

Digitalizing Pesantren Economy: The Dynamics of Cashless Payment Systems and Santri Financial Behavior

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Abstract: *The rapid development of financial technology has driven the transformation of the payment system from cash transactions to digital systems in various sectors, including Islamic educational institutions such as Pesantren. However, the implementation of a non-cash payment system in Pesantren presents unique dynamics because it involves the interaction between technological innovation, institutional governance, and Islamic economic values that are the basis of Islamic social practices. This research aims to examine the dynamics of digital financial transformation in Pesantren and synthesize the pattern of financial technology adaptation in the Pesantren economic ecosystem. This study uses a qualitative approach through the Systematic Literature Review (SLR) method, analyzing nine primary corpus articles selected through the PRISMA 2020 screening process from publications in the 2020–2025 period. The data was analyzed using thematic content analysis to identify the main patterns in the implementation of digital payment systems in Pesantren. The results of the study show three main dynamics in the digitalization of the pesantren economy, namely variations in digitalization policy typologies, gaps in infrastructure and institutional readiness, and changes in student transaction behavior influenced by the digital payment system. The cashless payment system contributes to increased transparency, financial control, and institutional accountability, but also faces challenges in the form of limited digital literacy, infrastructure gaps, and socio-cultural resistance. Theoretically, this study enriches the study of Islamic digital economy by explaining how traditional Islamic educational institutions negotiate technological modernization through the integration of fintech innovation, institutional governance, and Islamic economic values.*

Keywords: *non-cash transactions, Pesantren, digital payments, sharia economy, public policy*

Introduction

The development of financial technology in Indonesia has accelerated significantly in the last decade, transforming the paradigm of economic transactions from cash-based to digital systems (Karimah et al., 2023). Bank Indonesia reported that electronic money transactions reached Rp 35.26 trillion in 2023, reflecting a significant increase of 42.3% compared to the previous year (Bank Indonesia, 2023).

This rapid growth indicates that digital payment systems have become an integral part of modern economic life. In an ideal context, digital financial technology is expected to improve transparency, efficiency, and accountability in financial management across various sectors, including educational institutions.

Islamic boarding school (pesantren), as one of the oldest Islamic educational institutions in Indonesia (Mansyuri et al., 2023), are also encouraged to adapt to the transformation of digital financial systems. The integration of digital technology in pesantren management is expected to strengthen institutional governance while supporting financial transparency and efficiency. The implementation of cashless payment systems, such as e-money cards, student digital wallets, and electronic payment applications, has been introduced in several pesantren to facilitate financial transactions for students' daily needs, including canteens, cooperatives, and other institutional services (Priatna & Faizah, 2023; Rahmah et al., 2025).

However, the application of digital payment systems in Pesantren is not always straightforward. In reality, the implementation of cashless transactions often encounters various structural, cultural, and technical challenges. Limited digital infrastructure, uneven internet access, and low levels of technological literacy among students, administrators, and parents remain significant barriers to the adoption of digital payment systems. Moreover, socio-cultural resistance can also emerge due to the long-standing tradition of cash-based transactions within pesantren communities and concerns regarding the compatibility of digital financial systems with traditional Islamic values (Hidayatullah et al., 2024).

These conditions create a unique tension between technological modernization and the preservation of traditional institutional values in Pesantren. Unlike general educational institutions, pesantren operate within a socio-religious environment where economic practices are closely related to Islamic ethical principles and community traditions. Therefore, the implementation of cashless payment systems in pesantren cannot be understood merely as a technical innovation but must also be examined within the broader context of institutional transformation, cultural adaptation, and Islamic economic values.

Several previous studies have explored the implementation of non-cash payment systems in Pesantren from different analytical perspectives. Ahsan et al. (2024) primarily focus on the administrative and managerial benefits of using Santri Virtual Accounts, emphasizing their role in improving financial recording systems and enhancing transaction transparency within pesantren financial management. This study highlights the operational advantages of digital payment instruments in simplifying financial administration. In a similar vein, Setiawan et al. (2025) examine the integration of educational fintech within Pesantren and demonstrate that the use of digital payment platforms can significantly improve students' financial literacy as well as institutional financial management efficiency.

Meanwhile, Anwar et al. (2023) analyze the operational implementation of the Ngabar Smart Payment system and emphasize its contribution to improving financial circulation and transaction openness in pesantren economic activities. Unlike the previous studies that focus on administrative efficiency and financial literacy, this study highlights the role of technological systems in supporting pesantren economic transactions. Furthermore, Hidayatullah et al. (2024) approach the issue from the perspective of user adoption by identifying security and ease of use as key factors influencing students' acceptance of non-cash payment systems.

