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Optimizing the Circulation of Islamic Boarding School MSME Funds Through Digital-Based Sharia Microfinance Technology Innovation at the Nurul Jadid Islamic Boarding School, Paiton

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ABSTRAK

The rapid advancement of digital financial technology has encouraged Islamic boarding schools (pesantren) to modernize their financial management systems in order to improve the efficiency, transparency, and sustainability of their economic activities. As pesantren increasingly develop micro, small, and medium enterprises (MSMEs), optimizing fund circulation through Sharia-compliant digital financial services has become an important strategy for strengthening institutional economic governance. This study aims to examine the role of digital-based Sharia microfinance technology in optimizing the circulation of MSME funds at the Nurul Jadid Islamic Boarding School, Paiton. A descriptive qualitative approach with a case study design was employed. Data were collected through in-depth interviews, participant observation, and document analysis involving MSME managers, cooperative administrators, and students who actively used digital financial services. The findings reveal that the integration of digital financial technologies, including QRIS, digital bookkeeping, and electronic financial reporting, has accelerated transaction processing, improved the efficiency of MSME fund circulation, strengthened financial record-keeping, and enhanced transparency and accountability in financial management. However, the implementation of these technologies continues to face several challenges, including uneven digital literacy, differences in users' technical competencies, and limited technological infrastructure. The study concludes that digital-based Sharia microfinance technology represents a strategic instrument for strengthening the financial governance of pesantren-based MSMEs. Its successful implementation requires continuous investment in human resource development, institutional readiness, and digital infrastructure to support a modern, transparent, accountable, and sustainable Islamic boarding school economic ecosystem.

Keywords: Digital-Based Sharia Microfinance; Islamic Boarding School MSMEs; Fund Circulation; Digital Financial Governance; QRIS

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INTRODUCTION

Islamic boarding schools (pesantren) have evolved beyond their traditional role as religious educational institutions into community-based socio-economic centers. In addition to providing Islamic education, many pesantren now operate cooperatives, micro, small, and medium enterprises (MSMEs), and other productive business units that contribute to local economic development. As these economic activities expand, the need for accountable, efficient, and Sharia-compliant financial management has become increasingly important. In this context, digital financial technology offers practical solutions through electronic payment systems, QRIS, digital bookkeeping, and Islamic financial technology (Islamic fintech) services that support integrated financial management. Previous studies have shown that digital transformation can strengthen financial governance by streamlining transaction processes and enhancing accountability (Khakim, 2025; Judijanto, 2025).

Despite these opportunities, implementing digital financial systems in pesantren-based MSMEs remains challenging. Many pesantren still rely on manual financial management, resulting in inefficient record-keeping, poor integration of financial records, and a greater risk of administrative errors. Furthermore, previous studies have identified unequal digital literacy, limited technical competencies, and inadequate infrastructure as persistent barriers to the effective adoption of digital financial services (Cahya et al., 2025). These findings suggest that successful digital transformation depends not only on the availability of technology but also on institutional readiness and users' capacity to utilize digital systems effectively.

The Nurul Jadid Islamic Boarding School in Paiton provides an appropriate case for examining this issue because it has begun integrating digital financial services into the management of its cooperative and MSME business units. However, empirical evidence on how digital-based sharia microfinance technology influences the circulation of MSME funds within pesantren remains limited. Existing studies have primarily focused on the adoption of Islamic fintech, QRIS implementation, or digital literacy, while giving limited attention to the operational dynamics of fund circulation, financial integration, and sharia-based financial governance within the pesantren ecosystem.

Accordingly, this study investigates how digital-based sharia microfinance technology optimizes the circulation of MSME funds at the Nurul Jadid Islamic Boarding School.

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Specifically, the study analyzes the contribution of digital sharia microfinance technology to fund circulation, financial record-keeping, and financial transparency, while identifying the practical challenges encountered during its implementation. The novelty of this study lies in examining the operational optimization of MSME fund circulation within a pesantren through an integrated digital sharia microfinance system, extending previous studies that have primarily focused on fintech adoption, QRIS implementation, or digital literacy.

RESEARCH METHOD

This study adopted a descriptive qualitative approach with a case study design to obtain an in-depth understanding of the implementation of digital-based sharia microfinance technology in optimizing the circulation of MSME funds within an Islamic boarding school. This design was selected because it allows an in-depth exploration of implementation processes, participants' experiences, and the institutional context underlying digital financial management in a real-world setting.

