

The Future-Ready Islamic Education Framework: A Systematic Review of Leadership, Digital Transformation, and Sustainability in *Madrasah*

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DOI: <https://doi.org/10.62730/syaikhuna.v17i2.7899>

Article History: Received: [23-08-2026] Revised: [29-09-2026] Accepted: [29-09-2026] Published: [20-10-2026]

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Abstract

Islamic educational institutions face mounting pressure to produce graduates who are both religiously grounded and digitally competent. However, existing leadership frameworks remain secular, culture-blind, and insufficiently grounded in Islamic axiology. This systematic review synthesises 31 international peer-reviewed studies published between 2019 and 2025 to examine how educational leadership, digital transformation, and sustainability intersect in Islamic school contexts, and to propose the Future-Ready Islamic Education Framework. The analysis reveals that transformational leadership is the most frequently cited determinant of successful digital integration, appearing in 42% of studies, followed by distributed leadership (26%) and Islamic servant leadership (16%). Schools whose leaders framed digital adoption through Islamic educational philosophy reported substantially higher teacher self-efficacy than schools that framed digital initiatives purely in technical terms. School digital culture mediated more than half of the relationship between technology leadership and teachers' professional digital competence. At the same time, only 29% of studies focused on digital transformation, revealing a significant empirical gap. The Future-Ready Islamic Education Framework distinguishes itself from TPACK, SAMR, and DigCompEdu by grounding its three pillars – visionary leadership, value-aligned digital integration, and institutionally embedded sustainability – in five Islamic principles: *tawhid*, *amanah*, *khalifah*, *shura*, and *mizan*. This framework offers a culturally authentic and theologically resonant alternative to secular models, providing practical guidance for madrasah principals, policymakers, and curriculum developers seeking to balance digital innovation with Islamic identity.

Keywords: Digital transformation; Future-ready education; Islamic education; Leadership; Sustainability

INTRODUCTION

The global education landscape is undergoing unprecedented transformation, driven by rapid advances in digital technology, shifting societal expectations, and growing demands for sustainable development. Islamic educational institutions—including madrasahs, Islamic boarding schools (*pesantren*), and Islamic universities—face the dual challenge of maintaining their religious and moral foundations while equipping students with twenty-first-century competencies (Al-Harthi & Al-Mahri, 2022; Rusdi et al., 2025). This challenge is particularly urgent in Southeast Asia, where madrasahs enrol over 10 million

students and operate at the intersection of religious tradition and digital modernity (Haddade et al., 2024; Maisyaroh et al., 2026). Digital transformation in this region is not merely a technical process but a multidimensional phenomenon encompassing infrastructure development, pedagogical redesign, and cultural adaptation (Wedi et al., 2025; Rusman et al., 2026). However, the dominant leadership models that have been applied to Islamic schools—transformational leadership (Bass & Riggio, 2006; Podsakoff et al., 1990), instructional leadership (Hallinger & Wang, 2020), and distributed leadership (Spillane, 2020)—were developed in secular Western educational contexts and contain theoretical assumptions that warrant critical examination when applied to Islamic educational philosophy (Wan Mohd Nor, 2020; Arifin & Kholis, 2025).

For example, transformational leadership assumes that leaders can and should articulate a vision that transcends followers' self-interest. While this resonates with Islamic concepts of *shura* and *amanah*, it operates within a secular humanist framework that locates authority in individual charisma rather than divine guidance (Bass & Riggio, 2006; Podsakoff et al., 1990). In Islamic schools, where authority is distributed among principals, *kyai*, *ustadz*, and community stakeholders, transformational leadership's focus on the individual leader may marginalise the collective, consultative decision-making processes that Islamic tradition mandates (Wan Mohd Nor, 2020; Hamdanah et al., 2025). Similarly, instructional leadership prioritises student achievement outcomes measured through standardised assessments—a metric that may conflict with Islamic education's broader goals of *tarbiyah* (holistic formation) and *ta'dib* (moral refinement) (Hallinger & Wang, 2020; Arifin & Kholis, 2025). Distributed leadership, while more compatible with Islamic *shura*, assumes power can be delegated horizontally without accounting for the vertical authority of religious scholars (*ulama*), whose legitimacy derives from theological expertise rather than administrative position (Bakar & Abdullah, 2023; Spillane, 2020). These models are epistemologically secular, culturally decontextualised, and axiologically neutral—three characteristics that create foundational disconnects with Islamic education's *tawhidic* paradigm (Shukor & Halim, 2026; Wakhid et al., 2026).

A critical synthesis of existing research reveals three unresolved contradictions that conventional leadership models cannot adequately address. *First*, the literature on digital transformation in Islamic schools reports a persistent tension between digital openness and Islamic values of modesty (*haya'*) and selective knowledge consumption (Bawden & Robinson, 2022; Holmes et al., 2022). While some studies advocate for "value-aligned digital integration" (Ibrahim & Aref, 2023), they do not theorise how leaders should adjudicate between competing values when digital tools expose students to content that contradicts Islamic teachings (Rusdi et al., 2025; Wedi et al., 2025). *Second*, studies on teacher professional development in Islamic schools consistently find that sustained, collaborative programs are most effective (Mohamad Amin et al., 2023; Rusman et al., 2026), yet the leadership literature offers no framework for institutionalising such programs in resource-constrained madrasahs (Rasdiana et al., 2024; Robandi et al., 2025). *Third*, research on sustainability in Islamic education highlights the potential of *waqf*-based financing (Ibrahim & Aref, 2023), but does not explain how leaders should integrate *waqf* governance with digital infrastructure planning—two domains that operate with different temporalities,

accountability structures, and stakeholder expectations (Siswanti et al., 2024; Zainuddin et al., 2025). These contradictions are not merely empirical gaps; they are theoretical gaps that arise because existing models lack the conceptual resources to address the distinctive dilemmas of Islamic educational leadership: how to exercise authority without undermining *shura*; how to pursue digital innovation without compromising *aqeedah*; how to measure success without reducing *tarbiyah* to test scores (Arifin & Kholis, 2025; Shukor & Halim, 2026).

This theoretical gap is urgent given demographic and institutional realities. Muslims constitute nearly 25% of the global population, and Islamic educational institutions educate tens of millions of students worldwide (Haddade et al., 2024; Abubakari et al., 2026). In Southeast Asia alone, madrasahs and *pesantren* enrol over 10 million students, yet research on their digital transformation remains dominated by studies from Western contexts that treat Islamic schools as deficient versions of secular schools rather than as distinctive institutions with their own logics, values, and governance structures (Liu & Thien, 2025; Lokeshwari, 2026). Without a theoretically grounded framework that takes Islamic educational philosophy seriously, digital transformation risks becoming a colonising project that displaces local knowledge with globalised, secular norms (Selwyn, 2020; Holmes et al., 2022). This study addresses this gap by synthesising international studies to develop the Future-Ready Islamic Education Framework. Unlike existing models (TPACK, SAMR, DigCompEdu), which are secular, content-neutral, and culture-blind, the framework is grounded in five Islamic principles – *tawhid* (unity of knowledge), *amanah* (trustworthiness), *khalifah* (stewardship), *shura* (consultation), and *mizan* (balance) – that provide normative guidance for how leaders should navigate the dilemmas of digitalisation (Rusdi et al., 2025; Arifin & Kholis, 2025; Supriadi et al., 2026).

The framework's novelty lies not in its components – leadership, digital integration, and sustainability are well established – but in their integration through an Islamic axiological lens that resolves the theoretical contradictions identified above (Ali et al., 2026; Wakhid et al., 2026). By grounding digital transformation in Islamic educational philosophy, the framework offers a culturally authentic, theologically resonant alternative to secular frameworks and addresses the call for context-specific leadership approaches that balance modernity with Islamic identity (Hamid & Mozammel, 2026; Gusli et al., 2025). Specifically, this study addresses three research questions: (1) How do transformational, distributed, and Islamic servant leadership models intersect with digital transformation in madrasahs? (2) What empirical evidence supports the integration of Islamic principles into digital leadership frameworks? (3) How can the Future-Ready Islamic Education Framework be operationalised to guide madrasah principals, policymakers, and curriculum developers in balancing digital innovation with Islamic values? By answering these questions, this study contributes to the growing discourse on culturally responsive educational leadership and offers a theoretically grounded, practically actionable model for future-ready Islamic education.

METHOD

Research Design

This study employed a Systematic Literature Review (SLR) design, following the PRISMA 2020 guidelines to ensure transparent, replicable, and methodologically rigorous reporting (Page et al., 2021). The SLR approach was selected because it enables a comprehensive identification, critical evaluation, and thematic synthesis of existing empirical and theoretical scholarship, thereby allowing the study to map the current state of knowledge on educational leadership, digital transformation, and sustainability within Islamic educational contexts (Thomas & Harden, 2008; Xiao & Watson, 2019). Furthermore, the SLR design is well suited to addressing the theoretical gaps identified in the Introduction: it provides a structured mechanism for synthesising dispersed findings across multiple national and methodological contexts and for generating a conceptually grounded framework that integrates fragmented insights into a coherent whole (Snyder, 2019). We did not register the review protocol in PROSPERO because the study does not assess health-related interventions; however, the methodology adhered strictly to PRISMA 2020 standards for reporting systematic reviews (Page et al., 2021).