Although these studies provide important insights into the implementation of digital payment systems in pesantren, most of them primarily concentrate on technical efficiency, operational management, and user acceptance. The broader institutional dynamics of digital financial transformation in pesantren environments remain insufficiently discussed. In particular, previous studies have paid limited attention to the interaction between digital payment policies, pesantren socio-cultural traditions, and Islamic economic principles that shape financial practices within these religious educational institutions. Therefore, this study attempts to fill this gap by examining the dynamics of digital financial transformation and cashless payment adoption in Islamic boarding schools (Pesantren) from a broader analytical perspective. Rather than focusing solely on operational efficiency or technological adoption, this research analyzes the dynamics of digital financial transformation in pesantren by considering policy frameworks, socio-cultural challenges, and the compatibility of digital payment systems with sharia economic values. In addition, this study explores how the adoption of cashless payment systems contributes to shaping santri financial behavior within the broader process of digitalizing the pesantren economic ecosystem.

This study aims to examine the dynamics of digital financial transformation in Pesantren and to analyze how the adoption of cashless payment systems contributes to the digitalization of the pesantren economic ecosystem. In particular, this research explores how digital payment technologies are integrated into pesantren financial practices and how they influence santri financial behavior, including financial awareness, spending control, and responsible financial management. Furthermore, this study seeks to synthesize a conceptual understanding of fintech adaptation within traditional Pesantren environments by considering policy frameworks, socio-cultural contexts, and the compatibility of digital financial systems with sharia economic principles. Through this approach, the research contributes to the broader discourse on digital Islamic economics by explaining how traditional Islamic educational institutions negotiate technological modernization while maintaining their religious and cultural foundations.

Method

This study uses a qualitative approach through the Systematic Literature Review (SLR) method to examine the dynamics of digital financial transformation and the adoption of non-cash payment systems in the pesantren environment. The SLR method was chosen because it allows researchers to systematically identify, evaluate, and synthesize the findings of previous research resulting in a comprehensive, structured, and analytical understanding of the phenomenon being studied (Snyder, 2019). To ensure transparency and replication, the literature selection process in this study follows the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines which are reporting standards in reputable scientific publications (Page et al., 2021). Literature identification was carried out through three databases, namely Scopus, Garuda (Digital Reference Garba Portal), and Google Scholar. Searches on Scopus as an international database were conducted at an early stage using a combination of keywords "digital payment pesantren," "cashless payment Pesantren," and "financial digitalization of pesantren," but did not yield relevant articles ($n = 0$). These findings show that the topic of digitization of payment systems in Pesantren is still a research gap in the international literature. Therefore, the search was focused on national databases, namely Garuda and Google Scholar, which are more representative of the context of Islamic educational institutions in Indonesia.

The search strategy is carried out in two stages. The first stage used common keywords, namely "cashless payments" and "non-cash transactions," to map the scope of the literature broadly. The second stage narrows the search by adding the context of "pesantren," resulting in a combination of the keywords "payment cashless pesantren" and "pesantren's non-cash transaction." This two-stage approach aims to ensure comprehensive literature coverage while maintaining relevance to the research focus. Literature selection is carried out based on explicitly defined inclusion and exclusion criteria. Inclusion criteria include peer-reviewed journal articles, published in the 2020–2025 range, in Indonesian or English, available in full text, and focusing on digital payment systems or non-cash transactions in Pesantren or educational institutions in Indonesia. Meanwhile, the exclusion criteria include non-peer-reviewed articles such as opinions, editorials, proceedings, and theses; publication outside the specified year range; articles that are not relevant to the context of the Pesantren; as well as articles that are not fully accessible. The 2020–2025 time frame was chosen because it represents the period of digitalization acceleration after the COVID-19 pandemic and coincides with various national policies related to the digital payment system, including the Indonesian Payment System Blueprint 2025.

The literature selection process follows four main stages according to the PRISMA 2020 flow, namely identification, screening, eligibility, and inclusion. At the identification stage, 502 articles were found from all databases. At the screening stage, articles were screened based on relevance to the context of the pesantren so that 27 articles were obtained, while 475 articles were eliminated because they were irrelevant. At the eligibility stage, all 27 articles were analyzed through full-text assessment. A total of 18 articles were eliminated with details: did not meet peer-review standards ($n = 6$), did not focus on the specific context of the pesantren ($n = 5$), the full text was not available ($n = 4$), and discussed digitization but outside the context of the pesantren ($n = 3$). In the final stage (inclusion), 9 articles were obtained that met all the criteria and were designated as the main corpus of research. Overall, of the 502 articles identified in the initial stage, as many as 9 articles were analyzed in depth in this study.

Data from the nine selected articles were analyzed using thematic content analysis techniques which included three stages, namely immersive reading, open coding, and thematic clustering (Kiger & Varpio, 2020). Through this process, three main themes were identified, namely: (1) the typology of the payment system digitization policy, (2) the readiness of the infrastructure and institutional system of the Pesantren, and (3) the dynamics of changes in the transaction behavior of students in the use of non-cash payment systems. The entire analysis process is carried out by integrating two main theoretical frameworks, namely Institutional Theory and Sharia Maqashid. Institutional Theory is used to explain the mechanisms of institutional pressure and response in the process of digital technology adoption, while Maqashid Syariah serves as an evaluative framework to assess the extent to which the transformation is in line with the fundamental goals of Islamic education, especially in safeguarding the property (*hifz al-mal*) and moral values of the pesantren community. This integrative approach allows for analysis that is not only descriptive, but also normative-critical in understanding digital transformation in the pesantren environment.

