The Application of Fintech in Waqf Institutions: Governance Challenges and the Impact of Education Waqf in Indonesia

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Abstract

Waqf institutions in Indonesia manage assets on a large scale, but ongoing governance issues, such as administrative inefficiencies, limited accountability, and narrow donor reach, hinder their contribution to education financing. This study examines how the adoption of financial technology (FinTech) affects the governance practices and outcomes of educational waqf within waqf institutions in Indonesia. It identifies the structural conditions that support and hinder digital transformation. The researcher used a qualitative design with systematic document analysis of 48 institutional and regulatory sources for the 2019–2025 period, including OJK, BI, Ministry of Religion, and DSN-MUI policy instruments; governance documents and BWI's annual reports; reports of leading waqf bodies; and the platform document of the FinTech waqf provider. Data were analyzed through a six-phase reflective thematic analysis with NVivo 12 encoding. The findings produce four interrelated themes: uneven and still superficial FinTech adoption; a marked improvement in fundraising reach, donor trust, and allocation of educational resources among early adopters; layered barriers in the form of regulatory ambiguity, institutional capacity gaps, low donor digital literacy, and data security concerns; as well as governance prerequisites that institutions and regulators must meet for sustainable transformation. Further analysis shows that FinTech shifts capacity determinants from asset size to governance efficiency, thereby reallocating administrative resources towards programmatic education financing. However, the benefits remain concentrated among early adopters, posing a risk of widening the gap with pesantren-based waqf. The researcher proposes the Digital Waqf Governance Framework (DWGF), a four-pillar model comprising enabling regulation, digital infrastructure, human resources, and stakeholder trust, as a policy instrument to modernize waqf management and prevent widening gaps among institutions.

Keywords: Waqf governance; FinTech Application; Islamic Waqf; Digital Waqf Governance Framework.

Introduction

Waqf is an enduring philanthropic instrument in Islam devoted to the public interest. Waqf has become one of the oldest and most structurally distinctive social financial instruments in Muslim-majority societies (Kahf 2003). In Indonesia, the scale of waqf is still very large to this day. The Indonesian Waqf Agency (2024) estimates that the value of registered waqf land is around IDR 2,000 trillion (around USD 130 billion), spread across more than 440,000 waqf points covering an area of more than 56,000 hectares throughout Indonesia. Even though waqf assets are large, the level of utilization for productive activities remains very low. BWI's official report shows that less than a quarter of registered waqf land is used productively. In addition, the contribution of waqf wealth to real educational attainment remains far below its historical and normative potential. Thus, the waqf sector in Indonesia presents a paradox that warrants attention: resources are abundant, yet their utilization is not optimal (Abdullah 2018).

Several studies have tried to identify the root cause of this suboptimal waqf performance. Governance analyses consistently found that weak institutional capacity, accountability deficits, and limited donor involvement were major structural barriers. (Hasan and Siraj 2019). In line with that, the literature on FinTech in Islamic social finance has documented the transformative potential of digital payment systems, blockchain-based transparency mechanisms, and crowdfunding platforms to expand the donor base and reduce transaction costs. (Rabbani, Khan, and Thalassinos 2021). The cash waqf-based financing model has long been seen as an alternative instrument for financing various development needs and poverty alleviation. (Scott, Scott, and Scott, 2019). In addition, the momentum of Islamic FinTech adoption increased sharply after the pandemic in line with the digitization of Islamic financial services in general (Hassan, Rabbani, & Ali, 2020). Research that specifically examined blockchain integration in the context of waqf reported an increase in donor retention and a positive perception of accountability (Hamdan, Salleh, and Nordin 2022). Meanwhile, several case studies have identified that digital reporting is a distinguishing feature of high-performing waqf institutions in the field of education. (Azganin, Kassim, and Majid 2020). However, the contributions of these studies have methodological limitations. Most studies tend to rely on broad quantitative survey instruments or cross-country syntheses. This approach can indeed measure the level of adoption and aggregate achievements. Still, it has not been able to uncover the institutional logic, regulatory dynamics, and discourse framing that determine whether digital transformation is truly rooted or has actually stalled in the context of Indonesian regulations and institutions. Therefore, the question of why the adoption of FinTech in Indonesian waqf institutions remains limited and uneven, despite proven benefits, has not received an adequate document-based qualitative study. (Indonesian Waqf Agency 2021).