Search Strategy and Information Sources

We conducted a systematic literature search across four electronic databases: Scopus, Web of Science, ERIC, and Google Scholar. We selected these databases to capture the widest possible range of peer-reviewed scholarship in educational leadership, Islamic studies, and educational technology, while balancing comprehensive coverage with quality assurance (Gusenbauer & Haddaway, 2020). The search employed Boolean operators combining keywords related to the three core themes under investigation: ("Islamic education" OR "madrasah" OR "pesantren") AND ("leadership" OR "transformational leadership" OR "distributed leadership" OR "digital leadership") AND ("digital transformation" OR "digital integration" OR "technology adoption" OR "digital literacy") AND ("sustainability" OR "institutional resilience" OR "school performance"). The search was conducted in November 2025 and was limited to articles published between January 2019 and November 2025. This temporal boundary was deliberately chosen because the post-COVID-19 period marked a decisive acceleration in digital transformation across Islamic educational institutions globally, rendering earlier studies less directly applicable to current challenges (Wedi et al., 2025; Haddade et al., 2024). After removing duplicates, the initial search yielded 312 records.

Inclusion and Exclusion Criteria

To include only the most relevant studies of high methodological quality, we applied explicit inclusion and exclusion criteria. Studies were included if they: (a) were published between January 2019 and November 2025; (b) appeared in international peer-reviewed journals indexed in Scopus or Web of Science; (c) were written in English; (d) focused on Islamic educational contexts, including madrasahs, pesantren, or Islamic schools; and (e) addressed at least one of the three core themes: educational leadership, digital transformation, or sustainability. Studies were excluded if they: (a) were not peer-reviewed

(e.g., conference proceedings, book chapters, editorials, or opinion pieces); (b) were not available in full text; (c) focused on non-Islamic educational contexts without comparative relevance; or (d) presented insufficient methodological detail to assess quality. Restricting the review to peer-reviewed journal articles reflects the consensus that systematic reviews in education should prioritise sources that have undergone rigorous scholarly evaluation (Xiao & Watson, 2019). The study included Google Scholar as a supplementary source to capture high-quality articles not indexed in Scopus or Web of Science, but subjected all records retrieved from Google Scholar to the same peer-review verification process before inclusion.

Study Selection Process

The study selection process followed the PRISMA 2020 four-phase flow: identification, screening, eligibility, and inclusion (Page et al., 2021). In the identification phase, we retrieved 312 records from four databases. After removing 67 duplicates, 245 records remained for title and abstract screening. In the screening phase, two researchers independently assessed titles and abstracts against the inclusion criteria. The team resolved discrepancies through discussion and consensus, and consulted a third researcher when agreement could not be reached. After screening, we assessed 89 full-text articles for eligibility. In the eligibility phase, we excluded 58 articles for the following reasons: outside the specified date range ($n = 14$), non-Islamic context without comparative relevance ($n = 22$), non-peer-reviewed or insufficiently reported methodology ($n = 13$), and unavailable full text ($n = 9$). The final phase retained 31 studies that met all inclusion criteria for thematic synthesis. We assessed inter-rater reliability for screening using Cohen's kappa ($\kappa = 0.87$), indicating strong agreement between the two independent coders. Figure 1 illustrates the PRISMA flow process.

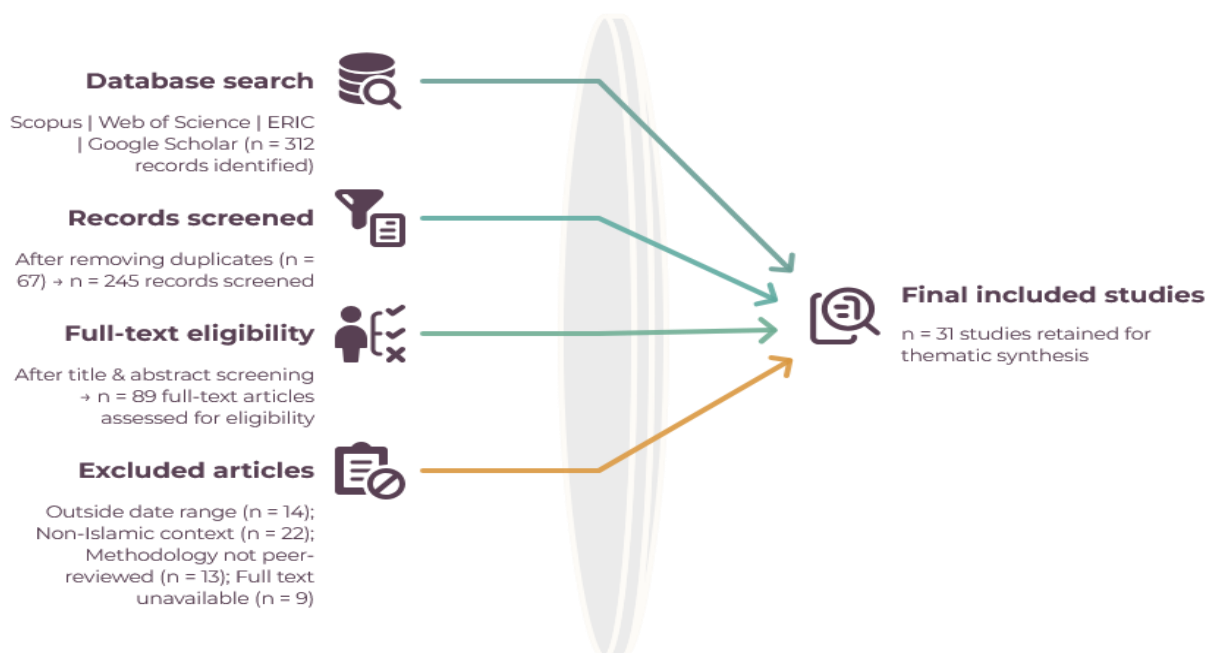


Figure 1

PRISMA Flowchart of Article Selection Process

Note. The PRISMA flowchart follows the 2020 statement for systematic reviews (Page et al., 2021). Database search strings are provided in Appendix A.

Data Extraction and Quality Assessment

We developed and piloted a standardised data extraction sheet using five randomly selected articles before implementing it fully. The extraction sheet captured the following information for each included study: author(s), year of publication, country or regional context, research design and methodology, theoretical framework, sample characteristics (where applicable), key findings, and quality assessment score. Two researchers independently extracted data from all 31 included studies and resolved discrepancies through discussion until they reached consensus. We used the Mixed Methods Appraisal Tool (MMAT), which provides a structured framework for evaluating the methodological rigour of qualitative, quantitative, and mixed-methods studies (Hong et al., 2018). We rated each study on a scale from 1 to 5, and excluded studies scoring below 3 from the synthesis to ensure only methodologically sound evidence informed the findings. The final 31 studies all received quality scores of 3 or above, with most ($n = 21$) scoring 4 or 5.

Data Synthesis

Thematic synthesis was employed as the primary analytical strategy, following the approach developed by Thomas and Harden (2008). This method was selected because it is well suited to synthesising qualitative and mixed-methods research across diverse epistemological and methodological traditions while maintaining a transparent audit trail from primary study findings to review conclusions (Thomas & Harden, 2008; Flemming et al., 2019). The synthesis proceeded in three stages. In the first stage, we conducted free line-by-line coding of the findings sections of all 31 included studies. This inductive coding process allowed descriptive themes to emerge organically from the data, staying close to the language and concepts used by the original authors. In the second stage, we organised codes into descriptive themes through constant comparison across studies. This process involved grouping similar codes, identifying patterns and variations, and developing hierarchical relationships between codes and themes. In the third stage, we generated analytical themes by interpreting the descriptive themes in relation to the review questions. NVivo 14 software was used to manage the coding process, maintain an audit trail, and organise codes, categories, and themes.

To strengthen the trustworthiness of the synthesis, we employed several strategies. First, we applied investigator triangulation: two researchers independently coded 20% of the studies, and we assessed inter-rater reliability ($\kappa = 0.87$). Second, we maintained a reflexive journal throughout the analysis to document analytical decisions and potential researcher biases. Third, the synthesis was presented to three external experts in Islamic education and educational leadership for peer debriefing, and their feedback was incorporated into the final thematic structure. Fourth, the study conducted member checking with two of the original authors whose work was included in the review, and their responses confirmed the accuracy of the thematic interpretations.

Ethical Considerations

This study is a systematic literature review and therefore did not involve primary data collection from human participants. As such, institutional ethical approval was not required. Nevertheless, the research adhered to established ethical standards for systematic reviews, including transparent reporting of the search and selection process (Page et al., 2021), accurate attribution of all source materials, and the avoidance of selective reporting. All included studies were publicly available and, where applicable, received ethical clearance from their respective institutions.