The research was conducted at the Nurul Jadid Islamic Boarding School, Paiton District, Probolinggo Regency, East Java, Indonesia. The research site was purposively selected because it has established cooperative-based MSME business units and has integrated digital financial services into its cooperative and business operations. This integration provides an appropriate setting for examining how digital-based sharia microfinance technology supports efficient, transparent, and accountable MSME fund circulation within a pesantren ecosystem. Fieldwork was conducted from January to March 2026.

The study involved 10 informants, who were selected through purposive sampling based on their direct involvement in the implementation and utilization of the digital financial system. The participants consisted of three managers of the pesantren business units, three cooperative administrators, and four students who actively used the digital financial services. All informants had at least five years of experience using the digital financial system, ensuring that they possessed sufficient knowledge and practical experience relevant to the research objectives. The selection criteria included: (1) direct involvement in digital financial management or transactions, (2) a minimum of five years of experience using the digital financial system, and (3) willingness to participate voluntarily in the study.

Data were collected through three complementary techniques: in-depth interviews, participant observation, and document analysis. Semi-structured interviews were conducted to explore participants' experiences, perceptions, and challenges related to the implementation of digital-based sharia microfinance technology. Participant observation was undertaken to examine transaction practices, financial record-keeping procedures, and the operation of digital financial applications in daily activities. Relevant documents—including financial reports, transaction records, cooperative administrative documents, and digital transaction records—were examined to support and verify the information obtained through interviews and observations.

Data analysis followed the interactive model proposed by Miles and Huberman, comprising three stages: data reduction, data display, and conclusion drawing and verification. Interview recordings were first transcribed verbatim, while observation notes and documentary evidence were systematically organized. The data were then coded by identifying meaningful units related to the research objectives. Similar codes were grouped into broader analytical themes, including transaction efficiency, financial transparency, digital literacy, institutional readiness, and infrastructure constraints. These themes were subsequently interpreted by relating the empirical findings to the concepts of sharia microfinance, MSME digitalization, and digital financial governance. To enhance the credibility of the findings, methodological triangulation was employed by comparing information obtained from interviews, observations, and documentary evidence, thereby enhancing the credibility and trustworthiness of the findings.

RESULTS AND DISCUSSION

Implementation of Digital-Based Sharia Microfinance Technology in Islamic Boarding School MSMEs

The findings indicate that the Nurul Jadid Islamic Boarding School has integrated various digital financial services into the management of its cooperative and MSME business units. The digital ecosystem includes QRIS-based payment services, inter-unit digital fund transfers, application-based financial recording, and electronic transaction reporting. These technologies have been adopted to accelerate financial transactions while improving the efficiency, transparency, and accountability of financial management within the pesantren's business ecosystem.

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One MSME manager explained:

"Before implementing the digital system, financial records were maintained manually, and the preparation of financial reports often took a considerable amount of time. Currently, every transaction is automatically recorded, allowing financial reports to be generated more quickly and accurately." (Interview with MSME Manager 1, February 2026).

This statement demonstrates that digital transformation has extended beyond changing payment methods to fundamentally improving administrative and financial governance. The automated recording system minimizes delays in transaction documentation while providing more reliable financial information for managerial decision-making.

Field observations further revealed that every transaction conducted through QRIS and other digital payment platforms is automatically synchronized with the cooperative's financial database. Consequently, financial administrators no longer need to perform repetitive manual bookkeeping at the end of each business day. Instead, transaction records are generated in real time, enabling managers to monitor cash inflows and outflows continuously. Such integration substantially reduces administrative workloads while improving the overall quality of financial reporting.

These findings support the concept of digital financial governance, which argues that information technology enhances organizational effectiveness by improving operational efficiency, reducing administrative costs, and facilitating evidence-based financial decision-making. Within the context of Islamic boarding schools, the integration of digital financial technology also reflects an institutional transformation toward more professional and accountable financial management without compromising Sharia principles.

The implementation process observed in this study can be summarized as an integrated financial management system in which customers and students make digital payments through QRIS or other electronic payment platforms. These transactions are then automatically processed through Sharia-compliant financial applications before being recorded within the cooperative's financial management system and subsequently distributed to the respective MSME business units. Such integration ensures that every financial transaction is documented systematically while supporting efficient fund circulation across the pesantren's economic ecosystem.

