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Digital Transformation in Islamic Education Management: A Review of Governance Innovation and Quality Improvement in Islamic Educational Institutions

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ABSTRACT

Digital transformation has become increasingly important in Islamic education management; however, existing research remains fragmented across digital leadership, information systems, administrative accountability, and educational quality assurance. This study aims to develop an integrated understanding of how digital transformation contributes to governance innovation and quality improvement in Islamic educational institutions. It employed a qualitative integrative literature review, drawing on scholarly publications from 2021 to 2026. Candidate sources were identified through academic search platforms, journal websites, DOI records, and publisher pages. Relevant literature was screened according to its scholarly credibility, verifiability, and substantive relevance to digital governance, institutional management, and educational quality. Data were organized in an analytical matrix and examined through qualitative thematic synthesis to identify recurring patterns, relationships, and conceptual implications. The findings reveal five interrelated dimensions of digital transformation: digital leadership and organizational readiness; integrated information systems and data-driven decision-making; administrative efficiency, transparency, and accountability; Islamic values and digital ethics; and quality assurance and continuous improvement. The synthesis further identifies three interconnected management components—digital leadership, data-driven governance, and digital quality assurance—supported by institutional capacity and Islamic ethical principles. These components form a continuous improvement cycle in which leadership establishes strategic priorities, reliable data informs institutional decisions, and quality assurance guides evaluation and corrective action. The study concludes that digital transformation should be understood as an institution-wide governance process rather than merely the adoption of technological platforms. Its conceptual framework offers a basis for context-sensitive management strategies, although empirical validation is required to establish its applicability across diverse Islamic educational institutions.

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INTRODUCTION

Digital transformation has become an important issue in educational management as institutions increasingly use digital technologies to improve administrative efficiency, information management, organizational coordination, and educational services. However, digital transformation should not be understood merely as the adoption of digital platforms or the automation of existing procedures. It involves broader changes in organizational processes, institutional strategies, and value creation. Müller et al. (2024) emphasize the need to understand digital transformation as an institutional process rather than a purely technological intervention. Similarly, Taher (2023) highlights the interconnected roles of people, processes, and technology, suggesting that sustainable transformation requires alignment between technological resources and organizational practices. These perspectives indicate that digital transformation in education requires comprehensive management strategies that connect technological innovation with institutional objectives and educational quality.

At the international level, leadership, organizational readiness, and change management are important dimensions of digital transformation. Carvalho et al. (2022) examine the relationship between leadership styles, digital transformation, and performance in higher education, highlighting the relevance of leadership in managing organizational change. In school settings, the integration of virtual learning environments requires changes in organizational culture and planned change management, rather than the provision of digital platforms alone (Purnomo et al., 2024). Firmansyah et al. (2024) also address the relationship between digital transformation, leadership, and organizational resilience in distance education. Taken together, these studies suggest that institutional performance depends on the capacity to coordinate technology, leadership, organizational processes, and adaptation. Nevertheless, the application of these principles to the distinctive governance structures, ethical commitments, and educational missions of Islamic educational institutions requires further synthesis.

In Indonesia, digital transformation presents both opportunities and challenges for Islamic education management. Digital systems can support administrative efficiency, information accessibility, and educational service delivery, although implementation may be constrained by infrastructure limitations, inadequate digital competencies, and institutional readiness (Jannah et al., 2023). At the madrasah level, digitalization is associated with efforts to improve learning quality through systematic planning, teacher development, learning resource management, and evaluation (Fahmi et al., 2024). Encu and Juliansyah (2024) similarly address the relationship between digital-based learning management and educational quality. These perspectives demonstrate that the educational benefits of digital technology depend not only on access to technological tools but also on the quality of their management and integration into institutional processes.

Human resource development and data management further illustrate the complexity of digital transformation. Supiansyah et al. (2025) emphasize the importance of improving teachers' digital competencies to support educational performance and quality. Yulianto et al. (2025) discuss the role of the Education Management Information System (EMIS) in supporting data-based madrasah management, while Fatoni (2023) relates digital transformation to the development of smart schools in Islamic education. Collectively, these studies point to the need for coordinated development of technological infrastructure, staff capabilities, information systems, and institutional planning. Yet, the relationship between these components and broader governance

innovation—including accountability, strategic leadership, and systematic quality assurance—requires a more integrated analytical perspective.

Contextual studies further demonstrate that digital transformation must be adapted to the characteristics of Islamic educational institutions. Suharto and Fatmawati (2022) discuss digital learning in traditional and modern Islamic boarding schools, highlighting the importance of considering institutional traditions when introducing technological innovations. Abtokhi et al. (2025) emphasize the integration of information technology with Islamic values in madrasah learning innovation, while Efendi et al. (2026) address teacher competence in designing interactive media for digital learning. At the organizational level, Musip et al. (2026) focus on strategic management in Islamic education, and Septiana et al. (2026) address bureaucratic leadership, good governance, and administrative compliance in madrasah management. These studies indicate that technological change must remain compatible with institutional identity, managerial accountability, and the ethical foundations of Islamic education.

Recent discussions have expanded toward digital ethics, artificial intelligence, integrated governance, and quality assurance. Mulyani et al. (2026) consider the challenges and opportunities of digital transformation alongside digital communication ethics. Saniya and Prabowo (2026) examine the integration of artificial intelligence into Islamic education management information systems, raising the importance of infrastructure readiness, staff competence, and data security. Aini and Husni (2026) connect digital-era management transformation with leadership, governance, and educational quality, while Baqir et al. (2026) emphasize the importance of integrating governance components to strengthen coordination and decision-making. Riyanto (2026) further links digital leadership with quality assurance, suggesting that technology should support systematic monitoring and continuous improvement rather than function as an isolated innovation.

Other studies address the implementation of digital transformation in specific institutional settings. Ahmed et al. (2026) examine leadership strategies for e-learning implementation in Islamic boarding schools, while Latipah et al. (2026) discuss data-driven school management as a means of supporting educational quality. Ruhiyat (2026) considers digital management integration in Islamic educational institutions, and Khafidah et al. (2026) address the use of educational management information systems to improve administrative efficiency in madrasahs. These studies broaden the discussion from digital learning to administrative integration and organizational management. However, their different institutional contexts and areas of emphasis also make it necessary to examine how their contributions relate to one another within a coherent framework of governance innovation and quality improvement.

Previous studies provide additional evidence concerning the relationship between digital systems, administrative accountability, and educational innovation. Abdullah (2021) reviews technology-related Qur'anic memorization learning, illustrating the development of technology-supported Islamic education while concentrating primarily on learning practices. Muhtasar et al. (2023) examine the use of EDM and e-RKAM applications for madrasah self-evaluation and budgeting, emphasizing the relevance of digital systems to administrative efficiency and accountability. Kasmin and Nurilahi (2023) investigate the relationship between EMIS 4.0 use and the effectiveness of madrasah education data management, bringing attention to the importance of operator competence, data timeliness, and network availability. Similarly, Khoirohnissah (2023) discusses the use of digital platforms in madrasah management, while Mahsusi et al. (2024) connect digital transformation with madrasah management and Islamic culture. These studies demonstrate

that digitalization has implications beyond classroom instruction, particularly for information management, institutional administration, and organizational culture.

