Al Qodiri: Jurnal Pendidikan, Sosial dan Keagamaan
Volume 24, Issue 2, 183-199.
e_ISSN: 2598-8735
https://al-qodiri.unikhams.ac.id/index.php/alqodiri/index

Human Capital Management and AI-Readiness in Islamic Religious Education: Toward an Islamically Grounded Competency Framework for PAI Teachers

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Article Info

Article history:

Received: Feb 24, 2026
Revised: April 06, 2026
Accepted: May 04, 2026

Keywords:

Artificial Intelligence in Education; Islamic Religious Education; PAI Teacher Readiness; Human Capital Development; READIE Framework.

Abstract

Artificial intelligence (AI) has rapidly transformed educational systems and created growing demands for teachers to develop responsible digital and AI competencies, including within Islamic Religious Education (PAI). However, existing AI readiness frameworks are generally developed within secular educational paradigms and provide limited guidance for integrating Islamic ethical values, pedagogical responsibilities, and institutional governance in Islamic education contexts. This study aimed to systematically synthesize the literature concerning AI readiness, professional development, Islamic ethical governance, and institutional support for PAI teachers, while proposing an integrative framework aligned with Islamic educational philosophy. The study employed a Systematic Literature Review (SLR) design based on the PRISMA 2020 protocol using data from Scopus, Web of Science, ERIC, and Google Scholar. After a multistage screening process, 14 indexed studies published between 2021 and 2026 were included in the thematic synthesis. The findings identified four major thematic clusters, namely AI readiness and teacher competency gaps, professional development and strategic human resource management, Islamic ethical foundations for AI governance, and institutional readiness for sustainable digital transformation. The results further revealed that although PAI teachers generally possess strong Islamic pedagogical foundations and moral authority, they continue to face limitations in AI literacy, digital competence, and technology-supported pedagogical adaptation. Based on these findings, this study proposes the READIE Framework (Readiness, Ethics, and AI Development in Islamic Education), which integrates readiness, ethics, advancement, digitalization, institutional conditions, and evaluation within a value-oriented model grounded in insan kamil, tawazun, and rahmatan lil 'alamin. Overall, the framework offers a theoretically coherent and practically applicable model for supporting ethically grounded AI integration and sustainable competency development in Islamic education.

To cite this article: Anshorudin, R., Rohman, D., Supriyatna, D., & Ruswandi, U. (2026). Human capital management and AI-readiness in Islamic Religious Education: Toward an Islamically grounded competency framework for PAI teachers. *Al Qodiri: Jurnal Pendidikan, Sosial dan Keagamaan, 24*(2), 183–199.

INTRODUCTION

Artificial intelligence (AI) has rapidly transformed contemporary educational systems by reshaping instructional practices, assessment models, and institutional decision-making processes. The integration of AI technologies enables personalized learning experiences, adaptive feedback mechanisms, and broader access to educational resources that support more efficient and data-driven learning environments (Kaswan et al., 2024; Strielkowski et al., 2025; Sumathy & Navamani, 2024). In higher and school-based education, AI is increasingly utilized to automate administrative tasks, facilitate curriculum management, and improve educational analytics for strategic planning purposes (Chiu & Chai, 2020; Ng et al., 2025; Pedro et al., 2019; Rafiq-uz-Zaman, 2026). Despite these

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opportunities, the accelerated diffusion of AI has also generated significant concerns related to algorithmic bias, unequal technological access, ethical misuse, and the erosion of pedagogical values rooted in human interaction and moral formation (Alam, 2025; Dinker, 2024; Katono, 2026; Matar, 2025). Educational institutions are therefore required not only to adopt technological innovation, but also to ensure that AI integration remains aligned with educational philosophies, cultural contexts, and ethical responsibilities. This challenge becomes more complex in faith-based educational environments where technology adoption must coexist with religious values and spiritual objectives. Consequently, discussions regarding AI in education increasingly emphasize the importance of ethical governance, contextual adaptation, and human-centered technological implementation.