Optimization of MSME Fund Circulation through Digital Financial Technology

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The primary objective of this study was to examine how digital-based Sharia microfinance technology optimizes the circulation of MSME funds within the Nurul Jadid Islamic Boarding School. The findings demonstrate that digital financial services significantly improve the speed of financial circulation by shortening transaction processing time and accelerating the availability of working capital for business operations.

Interview data revealed that digital payments enable sales revenues to be transferred directly into the cooperative's financial system immediately after each transaction. Consequently, the collected funds can be utilized more rapidly for inventory procurement, operational expenditures, and business expansion.

One cooperative administrator stated:

"Since QRIS has been implemented, payments made by students and external customers are immediately transferred into our financial system. As a result, cash circulation has become much faster than when we relied entirely on cash transactions." (Interview with Cooperative Administrator 2, February 2026).

This finding was consistently supported by participant observations conducted during daily business activities. Researchers observed that digital transaction records were automatically stored in the accounting application, allowing financial reconciliation to be completed within a considerably shorter period than under the previous manual system. Previously, financial administrators were required to collect cash receipts, manually record each transaction, and reconcile financial statements at the end of the day. Under the digital system, however, these procedures occur automatically, substantially reducing administrative delays.

The comparison between financial management practices before and after digital transformation is presented in Table 1.

Table 1.

Comparison of Financial Management Before and After Digital Transformation

Aspect	Before Digitalization	After Digitalization
Transaction processing	Relatively slow	Faster and more efficient
Financial recording	Manual bookkeeping	Automated digital recording
Financial reporting	Time-consuming	Faster and more systematic
Financial transparency	Limited	Higher transparency
Administrative errors	Relatively frequent	Significantly reduced

As shown in Table 1, digital financial technology has substantially improved several aspects of financial management. The most notable improvements include faster transaction processing, automated bookkeeping, more systematic financial reporting, increased financial transparency, and reduced administrative errors. These improvements collectively contribute to a more efficient circulation of MSME funds, enabling business units to utilize financial resources more productively.

The accelerated circulation of funds also enhances the liquidity of MSME business units. Because revenues are received and recorded immediately, managers are able to allocate financial resources more efficiently to maintain inventory availability, finance operational activities, and respond promptly to fluctuations in market demand. This improved liquidity strengthens the operational sustainability of pesantren-based enterprises while reducing financial bottlenecks associated with delayed cash availability.

These findings are consistent with transaction cost theory, which suggests that digital technology reduces the costs associated with financial transactions by minimizing administrative procedures, shortening transaction time, and improving the efficiency of resource allocation. Within the context of Islamic boarding school MSMEs, digital financial systems therefore function not merely as payment instruments but also as strategic mechanisms for strengthening working capital management and optimizing internal financial circulation.

Furthermore, the findings demonstrate that digital financial integration facilitates more effective coordination among cooperative administrators, MSME managers, and other stakeholders involved in financial management. Because transaction data are centrally stored and accessible in real time, financial monitoring becomes more transparent and collaborative. Managers can immediately identify changes in sales performance, evaluate business outcomes, and formulate financial decisions based on accurate and up-to-date information.

Overall, the implementation of digital-based Sharia microfinance technology has transformed financial management within the Nurul Jadid Islamic Boarding School from a predominantly manual system into an integrated digital financial ecosystem. This transformation not only accelerates the circulation of MSME funds but also strengthens institutional governance,

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enhances operational efficiency, and supports the long-term sustainability of the pesantren's economic activities.

Enhancing Financial Transparency and Accountability through Digital Financial Systems

Financial transparency represents one of the fundamental principles of Sharia-based financial management because it embodies the values of *amanah* (trustworthiness), accountability, and responsible stewardship of financial resources. The findings of this study demonstrate that the implementation of digital-based Sharia microfinance technology has significantly improved transparency in managing MSME funds at the Nurul Jadid Islamic Boarding School.

Interview data indicate that the digital financial system enables cooperative administrators and business managers to monitor financial transactions in real time. Every payment made through QRIS and other digital payment platforms is automatically recorded within the financial management application, thereby allowing managers to access accurate information regarding cash inflows, expenditures, and account balances whenever required.

One cooperative administrator explained:

"At present, every financial transaction can be traced through the digital system. We are able to monitor daily income and expenditures more easily, making financial supervision considerably more transparent than under the previous manual system." (Interview with Cooperative Administrator 1, February 2026).