Other research provides complementary insights into institutional change and digital governance. Nugroho and Astutik (2024) examine digital transformation in Islamic boarding school education, including the opportunities and challenges of integrating technology into established educational practices. Yusuf (2024) addresses leadership, implementation, and educational innovation in madrasah management, emphasizing the importance of organizational collaboration and contextual adaptation. Kurniawan et al. (2025) examine digital governance in Islamic educational institutions through a systematic literature review, connecting digital systems with leadership, service quality, and Islamic values. Hilman and Samad (2025) propose an information technology-based governance model oriented toward public accountability, while Ka'anto (2026) reviews Scopus-indexed literature on digital transformation in Islamic religious education and identifies themes involving digital learning, teacher competence, and ethical challenges. Although these studies provide useful foundations, their different emphases indicate the need to distinguish technology-supported learning from institution-wide management transformation and to examine how governance and quality improvement can be understood together.

The research gap lies in the fragmentation of existing knowledge. Although previous studies have examined digital learning, information systems, leadership, administrative efficiency, and institutional accountability, these dimensions have largely been discussed separately or within particular institutions and operational settings. Learning-oriented studies tend to emphasize pedagogical practices, whereas management-oriented studies often focus on individual systems, such as EMIS, EDM, or e-RKAM, or on specific aspects of leadership and governance. Consequently, the relationship between digital governance innovation, organizational capacity, Islamic ethical commitments, and systematic quality assurance remains insufficiently synthesized. This limitation matters because the availability of digital technology does not automatically produce better educational management. Without coordination among leadership, data systems, institutional processes, human resources, and quality assurance, digitalization may improve individual administrative tasks without generating coherent institutional development. Furthermore, the diversity of madrasahs, Islamic schools, and pesantren requires an analytical perspective that recognizes contextual differences rather than assuming that a single digital model will work equally well across institutions.

To address this gap, the present study adopts an integrative perspective on digital transformation in Islamic education management. Conceptually, it treats transformation as an organizational and governance process involving technological integration, leadership, data-based decision-making, administrative accountability, and quality improvement. This perspective is informed by the people–process–technology relationship discussed by Taher (2023), the leadership and performance relationship examined by Carvalho et al. (2022), and the institutional understanding of digital transformation presented by Müller et al. (2024). It also considers the importance of change management and organizational adaptation highlighted by Purnomo et al. (2024) and Firmansyah et al. (2024). Within Islamic educational institutions, these dimensions must additionally be considered in relation to Islamic ethical principles, institutional missions, and the cultural characteristics of educational communities (Abtokhi et al., 2025; Kurniawan et al., 2025; Mahsusi et al., 2024).

The novelty of this study is its integrative synthesis of digital transformation through the relationship between governance innovation and educational quality improvement, rather than treating technology adoption as an isolated intervention. It brings together five interrelated analytical dimensions: digital leadership and organizational readiness; integrated information systems and data-driven decision-making; administrative efficiency, transparency, and accountability; the integration of Islamic values and digital ethics; and quality assurance for continuous institutional improvement. By connecting these dimensions, the study seeks to clarify how digital initiatives can be understood as components of a coordinated management strategy. Its contribution is therefore primarily conceptual and integrative: it organizes dispersed findings into a framework that can inform future empirical investigations and support institutional decision-making. The framework is not assumed to establish causal relationships; rather, it identifies relationships and questions that can be examined in subsequent research across different types of Islamic educational institutions.

Accordingly, this study reviews digital transformation in Islamic education management by addressing three interrelated questions: How has digital transformation reshaped governance and management practices in Islamic educational institutions? What opportunities and challenges influence its implementation in improving the quality of Islamic education? How can digital leadership, data-driven governance, and quality assurance be integrated to strengthen the sustainable development of these institutions? By addressing these questions, the study aims to contribute to a more coherent understanding of digital transformation as an institution-wide process that connects technological innovation, accountable governance, Islamic educational values, and sustainable quality improvement.

METHODS

1. Research Approach and Design

This study employed a qualitative, integrative literature review to examine digital transformation in Islamic education management, particularly its relationship with governance innovation and institutional quality improvement. An integrative review was selected because the topic encompasses diverse forms of evidence, including conceptual discussions, empirical studies, and literature reviews addressing digital leadership, management information systems, administrative accountability, Islamic educational values, and quality assurance. Creswell and Creswell (2023) explained that research design should be aligned with the research questions and the nature of the evidence required to address them. Similarly, Zed (2018) emphasized the systematic examination and interpretation of documentary sources as the foundation of library-based research. Accordingly, the review synthesized existing publications to identify recurring themes, conceptual relationships, research limitations, and implications for the management of Islamic educational institutions.

The review followed an integrative rather than exclusively statistical approach because its primary objective was to interpret and connect findings across different research contexts. Snyder (2019) distinguished literature review approaches according to their purposes, sources, and analytical procedures, underscoring the importance of selecting a review design that fits the research problem. In this study, the integrative orientation enabled the comparison of studies on madrasahs, Islamic schools, Islamic boarding schools, and broader educational institutions while maintaining attention to their different organizational contexts.

2. Literature Sources and Selection Criteria

The literature corpus was assembled from the 25 references in the preliminary bibliography and the 10 additional prior studies identified in the research materials. These 35 records were treated as candidate sources rather than automatically accepted as the final analytical corpus. The review focused on publications from 2021 to 2026 concerning digital transformation in educational management, with particular attention to Islamic educational institutions. Relevant materials were identified through academic search platforms, journal websites, DOI records, and publisher pages using combinations of the terms digital transformation, Islamic education management, digital governance, educational management information systems, digital leadership, quality improvement, madrasah, and Islamic boarding school, together with their Indonesian equivalents.

The inclusion criteria comprised relevance to at least one research question, publication in a scholarly journal, identifiable bibliographic information, and substantive discussion of governance, management, digital implementation, or educational quality. Studies focused exclusively on classroom technology without a meaningful connection to management were excluded from the core synthesis unless they provided relevant evidence about institutional capacity or digital transformation. Duplicate records and references with incomplete or unverifiable publication information were flagged for further checking. Machi and McEvoy (2022) described literature reviewing as a structured process of locating, evaluating, organizing, and synthesizing research to establish a coherent argument. In addition, Hardani et al. (2020) emphasized the importance of defining the sources and procedures of data collection in order to maintain methodological clarity. The final corpus was therefore determined by applying these criteria to the candidate records; the number of included studies should be reported after the screening has been completed.

3. Data Collection Procedures

Data were collected through documentary review rather than interviews, surveys, or direct observation. A literature extraction matrix was used to record each publication's author and year, title, institutional context, research objective, methodological approach, principal findings, digital management dimensions, and relevance to the research questions. Where available, the full text was examined alongside the abstract and bibliographic record to ensure that the interpretation reflected the publication's actual content. Particular attention was given to whether each study addressed institutional governance, leadership, information systems, administrative efficiency, accountability, Islamic ethical values, or quality assurance.

The extraction process involved reading the candidate publications, recording relevant findings, and comparing their contributions across the selected analytical dimensions. Sidiq and Choiri (2019) explained the importance of systematic procedures for collecting and interpreting qualitative evidence in educational research. Similarly, Sugiyono (2022) emphasized the alignment of data collection and analysis with the objectives and characteristics of a study. In this review, the extraction matrix provided a consistent basis for comparing studies published in different contexts and helped distinguish the authors' reported findings from the present review's interpretations. Bibliographic information and access to full texts were checked against journal or publisher records wherever possible.

4. Data Analysis

The collected literature was analyzed through qualitative thematic synthesis. The analysis proceeded through data familiarization, initial coding, thematic categorization, comparison across studies, and synthesis of the findings. Initial codes were developed from the research questions and

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refined according to recurring concepts in the literature. These codes were then organized into five analytical themes: (1) digital leadership and organizational readiness; (2) integrated information systems and data-driven decision-making; (3) administrative efficiency, transparency, and accountability; (4) Islamic values and digital ethics; and (5) quality assurance and continuous institutional improvement.