Within the context of Islamic Religious Education (PAI), the integration of AI introduces challenges that extend beyond technical readiness and digital infrastructure. Islamic education fundamentally aims to develop holistic human beings through the integration of intellectual, moral, spiritual, and social dimensions, rather than focusing solely on cognitive achievement and technological efficiency (Bahri et al., 2025; Kurnianingsih et al., 2025; Sahin, 2018; W & Hasanah, 2024). As a result, the adoption of AI in Islamic educational institutions requires careful consideration regarding how technology can support learning without weakening the transmission of Islamic values, akhlaq, and spiritual guidance. Several recent studies indicate that AI technologies in Islamic education can improve instructional effectiveness, enhance assessment responsiveness, and support adaptive learning systems when implemented responsibly (Elihami et al., 2024; Hariyanto et al., 2025; Lisdianty et al., 2025; Sari et al., 2024; Supriatna, 2025). However, concerns remain regarding the possibility of excessive technological dependence, declining teacher authority, reduced interpersonal interaction, and the weakening of ethical awareness among learners (Abubakar et al., 2025; George et al., 2024; Herak, 2025). These concerns illustrate that AI implementation in Islamic education cannot rely solely on secular technological frameworks that prioritize efficiency and productivity. Instead, Islamic educational institutions require governance models that integrate technological innovation with Islamic ethical principles and educational missions. Therefore, the issue of AI readiness in Islamic education must be understood as both a pedagogical and moral challenge that requires systematic institutional responses.

The readiness of teachers represents one of the most decisive factors in determining whether AI integration contributes positively to educational transformation. In Islamic educational institutions, PAI teachers are not only responsible for delivering instructional content, but also function as moral exemplars, spiritual mentors, and facilitators of character development (Lestari et al., 2025; Mulyani et al., 2026; Pujianti & Nugraha, 2024; Yusuf, 2026). Nevertheless, recent evidence demonstrates that many PAI teachers still experience limitations in digital literacy, AI competence, and technology-supported pedagogical adaptation despite possessing strong foundations in Islamic pedagogy and religious knowledge (Husaeni & Haristiani, 2025; Ma'arif et al., 2025; Riki & Sukandar, 2025; Riveira et al., 2024). Studies on teacher readiness in Islamic education consistently report that infrastructural limitations, insufficient professional development programs, and weak institutional support remain major barriers to sustainable technological integration (Arim et al., 2024; Jamil et al., 2025; Samsuddin et al., 2026; Ubaedullah et al., 2025). This imbalance indicates that current professional development initiatives often focus primarily on technical digital skills without sufficiently integrating Islamic ethical reasoning and contextual pedagogical adaptation. At the same time, strategic Human Capital Management (HCM) approaches within Islamic educational institutions remain underdeveloped in responding to technological transformation (Ardillah et al., 2025; Hartati, 2025; Zarkasi et al., 2025). As AI increasingly influences educational ecosystems, strengthening teacher readiness becomes an urgent institutional priority rather than an optional innovation agenda. Accordingly, the development of AI-ready PAI teachers requires comprehensive competency frameworks that integrate technical, pedagogical, ethical, and spiritual dimensions simultaneously.

The urgency of developing an integrated AI readiness framework for PAI teachers is further reinforced by the rapid expansion of generative AI technologies in global education. Technologies such as ChatGPT and adaptive AI platforms are increasingly shaping how educational content is created, delivered, and evaluated across various educational contexts (Elbanna & Armstrong, 2023; Grassini, 2023; Munaye et al., 2025). While these technologies offer opportunities to improve

learning flexibility and instructional efficiency, they also raise critical ethical concerns regarding academic integrity, authenticity of learning, and responsible knowledge production. Islamic ethical traditions provide important normative foundations for responding to these challenges through principles such as maqasid shariah, amanah, adab, and mas'uliyyah, which emphasize responsibility, balance, and moral accountability in human activities (Ahmad et al., 2025; Mustapha & Malkan, 2025; Sulaeman et al., 2025). In this perspective, AI should function as a supportive educational instrument rather than a replacement for human values and pedagogical relationships. Furthermore, Islamic educational institutions currently remain in the early stages of AI adoption, making this period highly strategic for shaping long-term policies and governance directions (Albous et al., 2025; Khan et al., 2025; Sumiati et al., 2024). Without systematic guidance, institutions risk adopting AI practices that prioritize technological convenience while neglecting the philosophical and ethical foundations of Islamic education. Therefore, scholarly efforts to construct value-oriented AI competency frameworks for PAI teachers are increasingly necessary to support sustainable and ethically grounded educational transformation.