This statement illustrates that digital financial technology has strengthened financial control by providing systematic and traceable transaction records. Unlike manual bookkeeping, which often depends on individual accuracy and delayed documentation, digital recording minimizes the possibility of omitted transactions and facilitates continuous financial monitoring.

Participant observation further revealed that digital bookkeeping applications generate financial reports automatically according to predetermined accounting categories. Consequently, financial administrators spend substantially less time compiling reports while producing more accurate financial statements. The availability of real-time financial information also enables cooperative managers to evaluate the performance of individual MSME units more efficiently and identify operational issues before they become significant financial problems.

In addition, document analysis demonstrated that digital financial reports are organized more systematically than conventional paper-based records. Transaction histories, payment

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confirmations, and monthly financial summaries are electronically archived, thereby simplifying internal audits and administrative evaluations. Such documentation strengthens institutional accountability because every financial activity can be verified using objective digital evidence.

The improvements observed in financial governance are summarized in Table 2.

Table 2.

Improvements in Financial Governance Following the Implementation of Digital Financial Technology

Financial Governance Aspect	Observed Improvement
Transaction monitoring	Real-time monitoring of financial activities
Financial reporting	Faster and more systematic reporting
Accountability	Improved traceability of financial transactions
Internal supervision	More effective financial monitoring
Decision-making	Supported by accurate and up-to-date financial information

As presented in Table 2, the implementation of digital financial technology has strengthened multiple dimensions of financial governance. The most significant improvements include real-time transaction monitoring, enhanced accountability, more systematic reporting procedures, and evidence-based managerial decision-making. Collectively, these developments contribute to a more transparent financial management system that aligns with the governance principles expected of contemporary Islamic educational institutions.

From the perspective of Islamic economics, these findings are consistent with the principle of *hisbah*, which emphasizes transparency, honesty, and accountability in economic transactions. Digital financial systems facilitate these principles by ensuring that financial information is accurately documented and readily available for institutional oversight. Consequently, the adoption of digital technology not only improves operational efficiency but also reinforces ethical financial governance in accordance with Sharia values.

Moreover, enhanced transparency strengthens stakeholders' trust in the financial management of pesantren-based enterprises. Students, cooperative members, institutional leaders, and other stakeholders are more confident in financial decisions when they are supported by reliable and transparent financial information. Therefore, digital financial technology contributes simultaneously to institutional credibility and organizational sustainability.

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Challenges in Implementing Digital-Based Sharia Microfinance Technology

Despite the substantial benefits generated by digital financial technology, the findings reveal that its implementation continues to encounter several practical challenges. These challenges primarily relate to human resource capacity, technological infrastructure, and organizational adaptation to digital transformation.

One of the most frequently reported obstacles concerns the unequal level of digital literacy among users. Although younger users, particularly students, generally adapt quickly to digital payment systems, several cooperative administrators and MSME personnel continue to experience difficulties in utilizing certain features of digital financial applications.

A student actively using digital financial services stated:

"Most students are already familiar with digital payments, but some still require guidance, especially when using financial applications for the first time." (Interview with Student 3, March 2026).

This finding indicates that technological availability alone does not guarantee effective implementation. Rather, successful digital transformation requires sufficient user competence and continuous educational support.

Another significant challenge identified during the field study relates to technical infrastructure. Several participants reported that unstable internet connectivity occasionally interrupted digital payment transactions, resulting in temporary delays in transaction processing.

One MSME manager explained:

"The primary challenge is internet connectivity. When the network becomes unstable, QRIS transactions cannot be processed immediately, forcing customers to wait until the connection is restored." (Interview with MSME Manager 2, March 2026).

Field observations confirmed that network interruptions occasionally delayed payment verification, particularly during periods of high transaction volume. Although these interruptions were generally temporary, they reduced operational efficiency and occasionally affected customer satisfaction.

The principal implementation challenges identified during this study are summarized in Table 3.

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Table 3.

Major Challenges in Implementing Digital Financial Technology

Challenge	Empirical Findings
Digital literacy	Uneven levels of digital competence among users
Technical capability	Different levels of technological proficiency among administrators and students
Infrastructure	Internet connectivity remains unstable in certain situations
Organizational adaptation	Continuous training and technical assistance are still required

Table 3 demonstrates that the effectiveness of digital financial technology depends not only on the availability of technological infrastructure but also on the preparedness of human resources and institutional support mechanisms. Consequently, digital transformation should be understood as a comprehensive organizational change process rather than merely the adoption of new technological tools.