Miles et al. (2020) explained that qualitative analysis involves an iterative relationship between data condensation, data display, and conclusion drawing with verification. These processes informed the organization and interpretation of the reviewed literature. Braun and Clarke (2022) also emphasized the importance of systematic coding and theme development in identifying meaningful patterns across qualitative materials. Accordingly, the review compared convergent and divergent findings, examined differences between institutional contexts, and identified areas that remained insufficiently investigated. The resulting synthesis was used to develop an integrative conceptual understanding of how digital governance could contribute to educational quality improvement in Islamic educational institutions.

5. Trustworthiness and Research Ethics

The credibility of the review was supported through consistent application of the selection criteria, comparison of findings across publications, and verification of bibliographic information against available journal or publisher records. An extraction matrix was maintained to document the relationship between each source, its reported findings, and the themes developed in the synthesis. Claims were attributed to their original authors, and the interpretation distinguished reported evidence from conceptual conclusions drawn by the review. Because the study relied on published documents, it did not involve human participants or require participant consent. Nevertheless, academic integrity was maintained through accurate attribution, careful paraphrasing, and transparent acknowledgment of limitations in the available literature.

Saldaña (2021) highlighted the importance of systematic coding procedures for developing meaningful analytical categories from qualitative material. Moleong (2021) likewise emphasized methodological consistency and careful interpretation in qualitative research. In this study, these principles supported a transparent analytical process while recognizing that the strength of the conclusions depended on the quality, accessibility, and contextual relevance of the publications reviewed. The review was therefore intended to provide a conceptual synthesis rather than to establish causal relationships between digital transformation and institutional performance.

RESULTS

1. Digital Transformation and the Reshaping of Governance and Management in Islamic Educational Institutions

The synthesis of the reviewed literature identified four interconnected themes concerning the transformation of governance and management in Islamic educational institutions: the digitalization of administrative processes, data-driven decision-making and information system integration, digital leadership and governance innovation, and the integration of Islamic values into digital governance. These themes indicate that digital transformation encompasses not only the adoption of technological tools but also changes in institutional procedures, information management, leadership practices, and ethical accountability.

a. Administrative and Management Processes

The reviewed literature identified three main patterns in the digitalization of administrative and management processes.

First, administrative digitalization shifted institutional recordkeeping and reporting from predominantly manual procedures toward electronic information management. The literature addressing EMIS implementation and digital madrasah management highlighted the role of information systems in organizing educational data, facilitating administrative documentation, and supporting institutional reporting (Kasmin & Nurilahi, 2023; Yulianto et al., 2025).

Second, digitalization was associated with opportunities to improve administrative coordination and operational efficiency. The use of digital platforms enabled educational institutions to organize information across administrative functions, reduce repetitive documentation, and facilitate information retrieval. Research on management information systems in madrasahs also placed administrative effectiveness among the central concerns of digital transformation (Khafidah et al., 2026).

Third, the literature indicated that the implementation of digital administration remained dependent on institutional readiness. Infrastructure availability, staff competence, procedural consistency, and the integration of digital systems emerged as important considerations in the transition from conventional administration to technology-supported management (Jannah et al., 2023; Mulyani et al., 2026).

Overall, the findings identified administrative digitalization, improved information coordination, and institutional readiness as the principal dimensions of change in educational management processes. The extent to which these changes produced measurable improvements in institutional performance requires assessment against the specific evidence reported in individual studies.

b. Data-Driven Decision-Making and Integrated Information Systems

The synthesis identified three principal findings concerning data-driven governance.

First, educational management information systems emerged as an important foundation for organizing institutional data and supporting administrative decisions. Studies on EMIS 4.0 and data-based madrasah management emphasized the relevance of structured educational information for institutional administration and planning (Kasmin & Nurilahi, 2023; Yulianto et al., 2025).

Second, the literature connected digital management with the potential to strengthen institutional monitoring and educational quality management. Research on digital-based learning management and data-driven school management identified the relationship between digital information practices and educational quality as an important area of investigation (Encu & Juliansyah, 2024; Latipah et al., 2026). This relationship positioned data not merely as an administrative record but as a potential resource for evaluating institutional activities and identifying areas for improvement.

Third, the integration and reliability of information systems emerged as significant implementation requirements. Fragmented data, inconsistent records, and limited system interoperability can constrain the usefulness of digital information. The literature on digital transformation and educational management systems also raised the importance of developing management arrangements that support coordinated information use (Mulyani et al., 2026; Saniya & Prabowo, 2026).

The findings therefore identified structured data management, information-supported planning, institutional monitoring, and system integration as the main dimensions of data-driven governance. However, the presence of digital systems alone did not establish that decisions had

become more accurate or that educational outcomes had improved; those conclusions would require specific empirical evidence from the reviewed publications.

c. Digital Leadership and Governance Innovation

The literature synthesis identified three recurring dimensions of digital leadership and governance innovation.

First, leadership emerged as a central organizational dimension of digital transformation. Research on leadership styles and digital transformation in higher education examined the relationship between leadership, organizational change, and institutional performance (Carvalho et al., 2022). Research addressing Islamic boarding schools also identified leadership strategies as a relevant consideration in implementing digital educational initiatives (Ahmed et al., 2026).

Second, digital transformation required changes in organizational coordination and institutional culture. The literature indicated that the implementation of digital platforms involved not only technical adoption but also adjustments to staff responsibilities, established work practices, and organizational routines. Research on digital-based school culture and virtual learning environment integration highlighted the relevance of change management in this process (Purnomo et al., 2024).

Third, governance innovation involved greater attention to institutional transparency, accountability, and the coordination of management functions. Research specifically addressing information technology-based governance in Islamic education identified public accountability as a central concern (Hilman & Samad, 2025). Similarly, Aini and Husni (2026) positioned leadership, governance, and educational quality within the broader discussion of digital transformation in Islamic education management.

Taken together, these findings identified strategic leadership, organizational change management, and accountable digital governance as three interconnected dimensions of institutional transformation. Leadership provided the organizational direction, change management addressed adjustments in institutional practices, and governance arrangements established the procedures through which digital activities could be coordinated and monitored.

d. Islamic Values in Digital Governance

The reviewed literature revealed three principal dimensions concerning the relationship between Islamic values and digital governance.

First, the integration of Islamic values into digital educational initiatives emerged as a distinctive concern in Islamic educational management. Research on digital transformation in madrasah management and Islamic culture examined the relationship between technological development and the cultural foundations of Islamic education (Mahsusi et al., 2024). Similarly, Abtokhi et al. (2025) addressed the integration of Islamic values and information technology in educational innovation in madrasahs.

Second, ethical considerations constituted an important dimension of digital governance. The literature on digital transformation in Islamic educational management identified digital communication ethics and implementation challenges as relevant issues (Mulyani et al., 2026). Within institutional management, this dimension encompasses responsible information use, appropriate access to institutional records, protection of personal data, transparency in decision-making, and accountability for digital practices.

Third, the literature indicated that digital transformation needed to remain connected to the educational and institutional purposes of Islamic education. The integration of technology was therefore not simply a matter of improving technical capacity; it also involved maintaining

alignment between digital initiatives, institutional culture, and Islamic educational commitments (Abtokhi et al., 2025; Mahsusi et al., 2024).