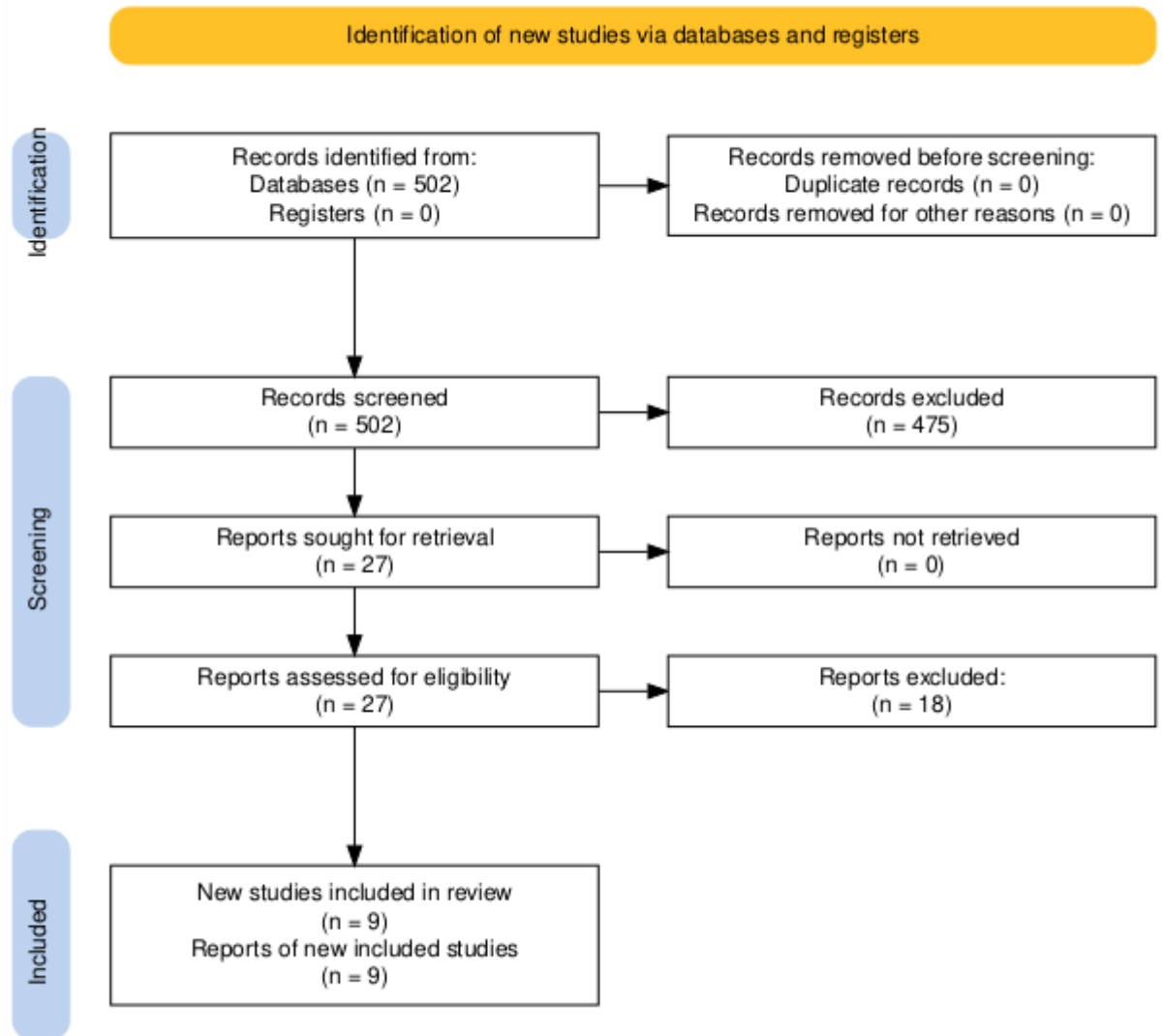


Figure 1. PRISMA 2020 Flow Diagram of Literature Selection

Result and Discussion

The following table presents the synthesis of the nine primary corpus articles identified through the PRISMA 2020 screening process. These articles form the evidentiary foundation of the thematic analysis developed in this section.