Previous studies have extensively examined digital transformation, AI integration, and teacher readiness within broader educational contexts. Research conducted by Derlan et al. (2026), Kashif et al. (2025), Mainuddin et al. (2025), and Saad et al. (2026) primarily emphasizes the opportunities and pedagogical innovations generated by AI-supported learning systems in Islamic education. Other studies have focused on teacher digital competence and institutional readiness, demonstrating that successful technology integration depends heavily on strategic leadership, digital infrastructure, and sustained professional development programs (Amemasor, Oppong, Ghansah, Benuwa, & Agbeko, 2025; Amemasor, Oppong, Ghansah, Benuwa, & Essel, 2025; Caena & Redecker, 2019; Falloon, 2020; Rasdiana et al., 2024). Research by Zaqiah et al. (2024) further highlights the positive impact of in-service teacher education programs on improving pedagogical and professional competencies among PAI teachers. Meanwhile, Geng and Chen (2026) and Namaziandost and Rezai, (2024) identified that many teachers still demonstrate only moderate levels of readiness for AI-supported deep learning environments due to infrastructural and motivational barriers. Several conceptual studies have also attempted to integrate Islamic ethical perspectives into discussions of AI governance and educational modernization (Elmahjub, 2023; Hakim et al., 2026; Kannike & Fahm, 2025). In addition, Firmansyah et al. (2025), Hazirman et al. (2026), and Rahman (2025) emphasized the importance of integrating Islamic values into competency development frameworks for educators in Islamic institutions. Collectively, these studies confirm that AI integration in Islamic education has become an increasingly important scholarly and institutional concern.

Although previous research has contributed significantly to discussions regarding AI and Islamic education, several important limitations remain insufficiently addressed. Existing competency frameworks such as TPACK, digital literacy models, and general AI-readiness frameworks were largely developed within secular educational paradigms that prioritize technological and pedagogical efficiency rather than spiritual and ethical dimensions (Orgianus et al., 2024). Consequently, these frameworks provide limited guidance for addressing the distinctive responsibilities of PAI teachers as moral educators and spiritual guides. In addition, empirical studies specifically investigating AI competency development among PAI teachers remain relatively limited and fragmented across institutional contexts (Zaqiah et al., 2024). Most existing studies also focus separately on digital literacy, teacher readiness, or ethical governance without systematically integrating these dimensions into a coherent framework for Islamic education. Furthermore, limited attention has been given to how strategic human capital management can support sustainable AI readiness among PAI teachers through institutionally coordinated professional development initiatives (Syuhud & Farid, 2025). Previous research has therefore not yet produced a comprehensive competency framework capable of integrating AI literacy, Islamic pedagogy, ethical governance, institutional leadership, and continuous evaluation within a unified conceptual model. This unresolved gap indicates the need for a more integrative and contextually grounded framework specifically designed for Islamic educational environments.

Based on these theoretical and empirical considerations, this study aims to systematically synthesize the literature concerning AI readiness, professional development, Islamic ethical governance, and human capital management within the context of Islamic Religious Education. Specifically, the study seeks to identify dominant themes, institutional challenges, and competency

dimensions that shape the readiness of PAI teachers to integrate AI responsibly and effectively in educational practice. This study also proposes the READIE Framework (Readiness, Ethics, and AI Development in Islamic Education) as a conceptual model that integrates technical AI literacy, Islamic ethical values, pedagogical adaptation, strategic institutional support, and continuous competency evaluation into a coherent framework for PAI teacher development. Theoretically, the study contributes to the growing discourse on faith-based educational management, Islamic educational technology, and value-oriented AI governance by integrating human capital theory with Islamic epistemological perspectives. Practically, the findings are expected to provide strategic guidance for policymakers, Islamic educational institutions, and teacher education programs in designing AI competency development initiatives that remain aligned with the philosophical foundations of Islamic education. In addition, the framework offers a contextual reference for developing sustainable professional development systems that balance technological innovation with moral and spiritual responsibility. Through this contribution, the study seeks to strengthen the role of Islamic education in responding constructively and ethically to the ongoing transformation of AI-driven educational ecosystems.

METHOD

This study employed a Systematic Literature Review (SLR) design to synthesize and critically evaluate scholarly evidence related to AI readiness, human capital management, and Islamic ethical governance in Islamic Religious Education (PAI). The SLR approach was selected because the study aimed to identify dominant research trends, map conceptual developments, evaluate empirical findings, and construct a comprehensive conceptual framework regarding AI readiness among PAI teachers. The review process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020) guidelines to ensure methodological rigor, transparency, and replicability throughout the research process (Page et al., 2021). In addition, the review protocol was established a priori to minimize post-hoc bias during article identification, screening, and thematic synthesis. This study adopted a qualitative evidence synthesis orientation because the objective was not to statistically aggregate findings, but rather to interpret conceptual patterns, institutional conditions, competency dimensions, and ethical considerations emerging from the literature. Through this approach, the study was able to integrate empirical studies, conceptual papers, and framework-development research relevant to AI integration in Islamic education.