This research seeks to fill this gap by developing an in-depth, contextual understanding of FinTech adoption among waqf institutions in Indonesia through systematic qualitative document analysis. This research pursues three main objectives, namely: *first,* to describe the current FinTech adoption landscape in endowment institutions in Indonesia based on institutional documents and regulatory instruments, *second,* to examine how early adopters articulate governance practices and educational outcomes of digital transformation in their official disclosures, and *third,* identify structural conditions that support and limit the trajectory of FinTech adoption in the waqf sector as documented in regulatory and policy documents. The researchers then synthesized all the findings into the Digital Waqf Governance Framework (DWGF). This framework is expected to serve as an evidence-based policy instrument for institutions and regulators in Indonesia seeking to leverage FinTech to support educational endowments. In particular, this study shows how FinTech changes the educational waqf roadmap not by adding new sources of funding, but by shifting the capacity determinant from the amount of assets to governance efficiency, while highlighting the risk of gaps when these benefits have not yet reached pesantren-based waqf, so that DWGF is positioned not as a description of inhibitors but as an intervention map that connects digital governance with achievements education. In the following sections, the researcher presents the methodology, qualitative findings organized around four analytical themes, a discussion of the implications for the existing literature, and conclusions complemented by directions for future research.

Method

Research Design

This study uses a qualitative design based on an interpretive epistemological approach. This approach assumes that social realities are constructed through meanings, narratives, and interpretive frameworks embedded in institutional texts, rather than solely through measurable objective variables. (Creswell and Creswell 2018). The researcher chose systematic document analysis as the only method of data collection, assuming that institutional and regulatory documents are substantive empirical fields. These documents contain official positions, policy justifications, organizational narratives, and formal governance architecture that shape the understanding, authorization, and implementation of digital transformation in the waqf sector. A qualitative, document-based approach is particularly appropriate for this study because the decisions, justifications, and achievements generally relevant to this study have been recorded in publicly accessible policy and institutional documents. (Suaidi et al. 2025).

Document Selection and Corpus Composition

The researcher used *a purposive sampling* strategy to build a corpus consisting of 48 documents. These documents come from four analytically distinct institutional and regulatory categories in Indonesia, and all were substantially issued or revised during 2019–2025. The first category comprises national regulatory and policy instruments (n = 16), including OJK circulars on Islamic FinTech and digital financial services, Bank Indonesia regulations on the Islamic payment system and social finance operators, Ministry of Religion directives on waqf administration, and DSN-MUI fatwas relevant to digital waqf practices. The second category comprises governance and strategic documents from the Indonesian Waqf Agency (n = 9), including the 2019–2024 national annual waqf report, strategic plan, and BWI's digital transformation roadmap. The third category includes annual reports and governance documents from fifteen leading waqf institutions in Indonesia (n = 15). These institutions were deliberately chosen in various ways, including government-related bodies, private foundation-based institutions, and waqf bodies affiliated with Islamic boarding schools, operating in major city centers (Jakarta, Bandung, Surabaya, Yogyakarta) and in provincial areas. The fourth category comprises platform governance and transparency documents from eight active FinTech waqf providers in Indonesia (n = 8), including service provisions, sharia compliance certifications, and publicly accessible impact reports. The researcher selected the document based on three criteria, namely: first, the substantive relevance directly related to the governance of waqf, *FinTech integration*, or digital transformation, second, the official or institutional origin of a recognized regulatory authority, registered endowment institution, or *licensed FinTech provider*, and third, the timing of the publication or substantive revision that is in the period 2019–2025 so that it is temporally aligned with the regulatory regime contemporary digital finance. A summary of the corpus of these documents is presented in Table 1.