Table 1. Primary Literature Synthesis: Digital Financial Management in Pesantren (2020-2025)

Author & Year	Methodology	Research Context	Key Findings
Ahsan et al. (2024)	Qualitative descriptive	Implementation of Virtual Accounts in Islamic Boarding Schools	Digital transaction documentation reduces record-keeping errors and increases accountability; There is a shift from personal trust to system-based trust
Anwar et al. (2023)	Case study	Digital payment system in Islamic boarding schools	Cashless improves financial transparency and fund circulation; Institutional pressures from external partners shape adoption patterns

Setiawan et al. (2025)	Qualitative case studies	Fintech education in Islamic boarding schools	Infrastructure determines the success of adoption; Large Islamic boarding schools with institutional capacity achieve a higher level of implementation
Hidayatullah et al. (2024)	Quantitative surveys	Non-cash payments at Islamic boarding schools	Security and ease affect user acceptance; Institutional trust in the platform is a key adoption factor
Rizal et al. (2021)	Qualitative descriptive	E-Provision System in Islamic Boarding Schools	The system makes it easy to monitor parents; Islamic transparency values are aligned with digital audit functions
Saifuddin & Fathony (2022)	Phenomenological	E-Bekal risk management	Technical disruptions and coordination failures are the main obstacles; Weak coordination between parties undermines the reliability of the system
Purwanto (2024)	Qualitative descriptive	Implementation of E-Santri Card	Limited internet networks hinder implementation in rural Islamic boarding schools; The urban-rural infrastructure gap is very real
Ansori (2021)	Qualitative descriptive	Consumption behavior of students	Cashless improves spending control; The control effect is only optimal if the students actively monitor transaction history
Niswa (2021)	Qualitative descriptive	Use of e-money in Islamic boarding schools	Reduce impulsive consumption; Cashless structure is in line with the value of iqtishad (balanced consumption) in Islam

Typology of Digitalization Policy in Pesantren Financial Management

The development of payment system digitalization in the pesantren environment cannot be separated from the national policy architecture that systematically encourages digital economic transformation, including in Islamic educational institutions. In the perspective of Institutional Theory, these policies act as a form of institutional pressure that encourages organizations to adapt their financial management practices to standards that are considered modern and accountable (DiMaggio & Powell, 1983). Some of the important regulations that are the main drivers include Bank Indonesia Regulation Number 12/11/PBI/2009 concerning electronic money, the National Non-Cash Movement (GNNT) 2014, the Ministry of Religion's Pesantren Independence Program 2021, and the Indonesian Sharia Economic Masterplan 2019–2024. Findings from several studies show that the impact of this policy is not uniform throughout the pesantren environment. Although external pressures are relatively similar, the response of each pesantren varies greatly depending on the institutional capacity, availability of resources, and value orientation held by pesantren managers (Setiawan et al., 2025; Syaputra, 2024). This shows that digitalization is not just a technical issue, but also an institutional transformation process that involves structural and normative dimensions at the same time.

Based on the synthesis of nine main articles, this study identifies three typologies of digital payment system adoption patterns in Pesantren. The first typology is

pesantren with progressive adoption, namely pesantren that are generally large, have adequate infrastructure, and have established partnerships with Islamic financial institutions. Pesantren in this category have integrated a comprehensive digital payment system in their financial operations, ranging from tuition fee payments, cooperative management, to financial reporting based on digital platforms (Setiawan et al., 2025). The second typology is pesantren with partial adoption, namely pesantren that are in a transition phase by running digital and manual systems simultaneously. Pesantren in this category generally face a dilemma between policy pressures from outside and limited capacity and cultural resistance from within (Syaputra, 2024). The third typology is pesantren with minimal adoption, namely pesantren that still fully rely on cash transactions. This condition is generally experienced by small Pesantren in remote areas that have limited access to network infrastructure and banking services (Purwanto, 2024).

This study argues that these three typologies should not be understood as linear stages towards modernization, but rather as a reflection of different positions within the broader institutional structure. Pesantren with minimal adoption, for example, do not always reflect lagging behind. In many cases, these conditions reflect a rational response to real limitations on the ground. If the digital system is implemented without adequate infrastructure readiness, it has the potential to cause uncertainty in student financial management. In the perspective of Maqashid Sharia, this condition is directly related to the principle of property protection (hifz al-mal), which does not solely require the use of the most up-to-date technology, but the use of the most reliable and accountable system according to existing conditions (Widjanarko et al., 2025)

One of the findings that has not received enough attention in the literature is the risks that accompany collaboration between Pesantren and external partners such as Islamic banks and fintech platforms. Darip et al. (2024) show that this kind of partnership can increase pesantren access to technological infrastructure and digital financial literacy programs. However, Wasilah et al. (2025) also identified the risk of a shift in institutional orientation, where pesantren slowly move away from educational and character-building missions to more pragmatic economic interests. This study argues that this risk is not accidental, but rather a structural consequence of the unequal relationship between pesantren as a weaker party and a much larger financial partner. When pesantren adopt governance standards from partners without adequate value filters, they tend to reflect the financial industry's logic of efficiency, transaction volume, and commercial standardization that are not necessarily aligned with the basic values of pesantren as Islamic educational institutions. In the perspective of Maqashid Syariah, the maintenance of the religious mission of Pesantren (maqashid al-din) occupies a higher position than just financial efficiency (hifz al-mal), so collaborations that have the potential to shift the mission need to be managed carefully (Widjanarko et al., 2025). The normative basis of this process is the rules of fiqh:

الأصل في المعاملات الإباحة

This rule emphasizes that the law of origin in muamalah is permissible, as long as there is no evidence that prohibits it. This rule opens up a wide space for the adoption of digital financial innovation in Pesantren (Rizal et al., 2021; Widjanarko et al., 2025) However, these abilities are conditional: transactions must be free from the elements of riba, gharar, and maysir; the contract must be clear; and the system must truly provide benefits for all components of the pesantren, not just those who are used to digital technology. When this institutional ijtehad process has not been resolved, the

adoption that occurs tends to be formal without real internalization. This condition is in line with the concept of decoupling in Institutional Theory, which is when the organization adopts a formal structure demanded by the external environment, but its actual work practices do not change (Wardi et al., 2025)

This study also identifies three dimensions of implementation gaps that are often analyzed separately in the literature, even though the three are interrelated and reinforce each other. First, infrastructure gaps, namely limited access to the internet, digital devices, and banking services, especially in Pesantren located in remote areas (Purwanto, 2024; Setiawan et al., 2025). Second, the gap in human resource capacity, namely low digital literacy among pesantren managers whose educational background is more dominant in the religious field than technology (Nursyamsi et al., 2025). Third, the regulatory gap, namely the absence of regulations that specifically accommodate the unique characteristics of pesantren as educational institutions as well as economic actors based on religious values (Rizal et al., 2021; Syaputra, 2024).

These three gaps do not stand alone. Pesantren that have weak infrastructure will find it difficult to attract partners who can help increase human resource capacity. Less skilled human resources will find it difficult to advocate for more accommodating policies. And without supportive regulations, the motivation to invest in infrastructure will be reduced. From the perspective of Maqashid Syariah, this condition also contains implications of justice ('adl): the digitalization policy that can only be enjoyed by structurally stronger pesantren does not fully meet the goal of asset protection equally for the entire pesantren community.

Overall, the study of the typology of Pesantren financial digitalization policies shows that the differences in adoption patterns do not just reflect differences in the level of technological advancement. The three typologies identified as progressive, partial, and minimal are more precisely understood as the result of the ongoing negotiation process between policy pressures and external partnerships on the one hand, as well as institutional capacity and internal values of pesantren on the other. The success of Pesantren financial digitalization, thus, does not only depend on the strength of policies or the availability of technological infrastructure. He also relies on the ability of institutions, especially through the leadership of kyai, to carry out an institutional ijthihad process that results in adoption that is truly in harmony with the principles of hifz al-mal, protects the mashlahah of the entire community, and does not threaten the religious mission of pesantren as an Islamic educational institution (Purwanto, 2024; Rizal et al., 2021; Setiawan et al., 2025)

Infrastructure and System Readiness in the Implementation of Digital Payments in Pesantren

The readiness of infrastructure and systems in the implementation of digital payments in Pesantren is an aspect that cannot be understood solely as a technical problem. In the perspective of Institutional Theory, this readiness reflects the condition of institutional participation, i.e. the extent to which pesantren have the material, coordinated, and normative capacity needed for the digital system to function sustainably. The difference in capacity between pesantren institutions results in significant variations in the success rate of implementation, as consistently shown in various studies studied (Purwanto, 2024; Saifuddin & Fathony, 2022; Setiawan et al., 2025).

From the perspective of Maqashid Syariah, infrastructure readiness is not only a matter of operational efficiency. It is directly related to the institutional obligation to maintain the assets entrusted to *hifz al-mal* accurately, transparently, and accountably. A system that is implemented without adequate readiness has the potential to introduce elements of *gharar* into the financial management of students, a condition that is not only technically problematic but also normatively problematic in Islam (Widjanarko et al., 2025). Thus, the discussion of infrastructure readiness in this study does not only touch on the technological dimension, but also the deeper ethical and institutional dimensions.

Most of the studies in the corpus studied discussed infrastructure readiness in a physical sense, namely the availability of internet networks, EDC devices, and digital wallet applications. Setiawan et al. (2025) show that large pesantren that have invested in physical infrastructure comprehensively achieve a much higher implementation success rate than small pesantren does. Purwanto (2024) documented that the instability of internet signals in rural pesantren led to repeated transaction failures which ultimately eroded the trust of managers and students in the digital system. However, the study argues that physical infrastructure alone is not enough to guarantee successful implementation. The findings of Saifuddin & Fathony (2022) show that even though EDC devices are available in Pesantren cooperatives, failure of coordination between cooperative managers and partner traders still results in operational failures that are functionally equivalent to the absence of infrastructure.

This condition shows that there is another dimension that is no less important, namely the routine coordination infrastructure, common understanding, and expectations that are considered reasonable among all actors in the pesantren transaction ecosystem about how the new system should be operated. Within the framework of Institutional Theory, the failure of coordination documented by Saifuddin & Fathony (2022) is a failure in the cultural-cognitive pillar of institutions that have not yet formed collectively internalized practices about how the new system works. From the perspective of Maqashid Sharia, this decoupling condition is not just inefficiency. A system that is formally digitized but in practice still relies on informal coordination and manual recording introduces uncertainty that has the potential to harm the management of students' assets. Therefore, the implementation of a responsible digital system in accordance with sharia requires not only the availability of devices, but also the coordinated readiness of the entire ecosystem involved.