The literature search was conducted between January and March 2026 using four academic databases, namely Scopus, Web of Science, ERIC, and Google Scholar. These databases were selected because they provide broad coverage of educational technology, teacher development, Islamic education, and interdisciplinary educational research. The search strategy employed Boolean operators and keyword clusters representing three conceptual domains. The first domain addressed Islamic educational contexts using terms such as “Islamic Religious Education,” “PAI,” “madrasah,” “pesantren,” and “Islamic school.” The second domain represented AI and educational technology through keywords including “artificial intelligence,” “generative AI,” “ChatGPT,” and “technology integration.” The third domain focused on teacher development and institutional readiness using terms such as “teacher competency,” “teacher readiness,” “professional development,” “digital literacy,” and “human capital.” Different keyword combinations were adapted to the indexing systems of each database to maximize search relevance and sensitivity. Reference lists from selected studies were also manually examined to identify additional relevant publications overlooked during the initial search process.

The population of this review consisted of scholarly publications discussing AI integration, digital readiness, teacher competency, Islamic ethical governance, and professional development within Islamic educational settings. Studies were included when they explicitly examined teacher competence, AI or technology integration, professional development, or Islamic ethical frameworks in the context of Islamic education involving PAI teachers, administrators, or institutional leaders. Only articles published in English or Indonesian between 2021 and 2026 were considered in order to maintain contextual relevance and capture the most recent developments in AI-based educational transformation. Studies were excluded when they focused solely on student perspectives, discussed technology integration without Islamic educational specificity, lacked methodological rigor, or

represented duplicate publications. The screening process followed the four PRISMA stages of identification, screening, eligibility assessment, and inclusion (Page et al., 2021). An initial 197 records were identified across databases, which were reduced to 78 unique records after duplicate removal. Following title and abstract screening, 42 studies were retained for full-text evaluation, resulting in 14 eligible studies included in the final synthesis. Excluded studies consisted of insufficient topical relevance (n = 10), methodological limitations (n = 6), topic incompatibility (n = 7), redundancy (n = 3), and other exclusion reasons (n = 2).

The primary instrument used in this study was a structured literature review matrix developed to facilitate systematic data extraction and thematic categorization. The matrix contained several analytical indicators, including publication identity, research objectives, methodological design, participant characteristics, technological focus, institutional context, competency dimensions, ethical foundations, and major findings. To strengthen content validity and analytical consistency, the extraction matrix was reviewed through expert judgment involving scholars in Islamic education and educational technology. The data collection process was conducted systematically, beginning with database searches, article exportation into reference management software, duplicate removal, title and abstract screening, full-text evaluation, and thematic coding. Two independent reviewers participated in the screening and coding procedures to improve reliability and minimize selection bias. Disagreements during the review process were resolved through discussion and consensus among the research team. All screening decisions, coding results, and extracted findings were documented systematically to ensure procedural transparency and auditability.

The data were analyzed using a qualitative thematic synthesis approach to identify recurring conceptual patterns and relationships across the selected studies. The analysis began with open coding of extracted findings, followed by categorization into broader thematic domains associated with AI readiness, Islamic ethical governance, teacher professional development, strategic human capital management, and institutional support systems. Axial coding was subsequently employed to examine relationships among themes and construct an integrative interpretation of the findings. This analytical process resulted in four major thematic clusters, namely AI ethics and Islamic governance, teacher competence and professional development, strategic human capital management, and digital innovation in Islamic education. The synthesis findings further informed the development of the READIE Framework (Readiness, Ethics, and AI Development in Islamic Education) as the principal conceptual contribution of this study. Throughout the research process, ethical principles were maintained through accurate citation practices, transparent reporting, objective interpretation of findings, and respect for intellectual property rights. Because all data originated from publicly accessible academic publications, the study did not involve direct risks to human participants; however, scholarly integrity and methodological accountability remained central considerations throughout the review process.