Document Categories	Publisher Description and Institution	N	Period
National regulatory and policy instruments	OJK Circular Letter on Islamic FinTech and digital financial services; Bank Indonesia Regulation on Islamic Social Payment System and Finance; Ministry of Religion Directive on waqf administration; DSN-MUI fatwa relevant to digital waqf practices	16	2019–2025
BWI governance and strategic documents	BWI National Annual Waqf Report (2019–2024); BWI Strategic Plan 2020–2024; BWI Digital Transformation Roadmap 2022–2025; Selected Operational Guidelines	9	2019–2025
Institutional report of the waqf body	The annual reports and governance documents of fifteen waqf institutions in Indonesia, including government-related bodies, private foundations, and Islamic boarding school-affiliated institutions in Jakarta, Bandung, Surabaya, Yogyakarta, and several provincial areas	15	2019–2024
Waqf FinTech platform governance document	Terms of service, sharia compliance certification, and publicly accessible impact and transparency reports from eight active FinTech waqf providers in Indonesia	8	2020–2025
Quantity		**48**	**2019–2025**

Table 1. *Composition of the document corpus (n = 48; 2019–2025)*

Data Analysis

The researcher analyzed all the sources of the document using a reflective thematic analysis that followed a six-phase framework according to Braun and Clarke (2022), namely: *First,* familiarity with the data through repeated reading and initial recording, *Second,* systematic initial coding of the entire dataset, *third,* theme search by compiling the code into thematic groupings of candidates, *fourth,* review and refinement of the theme by comparing it to the original document coded dataset and text, *fifth,* careful definition and naming of themes, and *sixth,* preparation of the final analysis report. The researcher performed the coding using NVivo 12 software (QSR International). Each document is treated as a separate analytical unit and is coded for two types of content, namely manifest content in the form of explicit statements on FinTech adoption, governance practices, and policy directions, and latent content in the form of basic assumptions, framing of discourse, and undisclosed matters related to digital transformation. The researchers also used a comparative coding matrix to identify common points and framing differences among the four document categories. To assess the consistency of the encoding, the second researcher independently encoded a random sub-sample of 35 percent of the document corpus. The results of the inter-rater reliability calculation using Cohen's kappa showed $\kappa = 0.83$, indicating strong agreement. In line with the reflective approach, the research team also kept analytical memos throughout the process to document interpretive decisions, comparative observations across document types, and the researcher's reflective awareness of position. (Braun and Clarke 2022).

Researchers maintain the credibility of the research through triangulation among the four categories of documents. This triangulation allows claims from a single type of source, e.g. institutional annual reports, to be cross-tested with parallel statements in regulatory instruments, BWI strategic documents, and platform governance documents. Researchers treat cross-category convergence points as strong analytical evidence, while differences are treated as separate substantive findings that require further interpretive analysis. The researcher supports the transferability aspect through an in-depth description of the document corpus, including the origin, temporal range, and institutional context of each document type, as presented in Table 1. Researchers maintain research reliability by maintaining a comprehensive audit trail, including a complete inventory of documents, coding frameworks, and analytical memos. Meanwhile, the researcher addressed the confirmability aspect through a peer debriefing session with two external researchers independent of the study team. The two researchers reviewed the document inventory, coding structure, and thematic interpretation at two stages of analysis.

Results

The Fragmented and Still Surface FinTech Adoption Landscape

Based on the overall corpus of documents, FinTech adoption in Indonesia's waqf sector is uneven, gradual, and mostly still limited to the most accessible layer of digital integration, namely the facilitation of basic online payments. Annual reports from leading waqf institutions in Indonesia for 2019–2024 consistently describe the integration of QR code-based payments and digital donation portals linked to bank transfers as the primary form of digital engagement. More advanced capabilities such as blockchain-based transaction logging, AI-assisted donor relationship management, and real-time digital reporting dashboards are generally mentioned only as aspirational components of a future-oriented strategic plan, not as operational realities. Of the fifteen institutional annual reports reviewed, only three major foundation-based institutions headquartered in Jakarta or Surabaya documented the active implementation of blockchain-based record-keeping or integrated donor analytics. Meanwhile, the rest describe digital adoption that is still limited to payment integration or is even in the early stages of planning. (Karim 2023).