The second dimension of institutional readiness concerns the capacity of human resources. Several studies show that low digital literacy among pesantren managers is a significant obstacle in the implementation of digital payment systems (Saepurohman et al., 2025; Nursyamsi et al., 2025). Nursyamsi et al. (2025) specifically found that the dominant religious education background among pesantren managers was negatively correlated with their digital literacy level. Oktaviani & Setiawati (2025) added that institutional leadership support plays an important role as a mediator between individual capacity and actual system use. This study argues that this human resource capacity deficit is not solely a skills problem that can be solved through technical training programs. In the framework of Institutional Theory, this condition reflects the problem of professional identity: pesantren managers are formed by an institutional environment that has been building leadership authority through the depth of religious science, not through technological prowess.

The implications of this understanding are quite important. Training programs designed solely as technical skills transfer are less likely to result in sustainable change, as they do not touch the normative dimension of the problem. Saepurohman et al. (2025) found that contextually designed training programs that place digital competencies within the Islamic Pesantren leadership framework showed higher effectiveness. These findings are in line with the argument that what is needed is not just technical training, but a reconstruction of professional norms that include digital competencies as part of the identity of good pesantren leaders in the modern era.

From the perspective of Maqashid Syariah, the manager of the pesantren has a trust responsibility for the assets entrusted to his institution. This responsibility is active, not passive: it demands the use of the best available means to ensure accurate and accountable management of the property. However, this "best" standard must be evaluated in the context of the real conditions of each pesantren. If digital systems cannot be operated reliably due to capacity limitations, maintaining a more reliable manual system is more in line with trust obligations than imposing digital adoption that results in uncertainty.

The third dimension concerns the role of the external ecosystem in supporting the readiness of pesantren infrastructure. Darip et al. (2024) documented that strategic partnerships between Pesantren and Islamic banks significantly increase pesantren access to payment technology infrastructure and digital financial literacy programs. Wasilah et al. (2025) added that sharia-based fintech platforms are able to provide payment solutions that are more compatible with Islamic values. However, this study argues that this external collaboration also carries a risk that has not been sufficiently analyzed in the literature, namely the risk of institutional dependence. When the digital infrastructure of the pesantren is built on the platform of external partners, the pesantren indirectly hands over some control of its financial system to other parties. If the partner changes the service policy or the platform experiences a change in the system, the pesantren is in a vulnerable position without the independent ability to switch. This condition in the framework of Institutional Theory can be referred to as institutional lock-in: pesantren that initially collaborated to increase capacity actually ended up becoming more dependent on external actors, not more independent.

From the perspective of Maqashid Sharia, the risk of dependency has a deeper dimension. Wasilah et al. (2025) identified that collaboration that is not well managed has the potential to shift the orientation of pesantren from educational missions and moral formation to more pragmatic economic interests. This condition touches maqashid al-din, the maintenance of the religious mission of Pesantren, which in the hierarchy of maqashid occupies a higher position than hifz al-mal. Thus, healthy external collaboration is one that builds the independent capacity of the pesantren, not one that deepens dependence, and that is managed with a governance mechanism that protects the autonomy of the pesantren values.

The fourth dimension that needs to be considered is the integration between the digital payment system and the broader financial governance mechanism. Wardi et al. (2025) emphasized that the success of digitalization does not only depend on the availability of technology, but also on the extent to which the digital system is integrated with financial reporting standards, internal audit mechanisms, and structured accountability systems. Ahsan et al. (2024) confirmed that when digital documentation completely replaced manual record-keeping and became part of the daily accountability routine, accuracy and accountability increased significantly. Within the framework of Institutional Theory, this integration is related to changes

in the cultural-cognitive pillars of the institution: not just adopting new tools, but changing the way of working that is considered normal in the financial management of Pesantren. Changes to these pillars are much slower and more difficult than changes to the regulatory pillars, because they require collective internalization that cannot be forced from the outside. From the perspective of Maqashid Syariah, genuine governance integration is a real expression of the obligation of trust: asset management that is truly transparent, accurate, and accountable to all stakeholders of the Pesantren.

Overall, the study of the readiness of the infrastructure and digital payment implementation system in Pesantren shows that this problem goes far beyond the technical dimension alone. True readiness requires the fulfillment of three levels simultaneously: the material level (availability of devices and connectivity), the coordinating level (routine and mutual understanding between actors), and the normative level (reconstruction of professional identity, fulfillment of trust obligations, and management of external collaboration that protects pesantren values). Digitalization policies that only target the material level without paying attention to the coordinating and normative level tend to result in partial and unsustainable implementation, as consistently shown by Purwanto (2024), Saifuddin & Fathony (2022, Setiawan et al. (2025). Therefore, a more holistic approach that combines strengthening physical infrastructure, identity-based human resource capacity building, collaborative management that protects the autonomy of Pesantren, and genuine governance integration is a prerequisite for the realization of Pesantren financial digitalization that truly serves the principles of *hifz al-mal* and the community *mashlahah* as a whole.

