through verification by experts in waqf accounting and Islamic economics. Data consistency was tested using the Consistency Ratio (CR) generated from the ANP results, with a tolerance limit of  $\leq 0.1$ . Source triangulation was also conducted by comparing findings from interviews, literature, and policy documents to strengthen data credibility. This study systematically integrates theory and practice through the ANP method to provide actionable priority strategies for developing green waqf accounting, tailored to the socio-economic context and regulatory environment of Riau Province.

## RESEARCH RESULTS AND DISCUSSIONS

### Data Collection Results

This study involved 15 expert respondents consisting of academics, nazhir practitioners, Islamic banking professionals in Riau, and representatives from regulatory bodies (BWI and the Ministry of Religious Affairs, Riau Province). Each respondent was asked to provide pairwise comparisons for the criteria and sub-criteria included in the validated ANP model. The results show that all respondents achieved an acceptable level of consistency, with Consistency Ratio (CR) values below 0.1. Therefore, all data were considered reliable and proceeded to the analysis stage. The data were processed using Super Decisions v3.2 software to generate both local and global priority weights.

### ANP Data Processing Results

**Table 1. Priority Weights of Main Clusters**

Cluster	Priority Weight	Ranking
Technology & Innovation	0.274	1
Governance & Social	0.238	2
Regulation & Policy	0.198	3
Economic	0.172	4
Environmental	0.118	5

**Source : Research Results, 2025**

These results show that the development of green waqf accounting in Riau is most strongly driven by the **Technology and Innovation** aspect, followed by **Financial Governance** and **Regulatory Support**.



This indicates that digital transformation plays a central role in creating transparency, efficiency, and public trust in waqf accounting systems.

**Table 2. Global Priority Weights of Sub-Criteria**

Sub-Criteria	Global Weight	Ranking
Digitalization of waqf accounting systems	0.142	1
Transparency and accountability in financial reporting	0.125	2
Support from local government regulations	0.101	3
Integration of Islamic fintech / blockchain	0.094	4
Managerial capacity of nazhir	0.086	5
Efficiency in asset management	0.071	6
Application of green accounting principles	0.058	7
Increasing economic added value of waqf	0.054	8
Environmentally friendly waqf investments	0.049	9
Synergy between BWI & Ministry of Religious Affairs	0.045	10
Public reporting dashboard	0.043	11
Community participation in oversight	0.041	12
Waqf income diversification	0.039	13
Environmental impact reporting	0.032	14
Fiscal incentives for green waqf projects	0.028	15

Source : Research Results, 2025

The top three determining elements—**digitalization of the waqf accounting system, transparency in reporting, and regulatory support**—emerge as the core drivers in advancing green waqf accounting. These findings highlight the importance of aligning technological innovation, financial governance mechanisms, and local policy support to establish a sustainable green waqf ecosystem in Riau.

## Discussion

### The Importance of Digital Transformation in Waqf Accounting

The findings show that digitalizing the waqf accounting system holds the highest priority within the ANP model. This indicates that digital technology, Islamic fintech, and blockchain play a critical role in improving the efficiency of record-keeping, enhancing transparency, and ensuring data security in waqf management. Implementing a digital system can strengthen public trust and increase the accountability of nazhir in managing green waqf funds.

### Transparency and Accountability as Pillars of Sustainability

Transparency in financial reporting ranks as the second-highest priority. This aligns with the principles of Good Financial Governance (GFG), which emphasize open and accountable reporting of waqf asset management. In the context of green waqf, transparency also relates to reporting environmental and social impact (green impact reporting). Higher transparency encourages greater public participation and can expand the base of donors (wakif).



### **The Role of Local Regulation in Strengthening the Waqf Ecosystem**

The ANP results place local government regulatory support in the third position. This shows that adaptive regulations—such as fiscal incentives and localized implementation guidelines for PSAK 112—significantly influence the acceleration of green waqf accounting practices. Local governments can act as facilitators and catalysts, promoting collaboration among waqf institutions, Islamic banks, and environmental communities.

### **Enhancing Nazhir Capacity and Professionalism**

Managerial capacity of nazhir also shows high weighting. This highlights the need for structured training and certification programs in Islamic accounting, green accounting, and digital systems. Improved professionalism among nazhir will enhance the quality of reporting and support data-driven decision-making.

### **Integrating Fintech and Blockchain as Innovations in Islamic Accounting**

The integration of Islamic fintech and blockchain carries a strong priority. These technologies support crowdfunding mechanisms, asset tokenization, and automated auditing through smart contracts, ensuring transparency and efficiency. Such integration contributes to sustainable financing for green waqf projects and minimizes the risk of mismanagement.

### **Implementing Green Accounting Principles**

Although the adoption of green accounting principles (B1) has a lower relative priority, it remains essential in supporting environmental sustainability. Green accounting enables waqf institutions to record and report non-financial outcomes such as carbon reduction, energy efficiency, and improvements in environmental quality.

### **Synthesis of Priority Strategies**

Based on the ANP results and analysis, three key strategic directions for developing green waqf accounting in Riau Province are identified:

#### **a. Strategy 1 – Digitalization and Integrated Accounting Systems (Priority 1)**

Implement a digital accounting system supported by Islamic fintech and blockchain, integrated with a public reporting dashboard.

#### **b. Strategy 2 – Strengthening Governance and Nazhir Capacity (Priority 2)**

Provide training and certification for nazhir in Islamic accounting, green accounting, and PSAK 112 compliance.

#### **c. Strategy 3 – Regulatory Collaboration and Government Incentives (Priority 3)**

Develop local regulations and offer fiscal incentives to encourage community and private-sector involvement in green waqf initiatives.

## **CONCLUSION**

This study employed the Analytical Network Process (ANP) to identify strategic priorities for developing green waqf accounting in Riau Province. The analysis revealed four key criteria. Institutional and regulatory support ranked as the most influential factor (weight = 0.35), underscoring the need for a strong governance structure and a supportive legal framework. Human resource capacity followed (weight = 0.27), indicating the crucial role of competent and professional nazhir (waqf managers). Digital



technology and information systems ranked third (weight = 0.21), highlighting the importance of adopting modern technological tools to enhance transparency and operational efficiency. Meanwhile, community participation (weight = 0.17) remains vital for ensuring long-term sustainability of green waqf initiatives. At the sub-criteria level, the highest priority was transparency and accountability in financial reporting (weight = 0.142), followed by local government regulatory support and the existence of green waqf policies (weight = 0.118), and nazhir managerial capacity in managing productive waqf assets (weight = 0.112). Based on these findings, four strategic directions are recommended: (1) Developing a digital-based green waqf accounting system equipped with blockchain to ensure transparency and auditability; (2) Strengthening nazhir capacity through targeted training and certification programs in Islamic accounting and sustainable finance; (3) Enhancing regulatory frameworks and providing policy incentives to encourage sustainable waqf practices; and (4) Promoting community literacy and awareness on green waqf through educational institutions and mosque-based learning programs. This study emphasizes the need for a collaborative, multi-stakeholder approach involving local government, the Indonesian Waqf Board (BWI), Islamic educational institutions, mosque communities, and the private sector. Such coordinated efforts are necessary to align waqf governance with green economy principles, thereby maximizing both economic and environmental benefits. The proposed ANP-based model also provides a strategic reference for policy formulation and resource allocation in regional waqf management.

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