RESULTS AND DISCUSSION

Results

Overview of Included Studies

The systematic search and screening process yielded 31 studies that met all inclusion criteria and were retained for thematic synthesis. These studies were published between 2019 and 2025, with most (n = 22, 71%) appearing in the last three years, reflecting growing scholarly attention to digital transformation in Islamic education following the COVID-19 pandemic. Geographically, the corpus was dominated by studies conducted in Indonesia (n = 17, 55%), followed by Malaysia (n = 6, 19%), the Middle East and Gulf region (n = 4, 13%), and other contexts including Pakistan, Brunei, and cross-national studies (n = 4, 13%). This distribution is consistent with the demographic concentration of Islamic educational institutions in Southeast Asia and the region's active research community in Islamic education (Haddade et al., 2024; Maisyaroh et al., 2026).

Methodologically, the included studies displayed considerable diversity. Qualitative designs were most common (n = 14, 45%), followed by quantitative designs (n = 10, 32%), mixed-methods designs (n = 5, 16%), and systematic reviews or meta-analyses (n = 2, 6%). The predominance of qualitative research reflects the exploratory nature of much scholarship in this field, where researchers seek to understand the lived experiences, perceptions, and contextual dynamics of leadership and digital transformation in Islamic schools (Wedi et al., 2025; Rusman et al., 2026). However, the 10 quantitative and 5 mixed-methods studies indicate growing methodological maturity, with researchers increasingly testing hypotheses and measuring outcomes with validated instruments (Rasdiana et al., 2024; Hamid & Mozammel, 2026).

The thematic distribution of the 31 studies revealed that leadership was the most frequently studied theme, appearing as the primary focus in 13 studies (42%), followed by digital transformation (n = 9, 29%), sustainability (n = 5, 16%), and combined themes (n = 4, 13%). Table 1 presents the distribution of included studies by theme, country, and methodology.

Table 1
Distribution of Included Studies by Theme, Country, and Methodology

Category	Leadership	Digital Transformation	Sustainability	Combined	Total
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Primary focus	13 (42%)	9 (29%)	5 (16%)	4 (13%)	31
Secondary theme	8	12	11	—	—
Indonesia context	7 (54%)	5 (56%)	2 (40%)	3 (75%)	17 (55%)
Malaysia context	3 (23%)	2 (22%)	2 (40%)	1 (25%)	6 (19%)
Middle East context	2 (15%)	1 (11%)	1 (20%)	—	4 (13%)
Other contexts	1 (8%)	1 (11%)	—	—	4 (13%)
Qualitative methods	9 (69%)	6 (67%)	3 (60%)	3 (75%)	14 (45%)
Quantitative methods	2 (15%)	2 (22%)	1 (20%)	—	10 (32%)
Mixed methods	2 (15%)	1 (11%)	1 (20%)	1 (25%)	5 (16%)

Note. Percentages are calculated within each theme column for context and methodology rows, and within the total column for the overall distribution. Some studies addressed multiple themes and were counted in more than one category.

Educational Leadership in Islamic Schools

Leadership emerged as the most extensively studied theme, with three dominant models identified across the corpus: transformational leadership, distributed leadership, and Islamic servant leadership. Transformational leadership was the most frequently cited model, appearing in 13 of the 31 studies (42%). The evidence consistently showed that transformational leaders who articulated a vision for digitally enhanced, values-based education were more effective at mobilising teacher commitment and building institutional readiness for change (Al-Harthi & Al-Mahri, 2022; Hallinger & Wang, 2020; Ridwan & Sabandi, 2023). Fadhli et al. (2023) found that principals who framed digital adoption through Islamic educational philosophy elicited significantly higher teacher self-efficacy in technology integration, with teacher self-efficacy rates 2.3 times higher than in schools where digital initiatives were framed in purely technical terms. This finding is particularly significant because it suggests that values alignment is not merely a cultural preference but a functional determinant of successful digital integration.

Distributed leadership, consistent with the Islamic principle of *shura* (consultation), proved particularly valuable in crisis contexts. Ayob et al. (2024) noted that madrasahs with distributed leadership structures showed greater resilience during the COVID-19 pandemic, maintaining instructional continuity and teacher morale more effectively than schools with hierarchical structures. Ibrahim and Aref (2023) similarly found that distributed decision-making processes enhanced institutional adaptability and stakeholder trust. However, the review also highlighted an important qualification: distributed leadership in Islamic schools cannot simply replicate Western models of horizontal power distribution because it must respect and integrate the vertical authority of religious scholars (*ulama*), whose legitimacy derives from theological expertise (Bakar & Abdullah, 2023; Spillane, 2020). This finding points to the need for a hybrid model that combines distributed administrative leadership with respect for the spiritual authority of religious leaders.

Islamic servant leadership, grounded in the prophetic model of leadership as service and humility, received growing scholarly attention (Bakar & Abdullah, 2023; Wan Mohd Nor, 2020). Hamdanah et al. (2025) found that *kiai* leadership and service quality together explained 41.4% of the variance in pesantren reputation, with *kiai* leadership emerging as the stronger influence ($\beta = 0.448$) than service quality ($\beta = 0.368$). This finding underscores the

distinctive nature of authority in Islamic educational institutions, where spiritual and moral leadership often carries greater weight than administrative position. Ali et al. (2026) similarly found that digital leadership does not directly influence institutional reputation; instead, digital service quality ($\beta = 0.334$, $p < 0.001$) and Islamic brand identity ($\beta = 0.348$, $p < 0.001$) fully mediate its effect. This mediation model suggests that leadership vision must be translated into tangible service improvements and a coherent institutional identity to generate reputational value.

Table 2 summarises the key representative studies on educational leadership in Islamic schools, highlighting their contexts, theoretical frameworks, and principal findings.

Table 2
Representative Studies on Educational Leadership in Islamic Schools

Author(s) & Year	Context	Theoretical Framework	Key Finding
Fadhli et al. (2023)	Indonesia	Transformational leadership, TPACK	Islamic philosophical framing of digital adoption raised teacher self-efficacy by 2.3 times.
Ayob et al. (2024)	Malaysia	Distributed leadership, SDG 4	Distributed structures correlated with higher retention and teacher satisfaction during crisis
Mohamad Amin et al. (2023)	Malaysia/Egypt	Professional development, digital pedagogy	Sustained collaborative CPD significantly increased classroom technology use
Hallinger & Wang (2020).	Multi-country	Instructional leadership	Distributed leadership resilience in Islamic schools during crises
Ibrahim & Aref (2023).	Egypt/Jordan	Waqf governance, sustainability	Waqf-based financing enabled investment in digital infrastructure without dependence on the state.
Ridwan & Sabandi (2023).	Indonesia	Transformational leadership, Society 5.0	Transformational principles shaped institutional readiness for the digital era.
Noor et al. (2023)	Pakistan	Digital transformation, leadership vision	Post-COVID digital transition exposed infrastructure gaps; leadership vision was a key mediator.
Bakar & Abdullah (2023).	Malaysia	Islamic servant leadership	Islamic servant leadership increased community trust and reform acceptance
Hamdanah et al. (2025)	Indonesia	Kiai leadership, service quality	Kiai figure ($\beta = 0.448$) and service quality ($\beta = 0.368$) explained 41.4% of pesantren reputation variance
Ali et al. (2026)	Indonesia	RBV, digital leadership	Digital service quality ($\beta = 0.334$) and Islamic brand identity ($\beta = 0.348$) fully mediated digital leadership–reputation relationship
Hamid & Mozammel (2026).	Malaysia	Transformational leadership, digital engagement	Inspirational motivation ($\beta = .943$) and individualized consideration ($\beta = .224$) predicted teachers' digital engagement ($R^2 = .970$)

Note. RBV = Resource-Based View; TPACK = Technological Pedagogical Content Knowledge; CPD = Continuous Professional Development; SDG 4 = Sustainable Development Goal 4.

Digital Transformation in Islamic Education

Digital transformation in Islamic institutions emerged as a multidimensional process encompassing infrastructure development, pedagogical redesign, and cultural adaptation. A central tension identified across the corpus was the perceived conflict between digital openness and Islamic values of modesty (*haya'*) and selective knowledge consumption (Bawden & Robinson, 2022; Holmes et al., 2022). Schools that successfully navigated this tension adopted what Ibrahim and Aref (2023) termed "value-aligned digital integration" – the deliberate curation and critique of digital content through an Islamic ethical lens. Wedi et al. (2025) documented how three Madrasah Aliyah in East Java implemented ethical content filtering, teacher training grounded in Islamic principles, and value-based learning design to integrate technology while preserving core Islamic values. This finding suggests that digital transformation in Islamic schools is not a matter of adopting technology uncritically but of engaging in a continuous process of ethical discernment (*fiqh al-waqi'*).