The synthesis identified value integration, ethical information management, and the preservation of institutional identity as the principal dimensions of Islamic values in digital governance. These dimensions suggest that the evaluation of digital transformation in Islamic educational institutions should consider both management effectiveness and the ethical principles governing institutional practices.

Table 1 summarizes the main findings on how digital transformation reshapes governance and management in Islamic educational institutions. It highlights four interconnected dimensions identified through the synthesis of the reviewed literature.

Table 1. Digital Transformation and Governance in Islamic Educational Institutions

Dimension	Key findings	Representative references
Administrative and management processes	Digital recordkeeping, streamlined reporting, and improved administrative coordination.	Kasmin & Nurilahi (2023); Yulianto et al. (2025)
Data-driven decision-making	Structured information management, evidence-informed planning, and integrated information systems.	Encu & Juliansyah (2024); Latipah et al. (2026)
Digital leadership and governance innovation	Strategic leadership, organizational change management, transparency, and accountability.	Carvalho et al. (2022); Hilman & Samad (2025)
Islamic values in digital governance	Ethical technology use, integration of Islamic values, and preservation of institutional identity.	Abtokhi et al. (2025); Mahsusi et al. (2024)

Source: Author's synthesis of the reviewed literature.

Table 1 demonstrates that digital transformation in Islamic educational institutions encompasses four key dimensions: administrative and management processes, data-driven decision-making, digital leadership, and Islamic values in digital governance. Digitalization supports more systematic recordkeeping and administrative coordination, while integrated information systems provide opportunities for evidence-informed planning. Digital leadership facilitates organizational change, transparency, and accountability, whereas Islamic values guide ethical technology use and help preserve institutional identity. Collectively, these dimensions indicate that effective digital transformation requires the integration of technological systems, organizational capabilities, and Islamic ethical principles to support more responsive and accountable educational management.

2. Opportunities and Challenges of Digital Transformation in Improving Educational Quality

The synthesis of the reviewed literature identified two broad dimensions of digital transformation in Islamic educational institutions: opportunities to strengthen institutional effectiveness and educational quality, and challenges that may constrain implementation. These dimensions were reflected in studies addressing digital management systems, educational quality improvement, leadership, institutional accountability, and the integration of technology into Islamic education. The findings were organized into four themes: institutional effectiveness and efficiency, educational quality and accountability, technological and organizational challenges, and ethical, cultural, and sustainability challenges.

a. Institutional Effectiveness and Efficiency

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The literature synthesis identified three principal opportunities through which digital transformation could support institutional effectiveness and efficiency.

First, digital management systems provided opportunities to streamline administrative procedures and improve information management. Research on EMIS 4.0 and the implementation of educational management information systems in madrasahs addressed the role of digital platforms in educational data collection and administrative efficiency (Kasmin & Nurilahi, 2023; Khafidah et al., 2026). These systems offered a basis for organizing institutional records, facilitating information retrieval, and supporting routine reporting. The main institutional opportunity was the potential to reduce repetitive administrative work and improve the coordination of management activities.

Second, digital transformation created opportunities to strengthen coordination among institutional functions. The use of digital platforms could facilitate the exchange of information between administrative personnel, teachers, school leaders, and other stakeholders. Research on digital transformation in Islamic education management identified both implementation opportunities and organizational challenges, suggesting that the benefits of digital systems depended on how they were incorporated into existing management practices (Jannah et al., 2023). Accordingly, the potential for greater efficiency was associated not only with the availability of technology but also with the coordination of institutional procedures and responsibilities.

Third, digitalization offered opportunities to support institutional planning and resource management through more accessible information. Data organized in digital systems could help leaders monitor administrative activities, identify operational needs, and organize institutional priorities. Research on data-based management in madrasahs highlighted the relevance of digital information to educational management processes (Yulianto et al., 2025). However, the degree of improvement depended on data accuracy, staff competence, and the institution's capacity to translate information into practical decisions.

Overall, the findings identified administrative streamlining, improved coordination, and information-supported planning as the main opportunities for institutional effectiveness and efficiency. These opportunities should be distinguished from demonstrated outcomes: the adoption of digital systems does not by itself establish that costs have declined, staff productivity has increased, or institutional performance has improved. Such conclusions require direct evidence from the studies reviewed.

b. Educational Quality and Accountability

The literature synthesis identified three dimensions connecting digital transformation with educational quality and institutional accountability.

First, digital management was associated with opportunities to strengthen the monitoring and evaluation of educational activities. Research on digital-based learning management examined its relationship with educational quality, while Fahmi et al. (2024) addressed digitalization in the management of quality improvement in a madrasah. Together, these research topics indicate that digital systems can serve as tools for organizing information relevant to quality evaluation and institutional improvement.

Second, data-based management offered opportunities to support evidence-informed planning and institutional review. Digital records could help institutions organize performance information, monitor the implementation of programs, and identify areas requiring further attention. Latipah et al. (2026) addressed data-driven school management in relation to educational quality improvement, while Yulianto et al. (2025) examined the role of EMIS in managing

madrasah information. These studies make the relationship between information management and quality improvement a significant dimension of digital transformation.

Third, the literature highlighted accountability as an important aspect of technology-supported governance. Digital documentation and reporting systems could provide more systematic records of administrative activities and institutional decisions. Hilman and Samad (2025) specifically addressed information technology-based governance in relation to public accountability in Islamic education management. The relevance of digital governance therefore extended beyond operational efficiency to the transparency and traceability of institutional processes.

The findings suggest that digital transformation could support educational quality through systematic monitoring, data-informed evaluation, and more accountable institutional management. Nevertheless, administrative indicators should not be treated as equivalent to educational outcomes. The availability of digital reports or the speed of information processing does not necessarily demonstrate improvements in teaching, student achievement, or the development of Islamic character. A robust quality-assurance approach therefore needs to connect digital management indicators with explicit educational objectives and appropriate evidence of progress.

c. Technological and Organizational Challenges

The synthesis identified technological limitations and organizational readiness as two interconnected categories of challenges affecting digital transformation.

First, infrastructure and system integration presented important implementation considerations. Digital management depends on access to appropriate devices, reliable connectivity, functional platforms, and technical support. Differences in institutional resources can affect the pace and scope of implementation. The literature on digital transformation in Islamic education has addressed implementation opportunities and constraints, while research on information systems has emphasized the relevance of effective data management in madrasahs (Jannah et al., 2023; Kasmin & Nurilahi, 2023). Where infrastructure is inadequate or systems are poorly coordinated, institutions may experience delays, inconsistent records, or continued dependence on manual procedures.

Second, staff competence and organizational readiness influenced the capacity to use digital systems effectively. Digital platforms require personnel who can enter and validate information, interpret reports, follow data-management procedures, and adapt established routines. The introduction of technology without sufficient training may increase workloads or lead to incomplete use of available functions. Research on digital transformation and leadership in educational institutions highlights the relevance of organizational and leadership dimensions alongside technological adoption (Carvalho et al., 2022; Firmansyah et al., 2024).

Third, organizational resistance and change-management difficulties could limit implementation. Staff may have different levels of digital literacy, confidence, and willingness to modify familiar procedures. The transition to digital systems may also require revisions to job responsibilities, reporting structures, and communication practices. Purnomo et al. (2024) examined digital-based school culture and change management in relation to virtual learning environment integration, providing a relevant perspective on the organizational changes associated with digital implementation.