RESULTS AND DISCUSSION

Results

The results of the PRISMA 2020 screening process have resulted in 14 studies that meet the researcher's requirements and criteria, namely the year of issue between 2021 and 2026, with qualitative, quantitative design, systematic review, and conceptual framework development. The studies collectively address four thematic domains, namely 1) AI ethics and value-based frameworks, 2) teacher competence, readiness, and professional development, 3) Human Capital Management and strategic institutional practices, 4) and digital innovation and curriculum integration. A comprehensive synthesis is presented in Table 1.

Table 1. Synthesis of 14 Included Studies

No.	Author (Year)	Title	Method	Focus	Key Findings	Thematic Category
1	(Djazilan et al., 2024)	Why AI is Essential for the Future of	Conceptual/ Literature Review	AI ethics and implementa	AI integration requires ethical	AI Ethics & Ethical Framework

		Islamic Education: A Call for Ethical and Effective Implementation		tion in Islamic education	alignment with Islamic values; educators need structured preparation	
2	(Kuswianto & Labibah, 2024)	Strategies for Managing Human Resources: Enhancing PAI Teachers' Digital Literacy in Bawang Banjarnegara	Qualitative (Case Study)	HR strategies for PAI teacher digital literacy	Strategic HR management significantly improves PAI teachers' digital literacy through targeted training programs	Professional Development & Digital Literacy
3	(Marwaji, 2025)	Analisis Kualitatif Deskriptif terhadap Integrasi AI dalam Kurikulum PAI Pasca Kurikulum Merdeka	Qualitative Descriptive	AI integration in PAI curriculum post-Merdeka curriculum	AI integration in PAI curriculum is at early stage; teachers face competency gaps in pedagogical adaptation	Curriculum Integration & Teacher Readiness
4	(Mintasih et al., 2024)	Integration of Digital Technology in Islamic Religious Education Learning: A Qualitative Study on Teachers' Competence and Implementation Models	Qualitative	Teacher competence and digital technology implementation models in PAI	Teachers exhibit varied digital competence; implementation models are context-dependent and institution-specific	Teacher Competency & Implementation Models
5	(Mukaffan & Siswanto, 2025)	Ethical Integration of Generative AI in Islamic Education: Toward Inclusive and Sustainable Human Capital Development	Conceptual/ Framework Development	Ethical generative AI integration for human capital development	Proposes an ethical framework grounded in Islamic principles for sustainable AI-enabled human capital development	AI Ethics & Human Capital Development

6	(Mumtahana et al., 2025)	Innovating Islamic Religious Education through Digital Learning in the Era of Society 5.0	Literature Review	Digital learning innovation in PAI for Society 5.0	Society 5.0 demands a paradigm shift in PAI pedagogy; digital innovation is critical for relevance and inclusivity	Digital Innovation & Pedagogical Adaptation
7	(Mustari et al., 2026)	AI-Era Digital Literacy: Cultivating Honesty in Islamic Education	Conceptual	Digital literacy and character education (honesty) in the AI era	AI-era digital literacy must be embedded within Islamic character-building frameworks to cultivate academic integrity	Digital Literacy & Islamic Character Education
8	(Orgianus et al., 2024)	Islamic Values in Lecturer Competency Development: A Systematic Literature Review	Systematic Literature Review	Islamic values integration in lecturer competency development in higher education	Islamic values are underutilized in competency frameworks; integration enhances educator effectiveness and institutional identity	Islamic Values & Competency Framework
9	(Pahrudin et al., 2025)	Teacher Readiness for Deep Learning in Islamic Education: A Rasch Model Analysis	Quantitative (Rasch Model)	Teacher readiness for deep learning pedagogy in Islamic education	Most PAI teachers demonstrate moderate readiness; infrastructural and motivational barriers are primary constraints	Teacher Readiness & Pedagogical Challenges
10	(Saidah et al., 2025)	Developing an Integrated Competency Framework for Madrasah Teachers: Bridging Scientific Literacy and Islamic Pedagogy	Framework Development (Qualitative)	Integrated competency framework for madrasah teachers	An integrated framework bridging scientific literacy and Islamic pedagogy enhances teacher professional	Competency Framework Development