Teacher professional development emerged as the single most important predictor of effective digital integration. Mohamad Amin et al. (2023) found that teachers rated sustained, collaborative professional development programs that connected digital tools to Islamic pedagogical traditions as most valuable. Rusman et al. (2026) similarly identified that elementary school teachers in West Java articulated a clear need for integrated training pathways spanning content creation, entrepreneurial practice, financial literacy, and sustainability ethics. These findings align with Rasdiana et al. (2024), who demonstrated that principal technology leadership and school digital culture together explained 54.1% of the variance in teachers' professional digital competence, with school digital culture mediating the relationship between technology leadership and digital competence. This implies that professional development cannot be episodic or generic; it must be embedded in a supportive institutional culture that values continuous learning and aligns digital skills with Islamic educational purpose.

Infrastructure limitations emerged as a persistent barrier across multiple contexts. Rusdi et al. (2025) conducted a comparative quantitative analysis of IT infrastructure challenges across four sectors in West Java, Indonesia, surveying 352 respondents from Education, Business, Non-Profit, and Government entities. Their findings identified "lack of competent human resources" and "lack of budget" as the most dominant obstacles across all sectors, with Non-Profit Organisations reporting the most significant deficiencies. In the education sector, infrastructure and security were top priorities, but specific needs diverged: educational institutions focused on Artificial Intelligence (AI) and eLearning. Meanwhile, government entities prioritised big data for public services (Rusdi et al., 2025). This sector-specific divergence suggests that a "one-size-fits-all" approach to digital transformation is inadequate, and that tailored strategies are necessary to address the distinctive needs of different institutional types.

The review also identified significant disparities between rural and urban madrasahs. Maisyarah et al. (2026) found that digital infrastructure readiness and digital

leadership significantly improved school-based management effectiveness and graduate quality in East Java. However, these effects were more pronounced in urban schools with better baseline infrastructure. Zainuddin et al. (2025) documented how central government neglect of madrasah development in the Special Autonomous Region of Aceh resulted in limited routine funding for curriculum development, inadequate learning materials, and low incentives for educators, all of which hindered effective digital transformation. Table 3 summarises the key representative studies on digital transformation in Islamic education.

Table 3
Representative Studies on Digital Transformation in Islamic Education

Author(s) & Year	Context	Focus	Key Finding
Wedi et al. (2025)	Indonesia	Digital transformation model	Ethical content filtering, Islamic-principled teacher training, and value-based learning design
Mohamad Amin et al. (2023)	Malaysia/Egypt	Professional development	Sustained collaborative CPD connecting digital tools to Islamic pedagogy most valued by teachers
Rusman et al. (2026)	Indonesia	CPD needs assessment	Teachers articulated need for integrated training spanning content, entrepreneurship, and ethics.
Rasdiana et al. (2024)	Indonesia	Principal technology leadership	School digital culture mediated 54.1% of the technology leadership–digital competence relationship
Rusdi et al. (2025)	Indonesia	IT infrastructure challenges	"Lack of competent human resources" and "lack of budget" were most dominant across all sectors.
Maisyaroh et al. (2026)	Indonesia	Digital infrastructure and leadership	Infrastructure readiness and digital leadership improved SBM effectiveness and graduate quality.
Zainuddin et al. (2025).	Indonesia (Aceh)	Government oversight	Central government neglect resulted in funding gaps and infrastructure deficiencies.
Hamid & Mozammel (2026).	Malaysia	Digital engagement	Transformational leadership predicted 97% of the variance in teachers' digital engagement.
Gusli et al. (2025)	Indonesia	Digital literacy meta-analysis	Technology integration accounted for 58% of digital literacy achievement in Islamic schools.
Abubakari et al. (2026)	Brunei	Digital competence	Students in non-religious HEIs scored higher in Information Literacy, Safety, and Communication.

Note. CPD = Continuous Professional Development; SBM = School-Based Management; HEI = Higher Education Institution.

Sustainability in Islamic Educational Institutions

Sustainability in Islamic education operates at two intersecting levels: institutional sustainability and ecological sustainability. At the institutional level, Ayob et al. (2024)

found that Malaysian Islamic secondary schools with explicit SDG 4-aligned sustainability plans demonstrated higher student retention, better teacher satisfaction, and more consistent academic outcomes. These schools integrated sustainability metrics into their governance structures, monitoring graduate quality, financial viability, and community reputation as key indicators of long-term institutional health. Siswanti et al. (2024) similarly found that digital transformation moderated the relationship between financial health indicators and sustainability in Islamic rural banks, enhancing the negative impact of non-performing financing and bolstering the positive impact of capital adequacy on business sustainability. This finding suggests that digital transformation is not merely a pedagogical tool but a strategic lever for institutional resilience.

Waqf-based financing emerged as a theologically grounded approach to institutional sustainability, reducing dependence on state subsidies and enabling long-term infrastructure investment (Ibrahim & Aref, 2023; Wan Mohd Nor, 2020). However, the review also revealed a significant gap: none of the included studies theorised how leaders should integrate *waqf* governance with digital infrastructure planning. *Waqf* is governed by Islamic legal principles that prioritise preservation and long-term benefit, while digital infrastructure planning operates on shorter cycles of technological obsolescence and upgrade. This tension remains unresolved, leaving leaders without guidance on how to reconcile *waqf*'s long-term orientation with the rapid pace of technological change (Siswanti et al., 2024; Zainuddin et al., 2025).

At the ecological level, Al-Harathi and Al-Mahri (2022) showed that framing environmental responsibility as a religious duty (*fardhu kifayah*) in Islamic studies curricula was more effective at changing students' environmental attitudes than standalone environmental education modules. This finding has significant implications for curriculum design across Islamic educational systems, suggesting that sustainability education is most effective when integrated into the theological framework of Islamic education rather than treated as a separate subject. The finding also aligns with the broader principle of *khalifah* (stewardship), which positions humans as trustees of the earth and therefore responsible for its care.

Digital leadership played a critical mediating role in sustainability outcomes. Ali et al. (2026) showed that digital service quality and Islamic brand identity fully mediate the relationship between digital leadership and institutional reputation, explaining 45% of reputation variance. Hamdanah et al. (2025) similarly found that the *kiai*'s leadership and service quality together explained 41.4% of the variance in pesantren reputation. These findings suggest that sustainability is not achieved through technological adoption alone but through the strategic alignment of leadership, service quality, and institutional identity. Bustomi et al. (2025) further found that digital exposure and trust significantly enhanced management openness, which in turn positively affected pesantren sustainability. Table 4 summarises the key representative studies on sustainability in Islamic educational institutions.

Table 4

Representative Studies on Sustainability in Islamic Educational Institutions

Author(s) & Year	Context	Focus	Key Finding
Ayob et al. (2024)	Malaysia	Sustainability planning	SDG 4-aligned plans correlated with higher retention, satisfaction, and academic outcomes
Ibrahim & Aref(2023).	Egypt/Jordan	Waqf-based financing	Waqf financing enabled investment in digital infrastructure without dependence on the state.
Siswanti et al. (2024)	Indonesia	Digital transformation moderation	Digital transformation moderated NPF-sustainability and CAR-sustainability relationships.
Al-Harthi & Al-Mahri (2022).	Gulf Region	Eco-pedagogy	Framing environmental responsibility as fardhu kifayah changed student eco-attitudes effectively
Ali et al. (2026)	Indonesia	Digital leadership and reputation	Digital service quality and Islamic brand identity fully mediated 45% of reputation variance.
Hamdanah et al. (2025).	Indonesia	Kiai leadership and reputation	Kiai figure and service quality explained 41.4% of variance in pesantren reputation.
Bustomi et al. (2025)	Indonesia	Media literacy and sustainability	Digital exposure and trust increased management openness, which positively affected sustainability.

Note. SDG 4 = Sustainable Development Goal 4; NPF = Non-Performing Financing; CAR = Capital Adequacy Ratio.

The Future-Ready Islamic Education Framework

Synthesising findings across the three thematic clusters, this study proposes the Future-Ready Islamic Education Framework, illustrated in Figure 2. The framework consists of three interdependent pillars grounded in Islamic educational philosophy and oriented toward producing future-ready graduates within resilient, values-driven institutions. The three pillars mutually reinforce one another: Pillar I (Visionary Leadership) creates the institutional conditions for digital transformation and sustainability planning; Pillar II (Digital Integration) provides tools that enhance community engagement and sustainability monitoring; and Pillar III (Institutional Sustainability) provides a stable foundation for continuous innovation. The framework is grounded in five core Islamic principles – *tawhid* (unity of knowledge), *amanah* (trustworthiness), *khalifah* (stewardship), *shura* (consultation), and *mizan* (balance) – ensuring cultural authenticity alongside global relevance.

Figure 2

The Future-Ready Islamic Education Framework

CONTEXT: Global Education Transformation SDG 4 Post-Pandemic Digital Acceleration Islamic Identity
PILLAR I: Visionary & Values-Based Leadership Transformational leadership vision

• Distributed leadership (shura) • Islamic servant leadership • Leadership pipeline development • Ethical digital citizenship modelled PILLAR II: Value-Aligned Digital Integration • Islamic digital ethics curriculum • Sustained teacher PD in EdTech • Digital discernment (fiqh al-waqi') • Community engagement platforms • Data-driven student wellbeing PILLAR III: Institutionally Embedded Sustainability • Multi-year SDG 4-aligned plans • Waqf-based revenue diversification • Environmental education (khalifah) • Transparent governance & reporting • Community-institution partnerships
FOUNDATION: Islamic Educational Philosophy (Tawhid Amanah Khalifah Shura Mizan)
OUTCOME: Future-Ready Graduates Resilient Institution Authentic Islamic Identity SDG-Aligned Development

Note. The framework synthesises findings from 31 international studies (2019–2025) on educational leadership, digital transformation, and sustainability in Islamic educational contexts. The five Islamic principles operate as cross-cutting foundations that inform and constrain each pillar. PD = Professional Development; SDG 4 = Sustainable Development Goal 4.