These challenges are interdependent. Limited infrastructure may reduce opportunities for staff to develop digital competence, while insufficient training may prevent institutions from using available systems effectively. Similarly, fragmented governance arrangements can weaken the

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benefits of otherwise functional technologies. The findings therefore indicate that infrastructure provision, staff development, system integration, and change management need to be addressed as complementary components of digital transformation.

The literature also suggests that implementation strategies should reflect institutional context. Madrasahs and Islamic boarding schools differ in scale, funding, staffing, governance structures, and technological resources. A digital strategy that is feasible for a well-resourced institution may not be suitable for a smaller institution. Consequently, digital transformation requires realistic implementation priorities, appropriate technical support, and a phased approach that considers institutional capacity.

d. Ethical, Cultural, and Sustainability Challenges

The synthesis identified three related concerns concerning the ethical, cultural, and long-term sustainability of digital transformation.

First, data protection and responsible information management emerged as important governance concerns. Digital systems may contain personal, academic, financial, and administrative information that requires appropriate protection. Institutions therefore need clear procedures for data access, storage, sharing, correction, and retention. Research addressing digital communication ethics in Islamic educational management has identified ethical considerations as part of the broader digital transformation agenda (Mulyani et al., 2026). The expansion of artificial intelligence in educational management also raises questions concerning transparency, human oversight, and responsibility for decisions informed by automated systems (Saniya & Prabowo, 2026).

Second, digital transformation raised questions about institutional culture and the preservation of Islamic educational values. Technology may improve the speed of communication and administrative coordination, but institutions must ensure that digital practices remain consistent with their educational mission. Research examining the relationship between digital transformation, madrasah management, and Islamic culture highlights the relevance of cultural considerations in technology adoption (Mahsusi et al., 2024). Similarly, Abtokhi et al. (2025) addressed the integration of Islamic values and information technology in madrasah innovation. These studies make value integration a relevant consideration when assessing the appropriateness of digital initiatives in Islamic educational settings.

Third, the sustainability of digital transformation depends on the continued availability of resources and institutional support. Digital systems require maintenance, software updates, technical assistance, staff development, and periodic evaluation. Institutions that depend on short-term funding or individual initiatives may find it difficult to sustain digital services over time. Research on leadership and organizational resilience in distance education provides a basis for considering the organizational capacity needed to manage technological change (Firmansyah et al., 2024). In Islamic educational institutions, sustainability also involves maintaining alignment between technological investments, institutional priorities, and long-term educational objectives.

These concerns are closely connected. Weak data protection can undermine stakeholder trust, while inadequate training can lead to inappropriate information handling. Cultural misalignment may also reduce staff acceptance or result in digital initiatives that do not reflect the institution's priorities. Sustainability therefore requires more than maintaining technological infrastructure; it involves the continued integration of ethical standards, organizational capacity, and institutional commitment.

The findings identified data protection, cultural and ethical alignment, and long-term institutional capacity as the principal challenges in this area. Addressing these issues requires clear

governance policies, appropriate staff training, responsible technology use, and periodic review of digital systems. These measures can help ensure that digital transformation remains consistent with the educational and ethical responsibilities of Islamic educational institutions.

Table 2 summarizes the main opportunities and challenges associated with digital transformation in improving the quality of Islamic education. It presents four dimensions identified through the synthesis of the reviewed literature.

Table 2. Opportunities and Challenges of Digital Transformation in Improving Educational Quality

Dimension	Key findings	Representative references
Institutional effectiveness and efficiency	Streamlined administration, improved coordination, and information-supported planning.	Kasmin & Nurilahi (2023); Yulianto et al. (2025)
Educational quality and accountability	Digital monitoring, data-informed evaluation, and more transparent institutional reporting.	Fahmi et al. (2024); Hilman & Samad (2025)
Technological and organizational challenges	Infrastructure limitations, uneven digital competence, system integration issues, and resistance to change.	Carvalho et al. (2022); Purnomo et al. (2024)
Ethical, cultural, and sustainability challenges	Data protection, alignment with Islamic values, and long-term institutional and financial support.	Abtokhi et al. (2025); Mahsusi et al. (2024); Mulyani et al. (2026)

Source: Author's synthesis of the reviewed literature.

Table 2 indicates that digital transformation offers opportunities to improve institutional efficiency, strengthen educational quality, and enhance accountability through streamlined administration, data-informed evaluation, and transparent reporting. However, these opportunities are accompanied by technological and organizational challenges, including infrastructure limitations, uneven digital competence, and resistance to change. Ethical concerns, the preservation of Islamic values, and the sustainability of institutional resources also influence implementation. Overall, the findings suggest that successful digital transformation requires a balanced approach that integrates technological development, organizational readiness, ethical governance, and long-term institutional commitment to support sustainable improvements in educational quality.

3. Integrating Digital Leadership, Data-Driven Governance, and Quality Assurance for Sustainable Institutional Development

The synthesis of the reviewed literature identified the integration of digital leadership, data-driven governance, and quality assurance as a central theme in the sustainable development of Islamic educational institutions. These three dimensions were closely related but served different institutional functions. Digital leadership provided strategic direction and organizational coordination; data-driven governance supported information-based planning and accountability; and digital quality assurance connected institutional monitoring with continuous improvement. The literature also highlighted the importance of aligning these dimensions with institutional capacity, ethical responsibilities, and the educational mission of Islamic institutions (Aini & Husni, 2026; Hilman & Samad, 2025; Riyanto, 2026).

The findings were organized into four themes: digital leadership, data-driven governance, digital quality assurance, and an integrative framework for sustainable digital transformation.

a. Digital Leadership

The literature synthesis identified three principal dimensions of digital leadership in Islamic educational institutions.

First, strategic direction and institutional commitment emerged as important components of digital transformation. Research on digital leadership and educational management addressed the relationship between leadership, institutional change, and educational quality (Aini & Husni, 2026; Carvalho et al., 2022). In Islamic educational institutions, this dimension involved establishing digital transformation priorities, aligning technological initiatives with institutional objectives, and coordinating the responsibilities of leaders, teachers, and administrative personnel.

Second, leadership was associated with organizational readiness and staff development. Digital transformation requires personnel to acquire the knowledge and skills needed to operate digital systems, manage information, and adapt existing administrative practices. Research on leadership strategies for e-learning implementation in Islamic boarding schools identified leadership as a relevant aspect of institutional digital initiatives (Ahmed et al., 2026). Similarly, Supiansyah et al. (2025) addressed the transition from traditional to digital practices in relation to teacher performance and educational quality. These research areas highlighted staff competence and organizational support as important considerations in implementing digital change.

Third, digital leadership involved coordinating technological adoption with institutional governance and accountability. The literature addressing digital leadership and quality assurance in Islamic educational institutions positioned leadership within the broader effort to connect technology with institutional improvement (Riyanto, 2026). This dimension encompassed the establishment of responsibilities, coordination across institutional functions, and monitoring of digital initiatives against organizational priorities.

The synthesis therefore identified strategic direction, staff capacity development, and institutional coordination as the principal dimensions of digital leadership. These dimensions suggest that leadership should be understood as an organizational capability rather than merely the technical competence of individual managers. The findings also indicate that leadership initiatives need to be connected to data governance and quality-assurance procedures to support sustained institutional development.

b. Data-Driven Governance

The synthesis identified three major dimensions of data-driven governance.

First, integrated information management emerged as a foundation for evidence-informed institutional decisions. Research on EMIS implementation in madrasahs addressed the organization of educational data and its relevance to administrative management (Kasmin & Nurilahi, 2023; Yulianto et al., 2025). These studies positioned structured information systems as relevant resources for institutional planning, reporting, and monitoring.