					identity and performance	
11	(Syuhud & Farid, 2025)	Driving Quality Through People: Strategic Human Resource Management in Indonesian Islamic Schools	Qualitative (Case Study)	Strategic HRM practices in Indonesian Islamic schools	Strategic HRM—including performance-based evaluation and targeted professional development—drives instructional quality	Strategic HRM & Institutional Quality
12	(Taha et al., 2025)	Penggunaan Kecerdasan Buatan (ChatGPT) dalam Pendidikan Islam: Analisis Cabaran, Peluang dan Pertimbangan Etika Berdasarkan Maqasid Syariah	Conceptual/ Document Analysis	ChatGPT use in Islamic education through Maqasid Shariah lens	ChatGPT presents both opportunities and ethical risks; Maqasid Shariah provides a robust ethical governance framework	AI Ethics & Maqasid Shariah
13	(Yemmardotillah et al., 2024)	Innovations in Islamic Religious Education Assessment in the Society 5.0 Era at MAN 3 Padang Panjang	Qualitative (Case Study)	Assessment innovation in PAI in Society 5.0 context	Authentic and technology-based assessments improve student engagement and teacher accountability in PAI	Assessment Innovation & Technology Integration
14	(Zaqiah et al., 2024b)	The Impact of In-Service Teacher Education Program on Competency Improvement Among Islamic Religious Education Teachers Using Self-Assessment	Quantitative (Self-Assessment Survey)	In-service education program impact on PAI teacher competency	In-service programs significantly improve PAI teacher competency across pedagogical, professional, and social dimensions	In-Service Professional Development

Four major thematic clusters were systematically identified from the reviewed literature. The first cluster focused on AI governance grounded in Islamic ethics and values, emphasizing that the integration of AI in Islamic education must be aligned with Islamic ethical principles, particularly

maqasid shariah, amanah, and akhlaq. This cluster highlighted the importance of ensuring that technological adoption remains consistent with the moral and spiritual objectives of Islamic education. The second cluster addressed teacher competence and professional development, revealing considerable variation in the digital and AI readiness of PAI teachers across institutional contexts. The findings further indicated that structured in-service programs, strategic human resource management, and continuous professional support were among the most effective approaches for strengthening teacher readiness and digital competence.

The third thematic cluster concerned the development of competency frameworks for Islamic education, emphasizing the continuing absence of an integrated and empirically validated framework specifically designed to support AI readiness among PAI teachers. Existing competency models were generally considered insufficient in integrating technical AI literacy with Islamic pedagogical values, ethical reasoning, and institutional dimensions. The fourth cluster focused on digital innovation and institutional readiness, demonstrating that sustainable AI integration depends heavily on strategic leadership, institutional commitment, digital infrastructure, and supportive governance systems. Collectively, these findings indicate that AI readiness in Islamic education is a multidimensional issue that requires the integration of ethical foundations, teacher competency development, institutional support, and long-term strategic planning.

Discussion

The findings demonstrate that AI readiness among PAI teachers remains uneven and structurally constrained across Islamic educational institutions. Although many teachers possess strong pedagogical and religious foundations, their ability to integrate AI into instructional practice is still limited by insufficient digital competence, weak institutional support, and the absence of systematic AI-oriented professional development. This finding suggests that AI readiness should not be interpreted merely as individual technological literacy, but rather as a multidimensional construct shaped by pedagogical adaptation, institutional governance, and contextual educational culture. The results reinforce the argument that technological transformation in Islamic education requires the simultaneous development of technical, pedagogical, and ethical competencies rather than isolated digital skills training alone. Similar patterns have been identified in previous studies reporting that teachers in Islamic educational institutions frequently demonstrate moderate levels of AI readiness despite positive attitudes toward educational innovation (Geng & Chen, 2026; Namaziandost & Rezai, 2024; Pahrudin et al., 2025). This finding is also consistent with studies emphasizing that teacher readiness in digitally transforming educational environments is strongly influenced by infrastructural conditions, institutional commitment, and access to continuous professional support (Amemasor, Oppong, Ghansah, Benuwa, & Agbeko, 2025; Arim et al., 2024). However, the present study extends previous discussions by showing that AI readiness in PAI contexts additionally involves epistemological and moral dimensions that are rarely emphasized in general digital competence frameworks.

Another important finding concerns the role of Islamic ethical values as a normative infrastructure for AI governance in Islamic education. The reviewed literature consistently positions Islamic ethical principles such as maqasid shariah, amanah, adab, and mas'uliyyah not as supplementary values, but as foundational mechanisms for regulating technological integration within educational environments. This finding expands dominant discussions in educational technology literature, which generally frame AI governance primarily through technical accountability, transparency, and data protection perspectives (Chiu & Chai, 2020; Pedro et al., 2019). In Islamic educational contexts, ethical governance is interpreted more comprehensively because technological implementation is expected to preserve moral responsibility, spiritual awareness, and the integrity of human interaction. Several studies included in this review further indicate that generative AI technologies may simultaneously support learning efficiency while also increasing risks related to academic dishonesty, reduced critical inquiry, and weakening ethical consciousness among students (Abubakar et al., 2025; George et al., 2024; Taha et al., 2025). Consequently, AI governance in Islamic education cannot rely exclusively on secular digital ethics models that prioritize procedural regulation without adequately addressing moral formation. This finding aligns with recent arguments asserting that faith-based educational institutions require