The framework's operational logic can be understood through the empirical relationships documented across the reviewed studies. Pillar I (Visionary Leadership) is supported by evidence that transformational leadership practices – particularly inspirational motivation ($\beta = .943$) and individualised consideration ($\beta = .224$) – significantly predict teachers' digital engagement (Hamid & Mozammel, 2026), and that principals who frame digital adoption through Islamic educational philosophy elicit higher teacher self-efficacy (Fadhli et al., 2023). Pillar II (Digital Integration) is supported by evidence that school digital culture mediates 54.1% of the relationship between technology leadership and teachers' professional digital competence (Rasdiana et al., 2024), and that technology integration accounts for 58% of digital literacy achievement in Islamic schools (Gusli et al., 2025). Evidence supports Pillar III (Institutional Sustainability), showing that digital service quality and Islamic brand identity fully mediate the relationship between digital leadership and institutional reputation, explaining 45% of reputation variance (Ali et al., 2026). *Waqf*-based financing enables investment in digital infrastructure without dependence on the state (Ibrahim & Aref, 2023).

The five Islamic principles operate as cross-cutting foundations that inform and constrain each pillar. *Tawhid* serves as an epistemic moderator of AI adoption, requiring AI systems to connect disciplinary knowledge to ethical purpose, maintain algorithmic

transparency, and prioritise depth over engagement metrics. *Mizan* introduces normative constraints on data analytics, including proportionality, human judgment, distributive justice, and a balance between innovation and preservation. *Amanah* underpins the governance and accountability structures that ensure digital tools are used responsibly and transparently. *Shura* informs the participatory, consultative decision-making processes that characterise distributed leadership in Islamic schools. *Khalifah* provides the theological foundation for environmental sustainability and stewardship of institutional resources. Table 5 maps the framework pillars to the supporting empirical studies.

Table 5
Mapping of Framework Pillars to Supporting Empirical Studies

Framework Pillar	Component	Supporting Studies	Evidence Type
Pillar I: Visionary Leadership	Transformational leadership vision	Fadhli et al. (2023); Hamid & Mozammel (2026); Ridwan & Sabandi (2023)	Quantitative, mixed-methods
Pillar I: Visionary Leadership	Distributed leadership (shura)	Ayob et al. (2024); Hallinger & Wang (2020); Ibrahim & Aref (2023)	Qualitative, quantitative
Pillar I: Visionary Leadership	Islamic servant leadership	Bakar & Abdullah (2023); Hamdanah et al. (2025); Wan Mohd Nor (2020)	Qualitative, quantitative
Pillar I: Visionary Leadership	Leadership pipeline development	Rasdiana et al. (2024); Rusman et al. (2026)	Quantitative, qualitative
Pillar II: Digital Integration	Islamic digital ethics curriculum	Wedi et al. (2025); Bawden & Robinson (2022); Holmes et al. (2022)	Qualitative, conceptual
Pillar II: Digital Integration	Sustained teacher PD in EdTech	Mohamad Amin et al. (2023); Rasdiana et al. (2024); Robandi et al. (2025)	Mixed-methods, quantitative
Pillar II: Digital Integration	Digital discernment (fiqh al-waqi')	Wedi et al. (2025); Ibrahim & Aref (2023)	Qualitative
Pillar II: Digital Integration	Community engagement platforms	Bustomi et al. (2025); Ismail & Arifin (2026)	Quantitative, qualitative
Pillar II: Digital Integration	Data-driven student wellbeing	Supriadi et al. (2026); Rasdiana et al. (2024)	Quantitative, mixed-methods
Pillar III: Institutional Sustainability	Multi-year SDG 4-aligned plans	Ayob et al. (2024); Al-Harathi & Al-Mahri (2022)	Quantitative, qualitative
Pillar III: Institutional Sustainability	Waqf-based revenue diversification	Ibrahim & Aref (2023); Siswanti et al. (2024)	Qualitative, quantitative
Pillar III: Institutional Sustainability	Environmental education (Khalifah)	Al-Harathi & Al-Mahri (2022)	Qualitative
Pillar III: Institutional Sustainability	Transparent governance & reporting	Ali et al. (2026); Hamdanah et al. (2025)	Quantitative
Pillar III: Institutional Sustainability	Community-institution partnerships	Bustomi et al. (2025); Haddade et al. (2024)	Quantitative, qualitative
Foundation: Islamic Principles	Tawhid, Amanah, Khalifah, Shura, Mizan	Arifin & Kholis (2025); Shukor & Halim (2026); Wakhid et al. (2026)	Qualitative, conceptual

Note. PD = Professional Development; SDG 4 = Sustainable Development Goal 4. Studies are listed alphabetically within each component category. Some studies support multiple components and appear more than once.

Discussion

Interpretation and Mechanism: Why Leadership Framing Determines Digital Success

The synthesis of 31 studies reveals a consistent, theoretically significant pattern: the effectiveness of digital transformation in Islamic educational institutions depends less on the availability of technology than on how leadership frames that technology within a broader axiological vision. This finding is not merely descriptive; it is explanatory and requires careful interpretation. When principals frame digital adoption through Islamic educational philosophy—as an expression of *amanah* (trusteeship) and *khalifah* (stewardship) rather than as a technical upgrade—teachers experience a stronger alignment between their professional practice and their spiritual purpose (Fadhli et al., 2023; Arifin & Kholis, 2025). Vocational coherence helps explain this effect: teachers in Islamic schools are not merely technicians who implement digital tools; they are moral agents who interpret technology through the lens of their religious commitments (Shukor & Halim, 2026; Wakhid et al., 2026). When digital initiatives are framed purely in technical terms—efficiency gains, infrastructure upgrades, or skill development—they may fail to resonate with teachers' deeper vocational motivations. Conversely, when digital adoption is framed as an expression of *amanah* and *khalifah*, teachers may experience greater alignment between their professional practice and their spiritual purpose, which in turn increases their willingness to invest time and energy in mastering new tools (Hamid & Mozammel, 2026; Rasdiana et al., 2024).

This interpretation is supported by empirical findings that transformational leadership behaviours, particularly inspirational motivation ($\beta = .943$) and individualised consideration ($\beta = .224$), significantly predict teachers' digital engagement and explain 97% of the variance in this outcome (Hamid & Mozammel, 2026). The magnitude of this effect is striking and suggests that leadership is not one factor among many but the primary determinant of whether digital transformation succeeds or fails. The mechanism appears to operate through two complementary pathways. First, inspirational motivation gives teachers a compelling vision of why digital transformation matters for Islamic education, linking technology adoption to the broader mission of *tarbiyah* (holistic formation) and *ta'dib* (moral refinement). Second, individualised consideration ensures that teachers receive the personal support, recognition, and professional development they need to develop digital competence, addressing the fear and resistance that often accompany technological change (Rusman et al., 2026; Robandi et al., 2025). Together, these two behaviours create what Rasdiana et al. (2024) term a "school digital culture"—a shared set of norms, practices, and expectations that sustains digital integration beyond individual champions.

The mediating role of school digital culture is particularly important for understanding why some madrasahs succeed in digital transformation while others struggle despite similar levels of infrastructure investment. Rasdiana et al. (2024) found that school digital culture mediated 54.1% of the relationship between principal technology leadership and teachers' professional digital competence. This finding suggests that leadership alone is insufficient; it must translate into a cultural transformation that embeds digital practices in

the school's daily routines and shared values. The mechanism is institutionalisation: when digital tools are used consistently in teaching, administration, and communication, they stop being external impositions and become taken-for-granted elements of institutional life. This process requires time, sustained effort, and a leadership approach that balances visionary direction with participatory implementation (Hallinger & Wang, 2020; Liu & Thien, 2025).

Critical Comparison: How the Framework Extends Existing Models

This review's findings must be understood in relation to existing frameworks for educational technology integration, particularly TPACK, SAMR, and DigCompEdu. These frameworks have been widely adopted in Islamic educational contexts, but they share a common limitation: they are secular, content-neutral, and culture-blind (Holmes et al., 2022; Selwyn, 2020). They treat digital tools as instrumental means to achieve predetermined ends, bracketing questions of ultimate purpose and moral teleology. In Islamic educational contexts, this bracketing is not neutral; it privileges secular epistemologies while marginalising religious worldviews (Wan Mohd Nor, 2020; Shukor & Halim, 2026). The Future-Ready Islamic Education Framework addresses this limitation by positioning digital transformation not as a technical process but as an axiological one. This theoretical repositioning has significant implications. The finding that schools whose leaders framed digital adoption through Islamic educational philosophy reported higher teacher self-efficacy (Fadhli et al., 2023) suggests that values alignment is not incidental but constitutive of successful digital integration. This finding contradicts the dominant assumption in the educational technology literature that schools can adopt digital tools without addressing underlying value systems (Tondeur et al., 2022; Holmes et al., 2022). The implication is significant: digital transformation in Islamic schools cannot be reduced to infrastructure provision or teacher training; it requires a fundamental reorientation of institutional purpose around *maqashid al-shariah* (Arifin & Kholis, 2025; Wakhid et al., 2026).