Second, data-driven governance involved the use of institutional information to support transparency and accountability. Digital records can help document administrative activities, facilitate reporting, and provide a basis for reviewing institutional decisions. Hilman and Samad (2025) specifically addressed information technology-based governance in relation to public accountability in Islamic education management. The literature thus identified accountability as an important dimension of data governance, alongside the technical management of information.

Third, effective data-driven governance required consistent procedures for collecting, validating, updating, and accessing information. Data systems may provide limited support for decision-making when records are incomplete, inconsistent, or disconnected across administrative functions. The literature on digital transformation and Islamic education management also

identified governance integration as a relevant concern (Baqir et al., 2026). Accordingly, the use of data in institutional management required both technological infrastructure and clear organizational procedures.

The synthesis identified integrated information systems, evidence-informed decision-making, and transparent accountability procedures as the principal dimensions of data-driven governance. These dimensions indicate that the institutional value of digital data depends on how information is managed and used. The presence of an information system alone does not establish that governance has become more effective; institutional leaders must also ensure data quality, appropriate access, responsible interpretation, and clear accountability for decisions.

c. Digital Quality Assurance

The reviewed literature identified three dimensions of digital quality assurance in educational management.

First, digital systems offered opportunities to support the systematic monitoring and evaluation of institutional performance. Research on digital-based learning management and educational quality examined the relationship between technology-supported management and quality improvement (Encu & Juliansyah, 2024). Fahmi et al. (2024) also addressed the management of quality improvement through digitalization in a madrasah. These studies positioned digital tools as potentially useful resources for organizing information relevant to institutional evaluation.

Second, digital quality assurance involved connecting performance information with institutional standards and improvement priorities. Digital records can help institutions monitor the implementation of programs, document administrative processes, and identify areas requiring further review. Research on data-driven school management similarly addressed the role of digital information in educational quality improvement (Latipah et al., 2026). The findings therefore identified the connection between information management and institutional evaluation as an important component of digital quality assurance.

Third, quality assurance required follow-up action rather than the collection of performance data alone. Monitoring becomes meaningful when institutions use the information generated to review existing practices, address identified weaknesses, and evaluate whether corrective measures have been effective. Research on integrated digital leadership and quality assurance in Islamic educational institutions made this relationship a relevant focus of contemporary digital management (Riyanto, 2026).

The synthesis identified systematic monitoring, evidence-based evaluation, and continuous improvement as the main dimensions of digital quality assurance. These findings suggest that digital quality assurance should connect institutional data with defined quality standards and documented follow-up processes. It should also distinguish administrative compliance from substantive educational outcomes. The availability of complete digital records may demonstrate improvements in documentation, but evidence of improved educational quality requires indicators that correspond to the institution's academic, pedagogical, and Islamic educational objectives.

d. An Integrative Framework for Sustainable Digital Transformation

The synthesis of the reviewed literature produced an integrative conceptual framework comprising three interconnected management components—digital leadership, data-driven governance, and digital quality assurance—supported by Islamic values and institutional capacity.

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The framework represents a conceptual synthesis of the themes identified in the literature rather than an empirically validated causal model.

First, digital leadership provides the strategic foundation. Institutional leaders establish priorities, coordinate stakeholders, allocate resources, and develop the organizational capacity required to implement digital initiatives. Research on leadership and digital transformation provides a basis for treating leadership as an important dimension of institutional change (Ahmed et al., 2026; Carvalho et al., 2022).

Second, data-driven governance provides the operational and accountability mechanisms. Integrated information systems support the organization of institutional data, while clear procedures guide data validation, access, reporting, and use in decision-making. Research on digital governance and information technology-based accountability in Islamic education supports the relevance of these arrangements (Baqir et al., 2026; Hilman & Samad, 2025).

Third, digital quality assurance connects management activities with institutional improvement. Information generated through digital systems can be compared with institutional standards, evaluated against educational objectives, and used to identify areas requiring corrective action. The literature on digital management and educational quality provides a basis for connecting information management with continuous institutional evaluation (Encu & Juliansyah, 2024; Fahmi et al., 2024; Riyanto, 2026).

Islamic values and institutional capacity function as cross-cutting foundations within this framework. Ethical commitments inform how data are managed, how decisions are made, and how digital resources are distributed. Institutional capacity—including infrastructure, staff competence, financial resources, and organizational readiness—affects whether digital initiatives can be implemented and maintained. Research on digital transformation in Islamic educational management and the integration of technology with Islamic values reinforces the importance of connecting digital innovation with institutional culture and educational purposes (Abtokhi et al., 2025; Mahsusi et al., 2024; Mulyani et al., 2026).

Figure 1 presents an integrative framework for sustainable digital transformation in Islamic educational institutions. It illustrates the interrelationships among digital leadership, data-driven governance, and digital quality assurance, supported by Islamic values and institutional capacity.

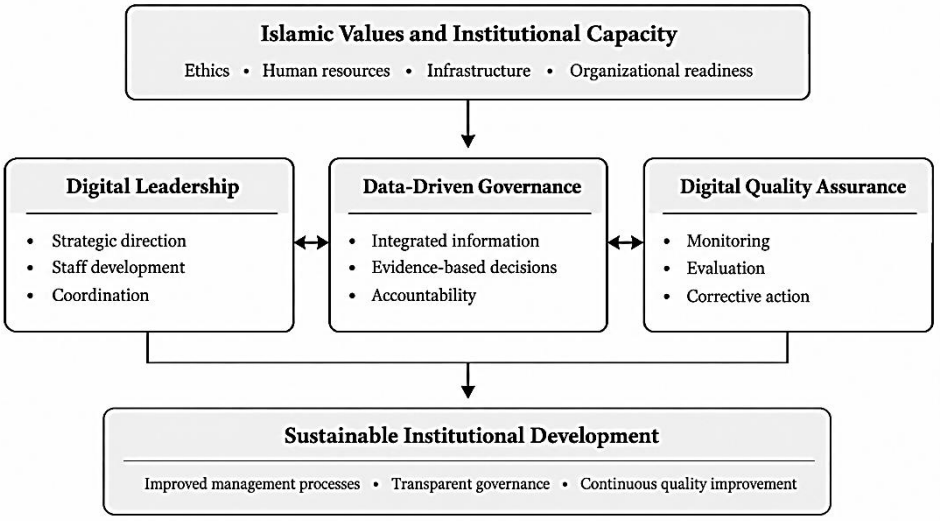


Figure 1. An Integrative Framework for Sustainable Digital Transformation in Islamic Educational Institutions

Source: Author's conceptual synthesis of the reviewed literature.

Figure 1 illustrates that sustainable digital transformation requires the integration of three interconnected components: digital leadership, data-driven governance, and digital quality assurance. Digital leadership provides strategic direction, staff development, and institutional coordination, while data-driven governance supports integrated information management, evidence-based decision-making, and accountability. Digital quality assurance facilitates monitoring, evaluation, and corrective action to promote continuous improvement. These components are underpinned by Islamic values and institutional capacity, including ethical principles, human resources, infrastructure, and organizational readiness. Their integration is expected to strengthen management processes, promote transparent governance, and support continuous quality improvement, thereby contributing to the sustainable development of Islamic educational institutions.

The framework suggests that sustainable digital transformation depends on the coordination of the three management components rather than the isolated adoption of technology. Digital leadership establishes direction and builds institutional readiness; data-driven governance provides reliable information and accountability mechanisms; and quality assurance uses evidence to guide institutional review and improvement. Islamic values and institutional capacity influence the implementation of all three components.