contextually grounded governance models capable of balancing technological innovation with religious and philosophical commitments (Elmahjub, 2023; Kannike & Fahm, 2025). Therefore, the integration of Islamic ethical values within AI governance represents both a conceptual expansion of existing AI ethics discourse and a practical necessity for sustaining the identity of Islamic education.

The study also reveals that current professional development models for PAI teachers remain insufficiently integrated and often fragmented in their implementation. Most institutional initiatives continue to prioritize short-term technical training while paying limited attention to sustainable competency development, pedagogical transformation, and ethical adaptation. This condition indicates that many professional development programs still operate within a reactive framework aimed at responding to technological trends rather than strategically preparing teachers for long-term educational transformation. From the perspective of Human Capital Theory, such fragmented approaches weaken the potential of educational institutions to build adaptive and future-oriented professional capacity (Becker, 1993). The findings support previous research emphasizing that sustainable technological integration depends heavily on strategic human resource management, collaborative learning cultures, and institutionally coordinated professional development systems (Kuswianto & Labibah, 2024; Syuhud & Farid, 2025; Zaqiah et al., 2024). However, this study further demonstrates that professional development in Islamic education must additionally integrate ethical reasoning and Islamic pedagogical orientation into competency enhancement initiatives. This finding modifies dominant human capital perspectives by suggesting that competency development in faith-based educational institutions cannot be evaluated solely through productivity and technical performance indicators. Instead, professional development should also strengthen teachers' moral authority, spiritual responsibility, and contextual pedagogical adaptability in responding to AI-driven educational change.

The findings further indicate that institutional readiness plays a decisive role in shaping the sustainability of AI integration within Islamic education. Institutions characterized by strategic leadership, collaborative governance, adequate infrastructure, and supportive organizational cultures demonstrate stronger capacity to facilitate teacher adaptation and technological innovation. In contrast, institutions with weak policy direction and limited resource allocation tend to experience fragmented implementation and inconsistent teacher engagement. This result reinforces broader educational technology literature emphasizing that digital transformation is fundamentally an organizational process rather than an exclusively technological intervention (Falloon, 2020; Ng et al., 2025). Nevertheless, the present study highlights that institutional readiness in Islamic education involves additional dimensions associated with preserving religious identity, ethical governance, and educational philosophy. This contextual characteristic differentiates Islamic educational institutions from many secular educational systems where technological adoption is often evaluated primarily through efficiency and performance metrics. Furthermore, the findings suggest that institutional leadership in Islamic schools and madrasahs must function simultaneously as technological facilitators and ethical guardians capable of ensuring that AI implementation remains aligned with Islamic educational objectives. Such a perspective broadens existing discussions on educational leadership by integrating organizational management with value-oriented technological governance.

A major contribution emerging from this study is the conceptual development of the READIE Framework as an integrative model for AI readiness in Islamic education. Existing competency frameworks such as TPACK, digital literacy models, and generalized AI-readiness frameworks provide important foundations for understanding technology integration; however, these models remain limited in addressing the ethical, spiritual, and institutional dimensions specific to Islamic educational contexts (Orgianus et al., 2024). The READIE Framework extends these previous models by integrating six interdependent dimensions, namely readiness, ethics, advancement, digitalization, institutional conditions, and evaluation within a unified conceptual structure grounded in Islamic educational philosophy. The framework positions insan kamil, tawazun, and rahmatan lil 'alamin as integrative principles connecting technological competence with moral and spiritual responsibility. This finding contributes conceptually by demonstrating that AI readiness in Islamic education should be understood as a holistic developmental process rather than a purely technical adaptation mechanism. In comparison with previous competency models that primarily emphasize operational digital skills, the READIE Framework offers a more context-sensitive approach that incorporates ethical governance, institutional sustainability, and pedagogical alignment simultaneously (Saidah et

al., 2025; Mukaffan & Siswanto, 2025). Consequently, the framework not only fills an important theoretical gap within AI readiness literature, but also provides a contextualized model for educational institutions attempting to balance technological modernization with Islamic educational values.