Dynamics of Student Transaction Behavior in the Adoption of Non-Cash Payment Systems

The adoption of a non-cash payment system in Pesantren has not only changed the mechanism of financial transactions, but also has an impact on the way students manage their finances, form financial habits, and internalize Islamic values in their daily economic lives. In the perspective of Institutional Theory, the behavioral changes produced by the cashless system are not solely individual changes, but are the impact of changes in the institutional structure that govern economic life in the pesantren community. From the perspective of Maqashid Sharia, this change needs to be evaluated not only in terms of efficiency, but also from the extent to which it supports the goal of protecting property (*hifz al-mal*), encouraging the value of simplicity in consumption (*iqtishad*), and maintaining the moral dimension of the economic practice of Pesantren.

The most fundamental change brought by the cashless system into the life of the pesantren is the shift in the architecture of trust that has been regulating economic relations between actors in the pesantren environment. In the traditional system, trust is built through layered personal relationships between *kyai*, students, guardians of students, and traders operating in the pesantren environment. This relational trust is not just a mechanism of economic coordination; It is also a medium of expression of communal values such as *ta'awun* (help-help), *ukhuwwah* (brotherhood), and *amanah* which are part of character education in Pesantren. The presence of cashless systems shifts this trust base towards a trust that is procedurally and system-based: every transaction is recorded automatically, verifiable and accessible to multiple parties simultaneously. Ahsan et al. (2024) confirmed that this shift brought a real increase in the financial accountability of Pesantren. Ansori (2021) added that parents of students who can monitor their

children's transactions in real-time report an increase in trust in the financial management system of the Pesantren.

However, this study also identifies structural vulnerabilities in these system-based trusts. When digital systems experience technical glitches, transactions fail, balances are not updated, notifications are not sent, institutional trust can be eroded faster than relational trusts that face similar disruptions. Relational trust has an organic recovery mechanism through direct interaction, while system-based trust that collapses due to technical failures takes longer to recover (Asep Zakariya Ansori, 2021; Saifuddin & Fathony, 2022). Within the framework of Institutional Theory, this condition shows that a sustainable transformation of trust cannot be achieved by simply replacing relational trust with systemic trust. A more appropriate strategy is to build a digital system on top of the foundation of existing relational trust, so that when technical systems experience disruptions, relational trust can function as a safety net. From the perspective of Maqashid Sharia, the reliability of the system in protecting the assets of students (*hifz al-mal*) requires not only the availability of technology, but also institutional resilience that is able to maintain accountability even in sub-ideal technical conditions.

One of the findings in the literature on the adoption of cashless in Pesantren is the tendency of student spending to be more controlled after using a non-cash system. Niswa (2021) documented that students who use the cashless system show a more planned spending pattern. Ansori (2021) confirmed that this system contributes to the reduction of impulsive consumption in the pesantren environment. The study argues that these behavioral changes are more accurately understood as institutional effects than simply individual psychological effects. When the pesantren adopted a cashless system, it changed the institutional structure that governs student consumption: the visibility of transactions increased, the circle of accountability extended to parents and pesantren managers, and the documentation of spending patterns became automatic and permanent. This change in structure encourages more controlled behavior, not just because students find it "more difficult" to spend money.

However, Ansori (2021) provides an important note: this expenditure control effect only works optimally when students actively monitor their transaction history. Students who were not actively involved with digital financial information did not show significant behavioral changes. Within the framework of Institutional Theory, this means that behavior change depends on the formation of a new routine of digital financial monitoring habits that do not arise automatically from the adoption of the system, but must be developed through a deliberate process of socialization and coaching. Alysa et al. (2023) confirm that structured exposure to financial information results in more sustainable behavioral changes than spontaneous exposure.

From the perspective of Maqashid Shariah, the value of *iqtishad* of simplicity and balance in consumption which is rooted in the prohibition of *israf* in Surah Al-Isra verses 26-27 is not something that can be produced solely through system engineering. It is a value that must be internalized through the process of moral education. A cashless system can create institutional conditions that facilitate the practice of *iqtishad*, but it cannot replace the value-building process that is at the core of the mission of pesantren education. Therefore, the implementation of an effective cashless system needs to be accompanied by an integrated financial literacy program in student development activities. The third dimension that needs to be considered is the uneven distribution of benefits from the cashless system in the

broader pesantren ecosystem. Rizal et al. (2021) show that while young students are generally more adaptive to digital systems, some parents of students, especially those from areas with limited banking access, face serious obstacles in operating top-up platforms and transaction monitoring.