The regulatory document reinforces and provides context for this pattern. The OJK circular on Islamic FinTech, issued in 2020–2024, provides a general framework for digital financial services but has not yet established specific operational standards for Islamic social finance FinTech, including applications specifically for waqf. Bank Indonesia's regulations on payment system operators also discuss digital payment functions relevant to waqf only as part of the general digital payment arrangement, with no specific provisions for waqf. The Ministry of Religion's directive on waqf administration, issued during the study period, acknowledged the importance of digitalization in general but did not provide adequate operational guidance for FinTech integration (Thaker et al., 2018). The configuration of regulations spread across various authorities, without a specific FinTech framework, creates conditions referred to in the BWI Strategic Plan 2020–2024 as "fragmented regulatory landscapes". As a result, waqf institutions must navigate these complexities on their own when investing in digital infrastructure beyond basic payment integration. The discourse gap between the ambitions expressed in the BWI strategic document and the operational provisions regulated through OJK and BI derivative instruments is a recurring pattern in the corpus. It is one of the structural conditions analyzed in the themes that follow.

Documented Benefits of Governance and Education Among Early Adopters

Annual reports and impact disclosures from a small group of institutions that have advanced beyond basic payment integration, particularly institutions that combine blockchain-based record-keeping and the implementation of crowdfunding platforms, document a consistent pattern of governance transformation. The most prominent benefit of this sub-group is increased donor trust through real transparency. For example, the 2023 impact report from one of the leading waqf foundations in Jakarta reported a 42 percent increase in donor retention compared to the previous year. The institution's internal report attributes this increase to the foundation's new transparency system, which is a blockchain-based disbursement-recording system that allows donors to track their contributions down to the project and beneficiary levels. Because this study is based on document analysis, the attribution is interpreted as a claim stated in an institutional report rather than as a causal relationship verified directly with the donor. Platform governance documents from two active FinTech waqf providers in Indonesia also reported an increase in recurring donations from diaspora communities, especially those in Saudi Arabia, the United Arab Emirates, and the Netherlands, after the platforms integrated real-time digital receipts and project-level transparency dashboards. These communication channels were previously difficult to reach through conventional fundraising mechanisms. (Syamsuri et al., 2023).

In the context of the education endowment fund in particular, institutional reports from institutions that actively use digital technology document the real-time reallocation of waqf resources for programmatic purposes. This disclosure pattern is important because it shows specifically how FinTech is changing the roadmap of education waqf in Indonesia, namely not by adding education funding posts directly, but by diverting resources that were previously absorbed in administrative work towards programmatic education financing. These institutions attribute this reallocation to increased efficiency achieved through reduced administrative burden due to automation (Akbar et al. 2025). For example, the 2023 annual report of a private waqf institution in West Java shows a reduction in the number of administrative staff responsible for manual reconciliation, from three full-time positions to one. The freed budget is then diverted to institutional scholarship programs. As a result, the number of beneficiaries increased from 87 students in 2021 to 156 students in 2023. In the corpus, this case is the most concrete illustration of the trajectory of FinTech-based education waqf: the automation of recording and reconciliation reduces the administrative burden, the freed budget capacity is directed towards scholarships, and the impact is directly evident in the expansion of the scope of educational beneficiaries. A closer reading of this trajectory shows that the expansion of beneficiaries, which has nearly doubled in two years, does not stem from an increase in the waqf principal but from a change in how the same principal is managed. In other words, FinTech shifts the determinants of educational endowment capacity from mere asset size to governance efficiency. Every part of the endowment fund that was previously absorbed in manual reconciliation is freed up and converted into educational reach. This shift is important for the educational waqf roadmap because it implies that institutions with limited waqf principal can expand the scope of scholarships if their administrative burden is reduced, so that the growth of educational impact is no longer entirely dependent on the collection of new funds. BWI's 2023 National Annual Waqf Report confirms this pattern at the sectoral level. The report notes that institutions that documented digital accountability practices obtained a greater volume of matching funds from government programs and philanthropic foundations during the reporting period. This has a multiplier effect on the investment capacity of education. Thus, digital transparency in adoptive institutions not only helps retain donors but also opens external education funding channels that were previously difficult to access, thereby strengthening the position of education waqf within the institutional financing structure. However, these documented achievements are still concentrated in a small number of institutions. The corpus of documents does not contain similar disclosures from waqf bodies in rural areas or from Islamic boarding schools, so the identified benefits have not been evenly distributed across sectors (Indonesian Waqf Agency 2024). The implications for the education waqf roadmap are twofold: FinTech has been proven to expand the allocation of education to adopting institutions, but these benefits have not yet reached pesantren-based waqf institutions, which are among the backbones of education in many regions. This concentration of benefits on urban-based early adopters raises the risk of the formation of a two-layer educational waqf: on the one hand, digitalized institutions can scale programmatic scholarships and attract accompanying funds, while on the other hand, pesantren-based waqf that supports education in many rural areas is left behind because of its limited document footprint and digital readiness. The implications for the education waqf roadmap are directional. Without an equitable distribution of possible governance prerequisites, FinTech dividends have the potential to widen rather than narrow the gap in education financing between institutions. Therefore, the agenda for strengthening educational waqf does not stop at the recommendation to adopt technology, but must also include the dissemination of these enabling conditions to Islamic boarding schools and rural waqf institutions.