These findings correspond with the Technology Acceptance Model (TAM), which argues that technology adoption is influenced by users' perceptions of usefulness and ease of use. Participants generally recognized the practical benefits of digital financial systems, particularly regarding transaction efficiency and financial transparency. Nevertheless, differences in digital competence affected the extent to which individual users were able to utilize these systems effectively.

Similarly, the findings support the concept of digital financial inclusion, which emphasizes that access to digital financial services must be accompanied by adequate digital literacy, institutional capacity, and supporting infrastructure. Without these complementary factors, the potential benefits of financial technology cannot be fully realized.

From a managerial perspective, the findings suggest that Islamic boarding schools should not regard digital transformation as a one-time technological investment. Instead, it should be viewed as a continuous institutional development process involving capacity building, regular technical training, infrastructure improvement, and periodic evaluation of digital financial practices. Such measures would enable pesantren-based MSMEs to maximize the benefits of digital financial technology while minimizing operational constraints.

Overall, although several implementation challenges remain, the empirical evidence indicates that the advantages of digital-based Sharia microfinance technology substantially

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outweigh its limitations. With continuous improvements in digital literacy, infrastructure, and institutional readiness, digital financial systems are expected to play an increasingly strategic role in strengthening the sustainability, competitiveness, and financial governance of Islamic boarding school MSMEs.

The findings of this study corroborate previous research demonstrating that digital financial transformation contributes significantly to improving the efficiency and accountability of financial management within community-based economic institutions. The implementation of digital-based Sharia microfinance technology at the Nurul Jadid Islamic Boarding School enhanced transaction efficiency, accelerated MSME fund circulation, improved financial transparency, and strengthened institutional accountability. These outcomes are consistent with the findings of Khakim (2025), who reported that digital financial systems simplify financial administration while increasing the accuracy of accounting records. Likewise, the results support Judijanto (2025), who concluded that digital transformation strengthens financial governance by improving reporting quality and facilitating institutional supervision.

Nevertheless, this study extends the existing body of knowledge in several important respects. Previous studies have primarily examined the adoption of Islamic financial technology, the implementation of QRIS, or the influence of digital literacy on financial inclusion. Although these studies provide valuable insights into the adoption of digital financial services, they pay limited attention to how digital financial systems influence the operational dynamics of fund circulation within pesantren-based MSMEs.

The present study addresses this gap by demonstrating that digital financial technology performs functions beyond facilitating cashless transactions. Specifically, the findings reveal that an integrated digital financial system accelerates cash flow, improves liquidity management, enhances financial monitoring, and supports more effective allocation of working capital across business units. Consequently, digital technology serves as an institutional mechanism that optimizes the circulation of MSME funds while reinforcing Sharia-based financial governance.

Furthermore, this study highlights the importance of organizational readiness in determining the success of digital transformation. Although technological infrastructure is essential, the effectiveness of digital financial systems ultimately depends on the digital competencies of users, institutional commitment, and continuous managerial support. This

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finding enriches previous discussions by emphasizing that digital transformation is fundamentally an organizational process rather than merely a technological innovation.

Theoretical Discussion

The empirical findings can be interpreted through several complementary theoretical perspectives.

First, the Technology Acceptance Model (TAM) provides a useful framework for explaining users' acceptance of digital financial technology. According to TAM, technology adoption is primarily influenced by perceived usefulness and perceived ease of use. The interview findings indicate that cooperative administrators, MSME managers, and students generally perceived the digital financial system as beneficial because it accelerated transactions, simplified bookkeeping, and facilitated financial monitoring. These perceived advantages encouraged users to adopt and continue utilizing digital financial applications despite several implementation challenges.

Second, the findings align with the concept of digital financial inclusion, which emphasizes equitable access to affordable and efficient digital financial services. Within the pesantren environment, digital financial technology has expanded access to financial services for students, cooperative members, and MSME operators while improving the efficiency of financial transactions. Nevertheless, unequal digital literacy and infrastructure limitations remain significant barriers to achieving comprehensive digital financial inclusion. These findings indicate that technological accessibility alone is insufficient; sustainable digital transformation also requires investments in human capital development and institutional capacity building.

Third, the findings may be interpreted from the perspective of digital financial governance, which emphasizes the role of information technology in strengthening organizational transparency, accountability, and operational efficiency. The automated recording of financial transactions, real-time monitoring, and systematic reporting observed in this study demonstrate how digital technology supports more effective financial governance. Such improvements enable institutional leaders to make financial decisions based on accurate, timely, and verifiable information.