Another important implication of the findings relates to the evolving role of PAI teachers within AI-driven educational ecosystems. The integration of AI technologies does not diminish the importance of teachers; rather, it transforms their responsibilities from knowledge transmitters into facilitators of ethical reasoning, critical reflection, and moral guidance. This finding challenges deterministic assumptions suggesting that AI technologies may eventually replace significant aspects of human teaching practice. In Islamic educational contexts, teachers continue to hold irreplaceable roles in shaping learners' character, spiritual awareness, and moral judgment, dimensions that cannot be fully replicated through algorithmic systems. Similar concerns have been raised in previous studies warning that excessive dependence on AI may weaken interpersonal educational relationships and reduce authentic moral engagement in learning processes (Herak, 2025; Katono, 2026). However, the present study demonstrates that AI can strengthen educational effectiveness when implemented within pedagogical frameworks that prioritize human-centered interaction and ethical accountability. This interpretation aligns with Islamic educational philosophy emphasizing that technology should serve human development rather than dominate educational purpose (Bahri et al., 2025; W & Hasanah, 2024). Therefore, the findings reposition AI not as a substitute for teachers, but as a complementary instrument whose effectiveness depends on the ethical and pedagogical capacity of educators themselves.

The overall findings of this study position Islamic education within a broader global discussion concerning ethical AI governance and human-centered educational transformation. While international scholarship increasingly recognizes the importance of responsible AI integration, most existing frameworks continue to emerge from secular educational paradigms emphasizing technical efficiency, automation, and data-driven optimization (Kaswan et al., 2024; Strielkowski et al., 2025). In contrast, the present study demonstrates that Islamic educational contexts contribute an alternative perspective in which technological readiness is inseparable from moral responsibility, spiritual formation, and institutional ethics. This perspective offers an important conceptual contribution to global educational technology discourse by illustrating that AI governance frameworks must remain culturally and philosophically contextualized rather than universally standardized. Moreover, the READIE Framework provides evidence that faith-based educational systems can actively participate in technological modernization without abandoning their foundational values and educational identities. The study therefore extends current AI-in-education literature by integrating human capital management, Islamic epistemology, and ethical governance into a single analytical framework. Through this contribution, the study not only addresses unresolved gaps in previous research, but also provides a new direction for developing context-sensitive AI readiness models capable of supporting sustainable and ethically grounded educational transformation in diverse educational environments.

CONCLUSION

This study concludes that AI readiness in Islamic Religious Education cannot be understood solely as a matter of technical competence, but must also involve ethical, pedagogical, institutional, and spiritual dimensions that are integrated within the philosophy of Islamic education. The synthesis of the reviewed studies demonstrates that PAI teachers generally possess strong Islamic pedagogical foundations and moral authority, yet continue to face significant limitations in AI literacy, digital competence, and technology-supported pedagogical adaptation. These challenges are closely related to insufficient institutional support, fragmented professional development systems, and the absence of a comprehensive competency framework specifically designed for Islamic educational contexts. In response to these issues, this study proposes the READIE Framework as an integrative conceptual model that combines readiness, ethics, advancement, digitalization, institutional conditions, and evaluation within a value-oriented approach grounded in Islamic principles. The framework contributes theoretically by extending existing AI readiness discourse beyond secular digital literacy paradigms, while practically offering strategic guidance for Islamic

educational institutions, teacher education programs, and policymakers in developing sustainable and ethically grounded AI competency development initiatives. Overall, the study highlights that the future of AI integration in Islamic education depends not only on technological adoption, but also on the capacity of institutions and educators to preserve moral responsibility, educational identity, and human-centered learning within rapidly evolving digital environments.

AUTHOR CONTRIBUTIONS STATEMENT

All authors made a meaningful contribution to the study, both in the formulation of the concept, development and completion of this article. The RA is responsible for the initial formulation of the research, including the preparation of the research question, the overall intellectual framework, and the preparation of the initial manuscript. Dr. contributes to the systematic development of the manuscript by identifying, selecting, and integrating relevant scientific references to strengthen the empirical and theoretical basis of the study. DS contributes to the elaboration and gradual improvement of the script, ensuring coherence, structural integrity and consistency throughout the sections of the article. The UR contributes to the consolidation and strengthening of the theoretical basis of the research, by critically evaluating the conformity between the existing theory and the arguments developed in the manuscript. All authors have read, reviewed, and approved the final version of the manuscript for submission.

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