This condition is not just an individual literacy problem that can be solved with training. The pesantren payment ecosystem is an interdependent system: students cannot maintain a sufficient balance if their parents are unable to replenish independently. When the weakest link in this ecosystem encounters a barrier, the entire system is disrupted. Within the framework of Institutional Theory, this condition shows that digital readiness cannot be measured only at the individual or organizational level, but must be measured at the ecosystem level that includes all actors whose participation is necessary for the system to function properly.

From the perspective of Maqashid Sharia, this inequality is a matter of justice ('adl) that has serious normative implications. A system of financial governance that benefits those who already have digital capacity while imposing additional barriers on already more vulnerable groups does not fully meet the standards that require that institutional arrangements serve the well-being of all community members fairly.

The last dimension that has received the least attention in literature is the tension between the logic of digital system efficiency and what can be called the moral economy of pesantren value systems and communal norms that have been regulating economic practices in pesantren as part of the formation of Islamic character. In the tradition of Pesantren, economic transactions are not solely the exchange of goods and money. It is a medium of social interaction that has a pedagogical dimension: students learn the manners of transactions, practice honesty, and experience the moral dimension of economic exchange in an environment guided by Islamic values. When all economic interactions are mediated by machines and digital applications, economic functions can be fulfilled and even increased, but the pedagogical and relational dimensions of such transactions are not automatically carried over. Ansori (2021) noted that resistance to the cashless system in some pesantren communities is not caused by technical limitations, but by concerns that digitalization will erode the social and moral dimensions of pesantren economic practices that have been part of the educational process.

Within the framework of Institutional Theory, these concerns reflect the real tension between the demands for change in the regulatory and normative pillars driven by digitalization policies, and the stability of the cultural-cognitive pillars that have long shaped the way the pesantren community understands the meaning of economic practices. From the perspective of Maqashid Sharia, this tension is not just a matter of change management. The maintenance of the moral dimension of economic practices is related to maqashid al-din and hifz al-'aql, the maintenance of religion and reason which in the hierarchy of maqashid occupies a higher position than hifz al-mal. Digitalization that achieves financial efficiency but erodes the moral-pedagogical dimension of pesantren economic life achieves some of the goals of maqashid at the expense of more basic goals.

Overall, the dynamics of changing student transaction behavior through the adoption of the cashless system is a much more complex process than just changing payment mechanisms. This research argues that this transformation is actually a process of institutional reconstruction that operates at four levels simultaneously: the technical level (system reliability), the accountability level (building systemic trust that complements relational trust), the distribution level (equitable distribution of benefits

throughout the pesantren ecosystem), and the normative level (maintaining the moral dimension of pesantren economic practices in the new digital architecture). Successful transformation at these four levels cannot be achieved through a purely technical approach. It requires an institutional commitment that views digitalization not as a replacement of the old system with a new system, but as an effort to build a new institutional order in which digital accountability strengthens relational trust, distribution justice is treated as a normative prerequisite, and the moral values of pesantren are not sacrificed for the sake of efficiency logic, but are reconstructed in a new digital architecture (Ahsan et al., 2024; Asep Zakariya Ansori, 2021; Niswa, 2021; Rizal et al., 2021; Saifuddin & Fathony, 2022; Setiawan et al., 2025).

Conclusion

This research shows that the digitalization of payment systems in Pesantren is not just a technological shift from cash transactions to digital platforms, but is a multidimensional transformation that involves policy structures, institutional readiness, and changes in students' financial behavior. The literature synthesis identifies three main dynamics that shape the adoption of cashless payment systems in Pesantren: first, variations in the typology of digitalization policies, which show differences in strategies and regulations between Pesantren; second, infrastructure gaps and institutional readiness, which reflect variations in technical capacity, digital literacy, and financial management of Pesantren; Third, transformation of student transaction behavior, including increasing financial awareness, controlling expenses, and transaction transparency. Theoretically, this study contributes to the discourse of digital Islamic economics by showing that the adoption of fintech in Pesantren runs through a hybrid process that integrates technological innovation, institutional governance, and Islamic economic values, specifically the principles of *hifz al-mal* within the framework of *Maqashid Sharia*. This integration emphasizes that the effectiveness of the cashless system is not only determined by technology, but also by institutional stability and conformity with Islamic normative goals in protecting property and supporting the welfare of the pesantren community.

However, this research has limitations. As a literature study, this analysis is limited to specific sources and only includes publications between 2020–2025, so the findings may not fully represent variations in implementation practices across Pesantren. In addition, the available literature often emphasizes the technical and behavioral aspects of students, while the social, cultural, and local dimensions of variation have not been explored in depth. Therefore, further research is needed to conduct field empirical studies that can: 1) Validate the findings of the literature regarding the transformation of students' financial behavior and institutional readiness. 2) Exploring the implementation of digital payment systems in various types of Pesantren. 3) Examine the impact of digitalization on financial literacy, institutional governance, and the development of the digital Islamic economic ecosystem in a more holistic manner. With an empirical approach, further research can provide a more comprehensive understanding of the real conditions on the ground and ensure that the adoption of the cashless system is not only technically efficient, but also in accordance with the values of *maqashid* and the moral economic practices of the pesantren.

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