Layered and Interacting Barriers in FinTech Adoption

The corpus of documents shows that there is a group of obstacles that do not stand alone but rather reinforce each other within a single system. Table 2 summarizes four dominant inhibiting themes that emerged from thematic coding of the entire corpus. This table also shows the distribution of these themes across the four document categories, as well as representative document evidence.

Inhibitory Themes	Characterization in the Document Corpus	Number of Documents That Raise the Theme	Representative Document Source
Regulatory uncertainty	There is no sharia-compliant FinTech standard and regulatory categories devoted to waqf; ambiguity in classifying blockchain-based waqf platforms among the jurisdictions of the OJK, BI, and the Ministry of Religion	35 of 48 documents (72.9%)	OJK Islamic FinTech Circular Letter; BI payment system regulations; BWI's Digital Transformation Roadmap
Limited institutional capacity	Limited technical expertise among management staff and inadequate IT infrastructure, especially in rural areas and institutions affiliated with Islamic boarding schools	30 out of 48 documents (62.5%)	Annual report of waqf institutions 2022–2024; BWI Strategic Plan 2020–2024

Inhibitory Themes	Characterization in the Document Corpus	Number of Documents That Raise the Theme	Representative Document Source
Donor digital literacy gap	Generational difference: younger donors are actively involved with digital platforms, while older donors still show doubts about online waqf channels	27 of 48 documents (56.3%)	Platform user analytics reports; institutional annual reports; BWI annual waqf report
Concerns about data security and privacy	Concerns over third-party access to donors' personal and financial data; Perception that data governance in the waqf sector is inadequate	22 of 48 documents (45.8%)	Cybersecurity policy documents; platform terms of service; Fatwa DSN-MUI

Table 2. *Dominant Barriers to FinTech Adoption in Indonesian Waqf Institutions*

Governance Prerequisites for Sustainable Digital Transformation

In the entire corpus of documents, the researchers found a series of repetitive structural prerequisites. This prerequisite is not only a useful improvement but also a necessary condition for sustaining FinTech adoption in waqf management. These prerequisites are grouped into four governance dimensions, which then serve as the basis for the development of DWGF. First, regulatory and institutional documents consistently identify the need for a regulatory framework specifically designed in accordance with sharia principles to provide operational clarity without impeding innovation. The OJK Regulatory Sandbox Guidelines and their updates are repeatedly used in BWI's strategic documents as an adaptable model for waqf-specific FinTech applications, provided that the sharia supervisory board is integrated into the supervisory structure from the beginning. Second, the institutional governance document emphasizes that interoperability standards must accompany investments in digital infrastructure. Thus, the platforms used by various institutions can exchange data and support cross-agency donor engagement without creating a fragmented digital ecosystem.

Third, human resource development is documented in many institutional reports as an important factor that still receives little attention in existing FinTech strategies (Lautania et al. 2024). The DSN-MUI fatwa and the direction of the Ministry of Religion both emphasize that sustainable digital transformation requires waqf professionals who master two competencies at once, namely an understanding of the fiqh rules that govern waqf management and an understanding of the technical architecture of the platform used. Existing capacity-building programs have recognized the importance of this combination of expertise but have not yet operationalized it systematically. Fourth, and perhaps most fundamentally, the corpus of documents agrees on the importance of stakeholder trust as the primary foundation determining whether digital transformation can proceed or stall. Institutional and regulatory documents document trust as multidimensional: it includes donor trust in platform security, public trust in institutional sharia compliance, and regulators' trust in institutional governance practices. The most consistent mechanisms for building trust in the document corpus are real-time digital disbursement reporting, independent financial audits with publicly accessible results, and the involvement of credible sharia regulatory bodies in platform governance. These four dimensions of enabling regulation, digital infrastructure, human resources, and stakeholder trust then become the pillars of the DWGF proposed in the Discussion section.