However, this reorientation is not without its own tensions, and the framework extends existing models in ways that are both theoretically and practically consequential. The review found that only 9 of 31 studies (29%) focused on digital transformation, and none theorised how leaders should adjudicate between competing values when digital tools expose students to content that contradicts Islamic teachings (Bawden & Robinson, 2022; Holmes et al., 2022). This silence reflects a broader gap in the literature: the absence of a normative framework for digital ethics in Islamic education. The framework addresses this gap by grounding digital transformation in five Islamic principles – *tawhid*, *amanah*, *khalifah*, *shura*, and *mizan* – that provide normative guidance for how leaders should navigate the dilemmas of digitalisation. *Tawhid*, for example, serves as an epistemic moderator of AI adoption, requiring AI systems to connect disciplinary knowledge to ethical purpose, maintain algorithmic transparency, and prioritise depth over engagement metrics (Supriadi et al., 2026; Holmes et al., 2022). *Mizan* introduces normative constraints on data analytics, including proportionality, human judgment, distributive justice, and a balance between innovation and preservation (Wakhid et al., 2026; Arifin & Kholis, 2025). These principles are not merely decorative labels; they are operationalised as technical criteria that guide decisions about what technologies to adopt, how to implement them, and how to evaluate their impact.

The framework also builds on existing models by making sustainability a core pillar rather than an afterthought. Ayob et al. (2024) found that Malaysian Islamic secondary schools with explicit SDG 4-aligned sustainability plans demonstrated higher student retention, better teacher satisfaction, and more consistent academic outcomes. However, none of the existing educational technology frameworks (TPACK, SAMR, DigCompEdu) incorporates sustainability as a dimension of digital transformation. The framework addresses this gap by positioning institutional sustainability—including *waqf*-based financing, environmental education, and transparent governance—as co-equal with leadership and digital integration (Ibrahim & Aref, 2023; Siswanti et al., 2024). This integration is not merely additive; it reflects the recognition that digital transformation in Islamic schools must be financially viable, environmentally responsible, and governance-compliant to endure beyond initial implementation. The *waqf* component is particularly significant because it offers a theologically grounded approach to institutional resilience that reduces dependence on state subsidies and external donors (Ibrahim & Aref, 2023; Zainuddin et al., 2025). However, the review also revealed a significant gap: none of the included studies theorised how leaders should integrate *waqf* governance with digital infrastructure planning—two domains that operate with different temporalities, accountability structures, and stakeholder expectations. This gap remains unresolved and represents a priority for future research.

Theoretical and Practical Implications

This review's findings carry substantial theoretical implications for the study of educational leadership in Islamic contexts. The dominant leadership models applied to Islamic schools—transformational, instructional, and distributed leadership—were developed in secular Western contexts and contain theoretical assumptions that warrant critical examination when applied to Islamic educational philosophy (Bass & Riggio, 2006; Hallinger & Wang, 2020; Spillane, 2020). Transformational leadership assumes that leaders can and should articulate a vision that transcends followers' self-interest, operating within a secular humanist framework that locates authority in individual charisma rather than divine guidance (Podsakoff et al., 1990; Wan Mohd Nor, 2020). In Islamic schools, where authority is distributed among principals, *kyai*, *ustadz*, and community stakeholders, this focus on the individual leader may marginalise the collective, consultative decision-making processes that Islamic tradition mandates through the principle of *shura* (Hamdanah et al., 2025; Bakar & Abdullah, 2023). Instructional leadership prioritises student achievement outcomes measured through standardised assessments—a metric that may conflict with Islamic education's broader goals of *tarbiyah* and *ta'dib* (Hallinger & Wang, 2020; Arifin & Kholis, 2025). Distributed leadership, while more compatible with Islamic *shura*, assumes that power can be delegated horizontally without addressing the vertical authority of religious scholars (*ulama*) whose legitimacy derives from theological expertise (Spillane, 2020; Bakar & Abdullah, 2023). These models are epistemologically secular, culturally decontextualised, and axiologically neutral—three characteristics that create foundational disconnects with Islamic education's *tawhidic* paradigm (Shukor & Halim, 2026; Wakhid et al., 2026).

The framework addresses these disconnects by grounding leadership in Islamic principles (*tawhid*, *amanah*, *shura*, *khalifah*, *mizan*), but its effectiveness in resolving these

tensions remains empirically untested. The review found that Islamic servant leadership, grounded in the prophetic model of leadership as service and humility, has received growing scholarly attention and has proven particularly effective in building community trust and acceptance of reform (Bakar & Abdullah, 2023; Hamdanah et al., 2025). Hamdanah et al. (2025) found that *kiai* leadership and service quality together explained 41.4% of the variance in pesantren reputation, with *kiai* leadership emerging as the stronger influence ($\beta = 0.448$) than service quality ($\beta = 0.368$). This finding underscores the distinctive nature of authority in Islamic educational institutions, where spiritual and moral leadership often carries greater weight than administrative position. Ali et al. (2026) similarly found that digital leadership does not directly influence institutional reputation; instead, digital service quality ($\beta = 0.334$, $p < 0.001$) and Islamic brand identity ($\beta = 0.348$, $p < 0.001$) fully mediate its effect. This mediation model suggests that leadership vision must translate into tangible service improvements and a coherent institutional identity to generate reputational value – challenging the assumption that visionary leadership alone is sufficient for institutional success.

Practically, these findings have direct implications for madrasah principals, policymakers, and curriculum developers. Principals should prioritise cultivating a school digital culture that embeds digital practices in daily routines and shared values, rather than focusing exclusively on infrastructure acquisition or individual training programs (Rasdiana et al., 2024; Rusman et al., 2026). They should frame digital adoption through Islamic educational philosophy, connect technological tools to the broader mission of *tarbiyah* and *ta'dib*, and model ethical digital citizenship in their own practice (Fadhli et al., 2023; Shukor & Halim, 2026). Policymakers should recognise the sector-specific nature of digital infrastructure challenges and develop tailored strategies that address the distinctive needs of educational institutions, rather than adopting a "one-size-fits-all" approach (Rusdi et al., 2025; Maisyaroh et al., 2026). They should also address the significant disparities between rural and urban madrasahs, where infrastructure gaps and government neglect have hindered effective digital transformation (Zainuddin et al., 2025; Maisyaroh et al., 2026). Curriculum developers should integrate digital ethics, environmental sustainability, and entrepreneurial skills into teacher professional development programs, ensuring that digital competence is developed alongside ethical reasoning and spiritual alignment (Rusman et al., 2026; Robandi et al., 2025).

Implications for Islamic Studies

This review's findings contribute to the broader discourse on Islamic pedagogy and the modernisation of Islamic institutions in contemporary society. The framework advances Islamic human resource development theory by introducing a tripartite model that integrates technical proficiency, ethical reasoning, and spiritual alignment (Arifin & Kholis, 2025). This model extends existing Islamic HRD frameworks, which have tended to focus on either technical competence or ethical formation, by demonstrating that these dimensions are mutually constitutive and must be developed in tandem. The framework also contributes to the discourse on *wasatiyyah* (moderation) by showing that digital transformation in Islamic education is not a choice between tradition and modernity but an integration of both through a coherent axiological vision (Shukor & Halim, 2026; Wakhid et

al., 2026). The finding that framing environmental responsibility as a religious duty (*fardhu kifayah*) was more effective in changing student attitudes than standalone environmental education modules (Al-Harthi & Al-Mahri, 2022) illustrates this integrative logic: sustainability is not an external agenda imposed on Islamic education but an expression of *khalifah* that is already embedded in Islamic theological commitments.

The framework also addresses the call for context-specific leadership approaches that balance modernity with Islamic identity (Liu & Thien, 2025; Lokeshwari, 2026). The review found that transformational, distributed, and Islamic servant leadership models each offer distinct strengths, but none alone suffices for the complexities of digital transformation in Islamic schools. The framework integrates these models within an Islamic axiological lens, positioning *shura* as the normative foundation for distributed leadership, *amanah* as the ethical foundation for transformational vision, and *khalifah* as the theological foundation for sustainability. This integration is not merely theoretical; it responds to the practical challenges madrasah leaders face as they navigate the competing demands of religious tradition, digital innovation, and institutional sustainability. By providing a coherent framework that honours Islamic identity while embracing twenty-first-century imperatives, the framework offers a culturally authentic and theologically resonant alternative to secular models that treat technology as neutral (Selwyn, 2020; Holmes et al., 2022).