From the standpoint of Islamic economics, the implementation of digital-based Sharia microfinance technology reflects the practical realization of several fundamental Sharia principles, including *amanah* (trustworthiness), *hisbah* (accountability and supervision), *adl* (justice), and *maslahah* (public benefit). Transparent financial reporting and traceable digital transactions reduce information asymmetry while promoting responsible financial management. Consequently, digital financial innovation does not merely improve administrative efficiency but also strengthens ethical governance consistent with Islamic values.

The integration of these theoretical perspectives demonstrates that digital financial technology should not be viewed solely as a technological instrument. Rather, it constitutes an institutional innovation that simultaneously enhances operational performance, organizational governance, and Sharia compliance within Islamic boarding school enterprises.

The findings have several practical implications for the development of digital financial management within Islamic boarding schools. First, pesantren administrators should strengthen digital literacy programs for cooperative personnel, MSME managers, and students to ensure that all users possess the competencies necessary to utilize digital financial systems effectively. Continuous training programs are particularly important because technological innovation evolves rapidly, requiring users to update their digital skills regularly.

Second, investment in technological infrastructure should become an institutional priority. Stable internet connectivity, reliable digital payment platforms, and secure financial information systems are essential prerequisites for maintaining efficient and uninterrupted financial transactions. Improving technological infrastructure would minimize operational disruptions while enhancing users' confidence in digital financial services.

Third, institutional policies should support the integration of digital financial systems across all business units within the pesantren. Standardized financial procedures, integrated reporting mechanisms, and periodic system evaluations would strengthen organizational coordination and promote consistent financial governance throughout the institution.

Academically, this study contributes to the growing literature on Islamic economics, digital financial innovation, and pesantren-based entrepreneurship by providing empirical evidence regarding the operational role of digital-based Sharia microfinance technology in optimizing MSME fund circulation. Unlike previous studies that concentrated primarily on technology adoption or financial inclusion, this research demonstrates how integrated digital

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financial systems influence liquidity management, financial governance, and institutional sustainability within Islamic boarding schools.

The findings therefore provide an important conceptual contribution by positioning digital-based Sharia microfinance technology as a strategic institutional mechanism that supports both economic sustainability and Sharia-compliant financial governance.

Overall, the findings indicate that digital-based Sharia microfinance technology has substantially transformed financial management practices within the Nurul Jadid Islamic Boarding School. The implementation of integrated digital financial systems has accelerated MSME fund circulation, improved financial transparency, strengthened institutional accountability, and enhanced the efficiency of financial administration.

Nevertheless, the success of digital transformation remains contingent upon several organizational factors, including digital literacy, technological competence, institutional commitment, and infrastructure readiness. These findings suggest that technological innovation alone is insufficient to ensure sustainable organizational transformation. Instead, successful implementation requires continuous capacity development, supportive institutional policies, and long-term investments in digital infrastructure.

The study therefore concludes that digital-based Sharia microfinance technology functions not only as an operational payment system but also as a strategic instrument for strengthening financial governance, improving institutional performance, and promoting the long-term sustainability of pesantren-based MSMEs. Through the integration of digital financial services with Sharia principles, Islamic boarding schools can develop a more transparent, accountable, efficient, and resilient economic ecosystem capable of responding to the challenges of contemporary digital transformation.

CONCLUSION

This study concludes that digital-based Sharia microfinance technology has significantly contributed to optimizing MSME fund circulation at the Nurul Jadid Islamic Boarding School. The integration of digital financial services, including QRIS, digital bookkeeping, and electronic financial reporting, has accelerated transaction processing, enhanced the efficiency of fund circulation, improved financial record-keeping, and strengthened financial transparency and accountability. These improvements have enabled cooperative administrators and MSME managers to monitor financial activities in real time and make more informed financial decisions, thereby supporting the sustainability of pesantren-based MSMEs. However, the successful implementation of digital financial systems remains dependent on adequate digital literacy, users' technical competencies, and reliable technological infrastructure. Therefore, strengthening human resource capacity, institutional readiness, and digital infrastructure is essential to maximizing the benefits of digital-based Sharia microfinance and fostering a sustainable, transparent, accountable, and Sharia-compliant economic ecosystem within Islamic boarding schools.

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