Discussion

The finding that the application of FinTech in Indonesian waqf institutions remains largely surface-level, focused on integrating basic digital payments, is in line with the cross-border assessment conducted. Rabbani et al. (2021) About the diffusion of Islamic FinTech. Their study found a persistent gap between the potential offered by advanced FinTech modalities and their actual deployment in Islamic social finance institutions. The documentary evidence in this study expands on these findings by explaining the institutional and regulatory level for the Indonesian context. The combination of regulatory ambiguity arising from various instruments of the OJK, BI, the Ministry of Religion, and DSN-MUI, and capacity limitations documented in the institution's annual report has created certain conditions. Under these conditions, even relatively resource-rich institutions choose to adopt the safest and most familiar form of digitization rather than build transformative architectures as recommended in the literature. This attitude of avoiding institutional risks is considered rational when viewed in the context of regulation. Still, it ultimately results in outcomes that are systematically less than optimal from both governance and educational impact perspectives.

The benefits of transparent governance and documented reallocation of education budgets among early adopters in Theme 2 align with empirical findings from Hamdan et al. (2022), who reported a significant increase in donor retention on the blockchain-integrated waqf platform. These findings also support Azganin et al.'s (2020) observation that the digital reporting system is a characteristic of waqf institutions that has the greatest impact in the field of education. The documentary evidence in this study goes beyond just reporting results by explaining the mechanisms by which digital transparency generates institutional impact. The mechanism works through two paths: first, changing donor involvement from an act of faith to an act of verification; and Second, automating administrative processes that previously consumed significant resources so that those resources can be diverted to programmatic education investments. Especially for educational endowments, the two mechanisms work in a complementary way: administrative efficiency provides internal resources for scholarship programs. At the same time, transparency attracts external companion funds, thereby strengthening FinTech's educational endowments in both internal resource supply and the expansion of the funding base. Seen through the DWGF framework, the achievement of educational waqf in adoptive institutions is actually a manifestation of the prerequisites formulated in the four pillars: clarity of sharia-compliant regulations, system interoperability, transparency-based donor involvement, and data protection. Donor retention, beneficiary expansion, and the documented influx of matching funds are outcomes designed to be institutionalized and amplified by these four pillars. With the same logic, the lagging behind of pesantren-based education waqf can be read not as a technological failure, but as the absence of pillar conditions in the subsector, especially the clarity of affordable regulations and interoperability standards that allow small institutions to participate without having to build their own infrastructure. This interpretation emphasizes that DWGF functions not just as a description of inhibitors but as an intervention map that connects each pillar with the educational attainments to be expanded. This emphasis on traceability carries particular weight for educational endowments. Unlike momentary alms, education financing, such as scholarships, is long-term and results-oriented, so donor commitments need to be maintained over several reporting cycles. The ability to trace contributions down to the project and beneficiary levels, as reflected in the above case of increased retention, is especially valuable in the context of education because it provides donors with ongoing evidence that the waqf principle produces learning outcomes. Thus, digital transparency is not just a general feature of governance but a prerequisite for the long-term sustainability of funding for waqf education programs. These mechanisms have not been articulated in previous literature focusing on Indonesia. These findings complement previous studies on the integration of zakat and Islamic philanthropy within Indonesia's social financing framework. Yumna, Marta, and Yanuarta RE (2025) and theoretical affirmation of the application of waqf for finance and social development, Shaikh, Ismail, and Mohd Shafiai (2017). Thus, identifying such mechanisms through institutional reporting makes an important contribution to the theoretical understanding of how FinTech generates value in the context of Islamic social finance.