The framework also implies a continuous improvement process. Quality-assurance findings can inform leadership priorities, while new institutional priorities can guide the refinement of information systems and governance procedures. In this way, digital transformation is conceptualized as an ongoing organizational process rather than a one-time technology implementation project.

Overall, the synthesis identified the integration of leadership, data governance, and quality assurance, supported by Islamic ethical principles and adequate institutional capacity, as the central conceptual proposition for sustainable digital transformation in Islamic educational institutions. This framework provides a basis for further empirical research examining how the proposed components interact across different institutional contexts.

DISCUSSION

1. Results Analysis

The findings of this integrative literature review indicate that digital transformation in Islamic education management is best understood as an institution-wide governance process rather than a technical intervention confined to the adoption of digital platforms. Addressing the first research question, the synthesis identifies four interrelated dimensions of institutional transformation: administrative digitalization, data-driven decision-making, digital leadership, and the integration of Islamic values into digital governance. In response to the second research question, the findings reveal that digital transformation offers opportunities to improve administrative efficiency, institutional coordination, educational monitoring, and accountability, while its implementation remains contingent on technological infrastructure, human resource competencies, organizational readiness, and ethical governance. The third research question is addressed through an integrative conceptual framework connecting digital leadership, data-driven governance, and digital quality assurance, with Islamic values and institutional capacity serving as cross-cutting foundations.

The first major finding is that administrative digitalization creates opportunities for more systematic institutional management, but its significance extends beyond replacing paper-based procedures with electronic systems. Digital platforms can facilitate information retrieval, reporting,

and coordination across administrative functions. However, the deeper managerial value of digitalization depends on whether these functions become integrated into institutional planning and decision-making. When digital systems merely reproduce existing administrative routines, transformation may remain superficial. Conversely, when digital information informs resource allocation, program evaluation, and organizational priorities, digitalization can become an instrument of governance innovation. This distinction suggests that the maturity of digital transformation should be assessed not only through technology adoption but also through the extent to which digital systems reshape institutional practices.

A second finding concerns the relationship between data-driven governance and institutional accountability. The synthesis indicates that educational management information systems can provide an informational foundation for planning, monitoring, and reporting. Nevertheless, the availability of digital data does not automatically produce evidence-based decisions. Data must be accurate, current, accessible to authorized personnel, and interpreted in relation to clearly defined institutional objectives. Consequently, the central issue is not simply whether Islamic educational institutions possess information systems, but whether they have the organizational capacity to convert information into responsible managerial action. This interpretation distinguishes digital data availability from effective data governance and highlights the importance of interoperability, data validation, appropriate access controls, and clearly assigned decision-making responsibilities.

The third finding positions digital leadership as the organizational mechanism connecting technological resources with institutional change. Digital transformation requires leaders to establish priorities, coordinate stakeholders, support staff development, allocate resources, and maintain accountability throughout implementation. Its success therefore depends on more than the technical competence of individual leaders. It also requires the ability to align organizational structures, professional responsibilities, and institutional culture with changing management practices. This explains why the introduction of digital platforms may produce uneven results across institutions with different levels of readiness. Where leadership, staff competence, and organizational procedures remain disconnected, technological investments may generate additional administrative demands rather than coherent institutional improvement. Digital leadership should therefore be understood as a strategic and relational capacity that enables technological innovation to become embedded in everyday governance.

A fourth finding concerns the distinctive role of Islamic values in shaping digital governance. In Islamic educational institutions, technological effectiveness cannot be considered independently of ethical responsibility, institutional identity, and educational purpose. The responsible management of information requires attention to confidentiality, transparency, fairness, and accountability, while decisions about technological adoption must remain consistent with the institution's educational mission. This dimension extends the evaluation of digital transformation beyond operational performance. A system may function efficiently yet remain institutionally inadequate if it compromises data protection, excludes stakeholders with limited digital access, or weakens the ethical commitments underlying educational practice. Accordingly, Islamic values should not be treated as supplementary considerations introduced after technological implementation; they should inform the design, implementation, and evaluation of digital management from the outset.

The fifth finding establishes educational quality assurance as the mechanism through which digital governance can be connected to continuous institutional improvement. Digital systems can support the collection of performance information, documentation of institutional activities, and

monitoring against established standards. However, administrative compliance and educational quality are not interchangeable. More complete records, faster reporting, and improved data accessibility may indicate administrative progress without demonstrating better teaching, student achievement, or Islamic character development. Meaningful quality assurance therefore requires institutions to connect digital indicators with explicit educational objectives, interpret the evidence in context, and implement corrective measures where necessary. The value of digital transformation ultimately depends on whether institutional information generates reflective evaluation and sustained improvement rather than merely increasing the volume of reports produced.

Theoretically, these findings can be interpreted through the interdependence of people, processes, and technology. Taher (2023) provides a conceptual basis for understanding digital transformation as an alignment among human capabilities, organizational procedures, and technological resources. Within Islamic education management, this relationship can be extended to include ethical governance and quality assurance as institutional conditions that shape how technological resources are used. Technology provides the infrastructure for information processing, people establish the capacity to interpret and act on information, and organizational processes determine how decisions are made and monitored. Islamic ethical commitments guide the legitimacy of these decisions, while quality assurance evaluates their contribution to institutional objectives. This interpretation supports an understanding of digital transformation as a coordinated organizational capability rather than a collection of independent technological applications.

Taken together, the findings produce a conceptual sequence in which digital leadership establishes strategic direction and organizational readiness; integrated information systems support data-driven governance; and quality assurance translates institutional information into evaluation and corrective action. Islamic values and institutional capacity influence every stage of this process. The relationship is also iterative: quality-assurance findings can inform leadership priorities, while revised priorities can guide improvements in information systems, staff development, and governance procedures. The resulting synthesis contributes a more integrated perspective by connecting technological adoption with organizational capability, ethical responsibility, accountability, and educational quality. Rather than assuming that digital transformation automatically improves institutional performance, the framework proposes that sustainable improvement becomes more plausible when these components operate as a coordinated and continuously evaluated management system.

2. Comparison with Previous Studies

The findings of this review are broadly consistent with previous research that conceptualizes digital transformation as an organizational process requiring alignment between technological resources, leadership, and institutional practices. Carvalho et al. (2022) examined the relationship between leadership styles, digital transformation, and performance in higher education, reinforcing the relevance of leadership in managing institutional change. Similarly, Firmansyah et al. (2024) addressed digital transformation, leadership, and organizational resilience in distance education. The present synthesis extends these perspectives to Islamic educational management by positioning leadership not merely as a factor associated with digital adoption but as a coordinating mechanism connecting data governance, institutional accountability, and quality assurance. This distinction shifts the analytical emphasis from the adoption of technology toward the

organizational arrangements through which digital initiatives may contribute to institutional development.

The findings concerning administrative digitalization and data-driven decision-making also correspond with studies examining educational management information systems. Kasmin and Nurilahi (2023) investigated EMIS 4.0 use and the effectiveness of madrasah education data management, while Yulianto et al. (2025) discussed the role of EMIS in supporting data-based madrasah management. Muhtasar et al. (2023) further examined the use of EDM and e-RKAM applications in madrasah self-evaluation and budgeting. Collectively, these studies establish the relevance of digital systems to information management, administrative coordination, and institutional accountability. However, the present review moves beyond examining individual applications by distinguishing the availability of digital systems from the institutional capacity to integrate their outputs into strategic decisions. This distinction is important because information systems may improve documentation without necessarily ensuring that data are accurate, interoperable, or systematically used to guide educational improvement.