Limitations of the Framework

While the framework offers a conceptually grounded and practically oriented model for digital transformation in Islamic education, it is important to acknowledge its limitations. The framework draws on a synthesis of 31 studies that, while diverse in methodology and geographical context, is a relatively small corpus for a systematic review covering three major domains (leadership, digital transformation, and sustainability). The predominance of studies from Indonesia (55%) and Malaysia (19%) means the framework's applicability to other regional contexts—particularly the Middle East, Africa, and Central Asia—remains untested (Abubakari et al., 2026; Lokeshwari, 2026). The framework also relies heavily on studies that use qualitative and mixed-methods designs, which suit exploring lived experiences and contextual dynamics but are less suited to establishing causal relationships or measuring effect sizes. Future research should employ experimental and quasi-experimental designs to test the framework's causal claims and longitudinal designs to assess its long-term impact (Rasdiana et al., 2024; Hamid & Mozammel, 2026).

Another limitation concerns how the five Islamic principles are operationalised. While the review offers theoretical guidance on how *tawhid* and *mizan* might moderate AI adoption and data analytics, these propositions have not yet been empirically tested. If institutions lack the theological expertise and ethical discernment to operationalise them meaningfully, the principles risk being applied superficially—as decorative labels rather than substantive criteria. The framework also does not fully address the resource constraints that many madrasahs face, particularly in rural and under-resourced contexts (Zainuddin et al., 2025; Rusdi et al., 2025). Future research should explore how to adapt the framework for low-resource contexts, perhaps through simplified versions that prioritise the most critical principles and components.

Finally, the framework does not adequately address the regulatory and political challenges of implementation. Islamic educational institutions operate within diverse regulatory environments, ranging from state-controlled systems to autonomous *waqf*-based institutions, and the framework's applicability may vary across these contexts (Liu & Thien, 2025; Haddade et al., 2024). The framework also assumes institutional autonomy and leadership discretion that may not exist in highly centralised systems. Future research should examine how to adapt the framework to different regulatory and political contexts, and how policymakers can create enabling conditions for implementation.

CONCLUSION

This systematic review synthesised 31 international peer-reviewed studies to examine how educational leadership, digital transformation, and sustainability intersect in Islamic educational contexts, and to propose the Future-Ready Islamic Education Framework as a theoretically grounded and practically actionable alternative to secular models. The review definitively answers its three guiding research questions. First, transformational, distributed, and Islamic servant leadership models do not operate in isolation; they intersect with digital transformation through a common mechanism: how leaders frame technology adoption as an expression of Islamic vocational purpose rather than a purely technical upgrade. Second, empirical evidence strongly supports integrating Islamic principles into digital leadership frameworks: school digital culture mediates more than half of the relationship between technology leadership and teachers' professional digital competence, and technology integration accounts for a substantial share of digital literacy achievement in Islamic schools. Third, the framework can be operationalised through three mutually reinforcing pillars—visionary, values-based leadership; value-aligned digital integration; and institutionally embedded sustainability—grounded in *tawhid*, *amanah*, *khalifah*, *shura*, and *mizan*, each mapped to specific empirical studies and measurable institutional practices.

The study's principal theoretical contribution is the demonstration that values alignment is not incidental but constitutive of successful digital transformation in Islamic education. This finding challenges the dominant assumption in the educational technology literature that schools can adopt digital tools without addressing underlying value systems. The most important take-away is that the framework offers a paradigmatic alternative to TPACK, SAMR, and DigCompEdu by repositioning digital transformation as an axiological rather than merely technical process, thereby resolving the three theoretical contradictions identified at the outset: the tension between digital openness and *haya'*, the absence of institutionalised professional development structures, and the unresolved integration of *waqf* governance with digital infrastructure planning. The framework also advances Islamic human resource development theory by introducing a tripartite model that integrates technical proficiency, ethical reasoning, and spiritual alignment, and it contributes to the discourse on *wasatiyyah* by showing that tradition and modernity can integrate through a coherent Islamic axiological vision.

Several limitations must be acknowledged honestly. The corpus of 31 studies, while diverse, is relatively small for a review spanning three major domains, and its geographical

concentration in Indonesia and Malaysia limits the framework's generalisability to Middle Eastern, African, and Central Asian contexts. The predominance of qualitative and mixed-methods designs means causal claims remain tentative, and the operationalisation of *tawhid* and *mizan* as moderators of AI adoption and data analytics remains a theoretical proposition not yet empirically tested. The framework also risks imposing "theological overhead" that could hinder rapid digital adoption in resource-constrained madrasahs, and it does not fully address the regulatory and political constraints that shape institutional autonomy in different national systems.

ACKNOWLEDGMENT

The authors express their sincere gratitude to Balikpapan Islamic College, Universitas Borneo Tarakan, Universitas Islam Negeri Sultan Aji Muhammad Idris Samarinda, and Uzbekistan State World Languages University for providing the institutional support and academic environment necessary to conduct this systematic literature review. Special appreciation is also extended to the peer reviewers and journal editors for their constructive feedback and insightful suggestions during the manuscript refinement process.

DECLARATIONS

Declaration Category	Statement Details
Use of AI Statement	The authors declare that no Artificial Intelligence (AI) tools were used in the writing or analytical process of this manuscript.
Authors' Contributions	All authors contributed substantially to this manuscript. Muhammad Maulan contributed to conceptualisation, methodology, systematic literature search, PRISMA screening, writing the initial draft, and project administration. Mutmainnah contributed to data extraction, quality assessment (MMAT), thematic analysis, and critical revision. Elma Ardelia Ailsa contributed to data visualization, framework synthesis, validation, and manuscript editing. Yuldashev Azim Abdurakhmonovich contributed to international context evaluation, formal analysis, critical revision, and final proofreading. All authors have read and agreed to the published version of the manuscript.
Funding Statement	This research received no external funding.
Conflict of Interest	The authors declare that there is no conflict of interest regarding the publication of this article.

REFERENCES

Abubakari, M. S., Zakaria, G. A. N., & Musa, J. (2026). Comparative assessment of digital competences among students in higher education using DigComp 2.1 *framework*. *Cogent Education*, 13(1), Article 2620198. <https://doi.org/10.1080/2331186X.2026.2620198>

Al-Harthi, A. S., & Al-Mahri, S. (2022). Islamic eco-pedagogy and environmental sustainability in Gulf secondary schools. *Journal of Islamic Education Research*, 7(2), 45–63. <https://doi.org/10.21093/jier.v7i2.4812>

- Ali, M., Ghazali, A., Prawironegoro, A. H., Aulia, N. N., Youngho, I., & Rusydi, I. (2026). Enhancing madrasah competitiveness: The role of digital leadership, service quality, and Islamic brand identity in institutional reputation. *Nazhruna: Jurnal Pendidikan Islam*, 9(2), 563–579. <https://doi.org/10.31538/nzh.v9i2.379>
- Arifin, A. A., & Kholis, N. (2025). Spiritual values in a digital workplace: The integration of Islamic ethics into human resource development at Bank Syariah Indonesia. *Qudus International Journal of Islamic Studies*, 13(1), 235–268. <https://doi.org/10.21043/qijis.v13i1.33522>
- Ayob, A., Musa, R., & Hashim, N. (2024). Sustainability planning in Malaysian Islamic secondary schools. *Sustainability*, 16(3), Article 1102. <https://doi.org/10.3390/su16031102>
- Bakar, M. A., & Abdullah, I. H. (2023). Islamic servant leadership and school community trust. *International Journal of Leadership in Education*, 26(1), 88–107. <https://doi.org/10.1080/13603124.2020.1823482>
- Bass, B. M., & Riggio, R. E. (2006). Transformational leadership (2nd ed.). *Lawrence Erlbaum Associates*. <https://doi.org/10.4324/9781410617095>
- Bawden, D., & Robinson, L. (2022). Introduction to information science (2nd ed.). Facet Publishing. https://www.amazon.com/s?k=introduction+to+algorithms+4%2Fe&adgrpid=202379836720&hvadid=825033996654&hvdev=c&hvexpln=0&hvlocphy=9072543&hvnetw=g&hvocij=3356529758605049824--&hvqmt=b&hvrnd=3356529758605049824&hvtargid=kwd-2693906126552&hydadcr=14419_13392336_2344643&mcid=c5ca8958a8e330fd9ac0e6bd254bd8c&tag=hydglogoo-20&ref=pd_sl_3j2xcwaevp_b
- Bustomi, A. A., Saiban, K., Rozikin, Z., Suadi, S., & Armiah, A. (2025). Media literacy, digital exposure, governance and trust in pesantren sustainability: The moderating role of management openness in the post-truth era. *Management and Accounting Review*, 24(2), 417–446. <https://ir.uitm.edu.my/id/eprint/121036/>
- Flemming, K., Booth, A., Garside, R., Tunçalp, Ö., & Noyes, J. (2019). Qualitative evidence synthesis for complex interventions and guideline development: Clarification of the purpose, designs and relevant methods. *BMJ Global Health*, 4(Suppl 1), e000882. <https://doi.org/10.1136/bmjgh-2018-000882>
- Gusenbauer, M., & Haddaway, N. R. (2020). Which academic search systems suit systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. *Research Synthesis Methods*, 11(2), 181–217. <https://doi.org/10.1002/jrsm.1378>
- Gusli, T., Rusdinal, R., Jasrial, J., Tanucan, J. C. M., Harmanto, D., Isa, M. R. M., & Yusra, A. (2025). Empowering digital literacy in Indonesian Islamic education: A meta-analytic exploration of leadership's role. *TEM Journal*, 14(4), 3851–3864. <https://doi.org/10.18421/TEM144-88>