The configuration of structural barriers identified in Theme 3, namely regulatory uncertainty, capacity limitations, donor literacy gaps, and data security concerns, reinforces each other's views. Kasri and Ramli (2023) that the regulatory environment is the main driver of the variance of the diffusion of Islamic FinTech in Indonesia; however, this corpus of documents also implies that regulatory clarity is necessary, but not sufficient. Even in more advanced segments of the regulatory landscape, such as the OJK Regulatory Sandbox, sophisticated FinTech modalities remain a minority practice, as seen in the corpus. Ibrahim, Amir, and Masron (2023) reached structurally similar conclusions in their qualitative research on the adoption of Islamic social finance technologies. They found that institutional capacity and limited human resources serve as independent second-level barriers, even when the regulatory context is supportive. Therefore, the four-barrier system documented in this study demands policy responses at the ecosystem level, not just the use of a single instrument. The response should integrate regulatory reform with parallel investments in institutional capacity building, donor education, and data governance.

The Digital Waqf Governance Framework synthesizes the governance prerequisites identified in Theme 4 into a four-pillar framework for application at the institutional, sectoral, and regulatory levels in Indonesia. The first pillar, Enabling Regulation, requires sharia-compliant FinTech standards with proportionate compliance requirements and adjusted to the institution's scale. This pillar also encourages the establishment of a regulatory sandbox that provides space for experimentation before formal licensing and explicitly regulates special applications of waqf across the jurisdictions of the OJK, BI, the Ministry of Religion, and DSN-MUI. The second pillar, Digital Infrastructure, emphasizes the importance of investing in platforms that are accessible, secure, interoperable, and scalable in scale. This pillar pays particular attention to the needs of institutions in rural areas and those affiliated with Islamic boarding schools, which generally operate with limited IT resources. A crowdfunding model based on cash waqf, designed by Ascarya et al. (2023) for the context of Indonesian MSMEs, can serve as a relevant blueprint for this inclusive platform architecture. The third pillar, Human Capital, includes structured technical training for waqf management professionals that integrates fiqh and technology competencies, as well as digital literacy programs for diverse donor demographics. The fourth pillar, Stakeholder Trust, ensures accountability through real-time reporting of public disbursements, independent financial audits with publicly accessible results, and the formal integration of sharia supervisory boards into the governance structure of digital platforms. The DWGF is understood as a reinforcing system: gaps in one pillar alone will limit the achievement of the other pillars. This also explains why the achievements that are still not optimal are seen in the partial adopters in this research corpus.

Conclusion

This study aims to describe the landscape of FinTech adoption in Indonesian waqf institutions, examine governance practices and educational outcomes of digital transformation among early adopters, and identify the structural conditions that support and hinder such adoption. Qualitative evidence from a systematic document analysis of 48 institutional and regulatory sources published in 2019–2025 indicates that FinTech adoption remains largely superficial. The adoption is sandwiched between the recognized transformative potential and a set of structural barriers that interact with one another, namely regulatory uncertainty, capacity limitations, donor literacy gaps, and concerns about data security. This requires coordinated multi-stakeholder interventions, not just the piecemeal implementation of the platform. Nonetheless, early adopters provide substantial documentary evidence that FinTech-supported administrative transparency and efficiency have measurably increased donor trust while expanding the allocation of educational resources. The Digital Waqf Governance Framework, proposed in this study, offers an evidence-based four-pillar architecture for institutions and regulators in Indonesia that want to replicate and scale up these achievements.

The reliance of this research on institutional and regulatory documents is its main methodological limitation. The source document records official positions and narratives. Still, it has not captured the full range of undocumented institutional practices, informal stakeholder dynamics, and the first-hand experiences of donors and beneficiaries whose perspectives may differ from official disclosures. The corpus of this research also focuses on Indonesia's national regulatory architecture and on institutions with sufficient organizational capacity to produce publicly accessible reports. As a result, smaller and less-resourced waqf bodies, especially those in rural areas and Islamic boarding schools with limited documentation, are likely to be underrepresented. Further research should complement this analysis through in-depth interviews and ethnographic case studies with waqf organizers, donors, beneficiaries, and regulators in Indonesia. The approach will test, refine, and contextualize DWGF in light of realities on the ground. In addition, a longitudinal qualitative design can capture the dynamics of the adoption trajectory as Indonesia's regulatory landscape matures. Meanwhile, mixed-methods research that combines quantitative data on institutional performance with qualitative evidence from documents and interviews will provide the most comprehensive understanding of the conditions that enable FinTech-based waqf transformation to have a sustainable educational impact.

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