The relationship between digital transformation and educational quality is similarly reflected in previous research. Fahmi et al. (2024) addressed digitalization in the management of quality improvement in madrasahs, while Encu and Juliansyah (2024) examined digital-based learning management in relation to educational quality. Latipah et al. (2026) also considered data-driven school management as a means of supporting quality improvement. These studies are consistent with the present finding that digital systems can provide resources for monitoring, evaluation, and institutional planning. Nevertheless, the current synthesis identifies an important analytical distinction between improvements in administrative processes and improvements in substantive educational outcomes. Digital reporting and systematic documentation are enabling conditions for quality assurance, but they cannot independently demonstrate improvements in teaching effectiveness, student learning, or Islamic character formation. This distinction suggests that digital quality assurance requires indicators that connect managerial performance with the educational objectives of Islamic institutions.

Regarding organizational readiness, the findings are consistent with Purnomo et al. (2024), who emphasized organizational culture and change management in the integration of virtual learning environments, and Supiansyah et al. (2025), who addressed digital competencies in relation to educational performance and quality. Jannah et al. (2023) also discussed opportunities and challenges associated with digital transformation in Islamic education. These studies support the interpretation that technological implementation depends on human capabilities, institutional resources, and organizational adaptation. The present review extends this discussion by interpreting infrastructure, staff competence, leadership commitment, and institutional procedures as interdependent elements rather than separate implementation variables. For example, infrastructure investments may have limited value when staff lack the competence to use available systems, while staff training may produce limited institutional benefits if digital platforms remain fragmented or management procedures do not support data-informed decisions. Such interdependence indicates the need for coordinated implementation strategies that reflect the operational realities of different Islamic educational institutions.

The integration of Islamic values into digital governance also finds support in previous studies. Mahsusi et al. (2024) connected digital transformation with madrasah management and Islamic culture, while Abtokhi et al. (2025) addressed the integration of information technology and Islamic values in madrasah innovation. Suharto and Fatmawati (2022) examined digital

learning in traditional and modern Islamic boarding schools, highlighting the relevance of institutional context when introducing technological change. These contributions are consistent with the present finding that digital transformation must remain aligned with institutional identity and educational purpose. However, the current synthesis extends the discussion by locating Islamic values within governance processes themselves, including data access, privacy, transparency, fairness, and accountability. This broader interpretation positions Islamic ethics as a guiding principle for institutional decision-making rather than a consideration restricted to digital learning content or the preservation of educational traditions.

Finally, the proposed integration of digital leadership, data-driven governance, and quality assurance complements research on governance innovation in Islamic education. Hilman and Samad (2025) addressed information technology-based governance oriented toward public accountability, while Aini and Husni (2026) examined the relationship between digital-era management transformation, leadership, governance, and educational quality. Riyanto (2026) further connected digital leadership with quality assurance. Baqir et al. (2026) emphasized the integration of governance components to strengthen coordination and decision-making. These studies support the relevance of examining leadership, accountability, and quality improvement as interconnected management concerns. The present review contributes a more explicit conceptual integration by organizing these concerns into a continuous institutional process in which leadership establishes direction, data governance supports accountable decisions, and quality assurance informs corrective action and subsequent planning.

Overall, the comparison reveals substantial thematic consistency between the present synthesis and previous research, alongside a difference in analytical scope. Much of the existing literature concentrates on particular technologies, institutional settings, leadership practices, or aspects of educational quality. The present review connects these contributions within a unified governance-oriented perspective that incorporates organizational readiness, data integrity, Islamic ethical commitments, and continuous improvement. Its contribution is not to claim that earlier studies overlooked these issues entirely, but to clarify how their separate emphases can be understood in relation to one another. Because the reviewed studies differ in research design, institutional context, and analytical focus, the synthesis should be interpreted as a conceptual integration of recurring insights rather than evidence that a single model has already been empirically validated across Islamic educational institutions.

3. Implications of Findings

The findings contribute theoretically by advancing an integrative understanding of digital transformation in Islamic education management as a coordinated process linking digital leadership, data-driven governance, and quality assurance, supported by Islamic values and institutional capacity. This perspective extends technology-oriented approaches by emphasizing the organizational and ethical conditions under which digital systems may contribute to sustainable institutional improvement. Practically, the findings suggest that leaders of madrasahs, Islamic schools, and pesantren should develop digital transformation strategies that integrate infrastructure investment, staff competency development, data protection, transparent decision-making, and continuous quality evaluation. Institutional performance indicators should also distinguish administrative efficiency from substantive educational outcomes. By aligning digital initiatives with institutional objectives and Islamic ethical principles, educational leaders can establish more coherent governance arrangements. However, the proposed framework should be treated as a

conceptual guide for institutional planning and future empirical investigation, rather than as a validated model guaranteeing improved educational quality.

4. Research Limitations

This study has several limitations. First, the review relied on a preliminary bibliography and additional studies identified in the research materials; therefore, the breadth and completeness of the final literature corpus depend on the verification and screening of these sources. Second, variations in research designs, institutional contexts, and definitions of digital transformation limited direct comparisons across studies. Third, the synthesis depended on the availability and quality of published evidence, potentially introducing publication bias and limiting the representation of unpublished findings or underrepresented institutions. Fourth, because the study used documentary analysis without primary empirical data, it could not independently verify implementation practices or establish causal relationships between digital transformation and educational quality. Finally, the proposed framework has not yet been empirically validated across different types of Islamic educational institutions. Future research should test its applicability through comparative case studies, mixed-methods designs, and longitudinal investigations that examine how leadership, data governance, institutional capacity, and Islamic ethical commitments interact to influence measurable educational outcomes.

CONCLUSION

This study examined digital transformation in Islamic education management by analyzing its implications for governance innovation, institutional effectiveness, and educational quality improvement. The findings indicate that digital transformation extends beyond the adoption of technological platforms to encompass the integration of digital leadership, data-driven governance, administrative accountability, and quality assurance. Digital systems offer opportunities to improve information management, institutional coordination, evidence-informed decision-making, and performance monitoring. However, these benefits depend on infrastructure availability, staff competencies, organizational readiness, ethical data management, and sustained institutional commitment. The study also highlights the distinctive importance of Islamic values in ensuring that technological innovation remains aligned with institutional identity, educational objectives, and ethical responsibilities.

The principal contribution of this study is an integrative conceptual framework connecting three interdependent management components: digital leadership, data-driven governance, and digital quality assurance, supported by Islamic values and institutional capacity. The framework conceptualizes digital transformation as a continuous improvement process in which leadership establishes strategic priorities, reliable information supports accountable decisions, and quality assurance informs institutional evaluation and corrective action. This perspective advances a governance-oriented understanding of digital transformation by distinguishing administrative digitalization from substantive educational improvement. Nevertheless, the framework remains conceptual and cannot establish causal relationships or guarantee improved institutional performance.

Several limitations should be acknowledged, including the dependence on published literature, differences in the methodological quality and institutional contexts of the reviewed studies, and the absence of primary empirical data. The completeness of the synthesis also depends on the verification and screening of the candidate references. Future research should empirically examine the proposed framework through comparative case studies, mixed-methods research, and longitudinal investigations across madrasahs, Islamic schools, and pesantren. Particular attention

should be given to developing measurable indicators that connect digital governance with educational outcomes, ethical accountability, and institutional sustainability. Such investigations would help determine how the proposed framework operates under different organizational conditions and provide stronger evidence for developing context-sensitive digital transformation strategies in Islamic education management.

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