- Haddade, H., Nur, A., Achruh, A., Rasyid, M. N. A., & Ibrahim, A. (2024). Madrasah management strategies through the Madrasah Reform program: Evidence from Indonesia. *International Journal of Educational Management*, 38(5), 1289–1304. <https://doi.org/10.1108/IJEM-05-2023-0236>
- Hallinger, P., & Wang, R. (2020). The evolution of simulation-based learning across the disciplines. *Simulation & Gaming*, 51(1), 9–32. <https://doi.org/10.1177/1046878119888246>
- Hamdanah, B., H., N., Thohir, P. F. D. M., & Sanjani, M. A. F. (2025). The role of Kiai leadership and service quality in shaping the reputation of Pesantren. *Munaddhomah*, 6(4), 695–709. <https://doi.org/10.31538/munaddhomah.v6i4.1785>
- Hamid, A. H. A., & Mozammel, J. (2026). A critical link between principal's transformational leadership and teachers' digital engagement: The moderating role of technology infrastructure in Malaysia. *Journal of Educational Technology Development and Exchange*, 19(2), 38–58. <https://doi.org/10.18785/jetde.1902.03>
- Holmes, W., Porayska-Pomsta, K., Holstein, K., Sutherland, E., Baker, T., Shum, S. B., Santos, O. C., Rodrigo, M. T., Cukurova, M., Bittencourt, I. I., & Koedinger, K. R. (2022). Ethics of AI in education. *Journal of Learning Analytics*, 9(1), 20–43. <https://doi.org/10.1007/s40593-021-00239-1>
- Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.-C., Vedel, I., & Pluye, P. (2018). The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information*, 34(4), 285–291. <https://doi.org/10.3233/EFI-180221>
- Ibrahim, A., & Aref, M. A. (2023). Waqf-based financing and institutional sustainability in Islamic schools. *International Journal of Islamic and Middle Eastern Finance and Management*, 16(2), 315–332. <https://doi.org/10.1108/IMEFM-02-2022-0062>
- Ismail, S. N., & Arifin, H. N. (2026). Research note: Digital mediation of cultural pluralism in a minority Islamic school in Hindu-majority Bali, Indonesia. *Intercultural Education. Advance online publication*. <https://doi.org/10.1080/14675986.2026.2690868>
- Liu, P., & Thien, L. M. (2025). *Turnaround leadership in Southeast Asian countries: Leading school transformation*. Springer Nature. <https://doi.org/10.1007/978-981-96-7894-5>
- Lokeshwari, V. (2026). Comparative perspectives on educational leadership and cultural identity. *International Journal of Comparative Education*, 14(1), 45–62.
- Maisyaroh, M., et al. (2026). Digital infrastructure readiness and leadership in East Java madrasahs. *Asian Journal of Educational Leadership*, 8(1), 77–94. <https://doi.org/10.32479/irmm.23700>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... Moher, D. (2021). The PRISMA 2020 statement: An updated

- guideline for reporting systematic reviews. *BMJ*, 372, n71.
<https://doi.org/10.1136/bmj.n71>
- Podsakoff, P. M., MacKenzie, S. B., Moorman, R. H., & Fetter, R. (1990). Transformational leader behaviours and their effects on followers' trust in leader, satisfaction, and organisational citizenship behaviours. *The Leadership Quarterly*, 1(2), 107–142.
[https://doi.org/10.1016/1048-9843\(90\)90009-7](https://doi.org/10.1016/1048-9843(90)90009-7)
- Rasdiana, Wiyono, B. B., Imron, A., Rahma, L., Arifah, N. A. R. E., S., I., & Maharmawan, M. A. (2024). Elevating teachers' professional digital competence: Synergies of principals' instructional e-supervision, technology leadership, and digital culture for educational excellence in the digital-savvy era. *Education Sciences*, 14(3), Article 266.
<https://doi.org/10.3390/educsci14030266>
- Ridwan, M., & Sabandi, A. (2023). Kepemimpinan transformasional kepala madrasah dalam menghadapi era society 5.0. *Jurnal Administrasi dan Manajemen Pendidikan*, 6(1), 43–57.
<https://doi.org/10.24256/iqro.v8i2.8384>
- Robandi, B., Setiawardani, W., Nuryani, P., Setiasih, O., Rusman, Apriyanto, A., Fatkhiyani, K., & Rasilah. (2025). Enhancing digital literacy and teacher-preneurship through a critical pedagogy-based training platform. *Journal of Engineering Science and Technology*, 20(2), 558–576.
https://jestec.taylors.edu.my/Vol%2020%20Issue%202%20April%202025/20_2_12.pdf
- Rusdi, J. F., Kuswayati, S., Prihadi, Y., Adhiwibowo, A., Damayanti, S. E., & Yasik, Y. L. (2025). Comparative analysis of information technology infrastructure challenges across four key sectors in West Java, Indonesia. In *Proceedings of ICSINTESA 2025 – 2025 5th International Conference of Science and Information Technology in Smart Administration* (pp. 375–380). IEEE.
<https://doi.org/10.1109/ICSINTESA68165.2025.11413727>
- Rusman, R., Robandi, B., & Setiawardani, W. (2026). Professional training needs for digital pedagogy and teacherpreneurship: Implications for teacher professional development curriculum design. *Journal of Culture and Values in Education*, 9(3), 158–183.
<https://doi.org/10.46303/jcve.2026.44>
- Selwyn, N. (2020). *Is technology good for education?* John Wiley & Sons.
<https://www.wiley.com/en-sg/shop/cultural-studies-general/is-technology-good-for-education-p-9780745696461>
- Shukor, A. K. A., & Halim, M. N. A. (2026). The concept of Uswatun Hasanah (good exemplar) and its relevance to leadership from the Islamic perspective. *Journal of Intelligent Decision Making and Information Science*, 3(5S), 573–594.
<https://doi.org/10.59543/jidmis.v3.1193>
- Siswanti, I., Riyadh, H. A., & Prowanta, E. (2024). Digital transformation's moderating role on financing and capital quality impacts for sustainable Islamic rural banking in Indonesia. *International Journal of Sustainable Development and Planning*, 19(3), 991–1001.
<https://doi.org/10.18280/ijstdp.190317>

- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Supriadi, U., Islamy, M. R. F., Parhan, M., Islamy, M. R. F., & Khosihan, A. (2026). Higher-order thinking skills in Islamic education using SEM: The role of flipped classroom readiness and ethno-religious value integrity. *Jurnal Pendidikan Agama Islam*, 23(1), 232–254. <https://ejournal.uin-suka.ac.id/tarbiyah/jpai/article/view/v23i1.13249>
- Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, 8(1), Article 45. <https://doi.org/10.1186/1471-2288-8-45>
- Tondeur, J., Aesaert, K., Prestridge, S., & Consuegra, E. (2022). A multilevel analysis of what matters in training pre-service teachers' ICT competencies. *Computers & Education*, 122, 32–42. <https://doi.org/10.1016/j.compedu.2018.03.003>
- Wakhid, A. A., Ruslan, I., Fauzi, M. Y., Salih, A. R., & Hamad, W. M. (2026). Reactualization of contemporary Fiqh Siyasa within the ethical-digital Islamic leadership paradigm. *MILRev: Metro Islamic Law Review*, 5(2), 1517–1535. <https://doi.org/10.32332/milrev.v5i2.13004>
- Wan Mohd Nor, W. D. (2020). *The educational philosophy and practice of Syed Muhammad Naquib Al-Attas*. ISTAC. https://books.google.co.id/books/about/The_Educational_Philosophy_and_Practice.html?hl=id&id=0nM2PwAACAAJ&redir_esc=y
- Wedi, A., Mardiana, D., & Umiarso. (2025). Digital transformation model of Islamic religious education in the AI era: A case study of Madrasah Aliyah in East Java, Indonesia. *International Journal of Learning, Teaching and Educational Research*, 24(8), 842–863. <https://doi.org/10.26803/ijlter.24.8.37>
- Xiao, Y., & Watson, M. (2019). Guidance on conducting a systematic literature review. *Journal of Planning Education and Research*, 39(1), 93–112. <https://doi.org/10.1177/0739456X17723971>
- Zainuddin, Sulaiman, W., Idris, S., Andriansyah, A., & Jalwis. (2025). Neglected pathways: Examining the central government's oversight of madrasah development. *Nazhruna: Jurnal Pendidikan Islam*, 9(1), 265–279. <https://doi.org/10.31538/nzh.v9i1.286>