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Policy Direction for Islamic Higher Education Institutions in Addressing the Imperative of Digital Transformation

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Abstract

Digital transformation in Islamic Religious Higher Education Institutions (Perguruan Tinggi Keagamaan Islam, PTKI) requires institutional change beyond the adoption of digital technologies because governance, human resources, learning, research, and organizational culture must evolve while preserving the ethical and religious identity of Islamic higher education. This study analyzed the conceptual orientation and policy direction of digital transformation in Indonesian PTKI and formulated an integrative Value-Based Digital Transformation framework. A qualitative integrative literature review examined peer-reviewed studies and relevant official policy documents published primarily between 2021 and 2026 and retrieved from Scopus, Dimensions, Google Scholar, GARUDA, and government repositories. Evidence was analyzed through qualitative content analysis, thematic coding, cross-source comparison, and conceptual synthesis. The findings identified five interconnected domains: adaptive digital leadership, integrated digital governance, digital human-capital development, digitally enabled learning, and collaborative research and innovation. These domains are guided by amanah, 'adl, ihsan, maslahah, and religious moderation as cross-cutting normative principles. The framework positions digital transformation as a value-oriented institutional process. Practically, it implies that PTKI leaders should align digital investment and institutional reform with organizational capability, academic quality, ethical governance, and Islamic educational values.

Keywords: Digital governance; Digital transformation; Islamic higher education; Policy framework; Value-based transformation

Introduction

Digital transformation has become a strategic concern for higher education institutions because digital technologies increasingly influence not only teaching and learning but also institutional governance, organizational processes, research practices, stakeholder services, and patterns of value creation. Conceptually, digital transformation should be distinguished from digitization and digitalization. Digitization primarily concerns the conversion of analogue information into digital formats, whereas digitalization refers to the use of digital technologies to improve existing organizational activities. Digital transformation is substantially broader because it involves technology-enabled changes in organizational structures, capabilities, processes, cultures, and value-creation mechanisms. Vial (2019) conceptualizes digital

transformation as an organizational response to technological disruption that requires strategic and structural change, while Verhoef et al. (2021) emphasize that successful transformation involves organizational capabilities and structures rather than technology acquisition alone. In higher education specifically, systematic reviews similarly demonstrate that institutional transformation requires the alignment of strategy, people, organizational processes, information systems, and academic functions (Alenezi, 2021; Castro Benavides et al., 2020). Digital transformation should therefore be understood as an institution-wide process of strategic change rather than as the simple introduction of learning management systems, electronic administration, or individual digital applications.

The challenge for higher education lies precisely in translating technological adoption into coherent institutional transformation. Evidence from international higher education shows that universities frequently implement isolated digital initiatives without integrating them into an overarching strategy. Fernández et al. (2023), for example, found that many higher education institutions had introduced digital initiatives without establishing a comprehensive institutional digital strategy. Leadership is equally important because digital reform requires institutional actors capable of developing digital culture, governance mechanisms, organizational commitment, and strategic advocacy (Ghamrawi & Tamim, 2023). At the individual level, the effectiveness of digital transformation is also constrained by the capacity and willingness of lecturers and other academic personnel to adopt technology meaningfully; academic technology adoption is shaped by technological, personal, contextual, and institutional factors rather than by availability alone (Liu et al., 2020). Likewise, digital competence research demonstrates that the capacity of university students and staff cannot be assumed to develop automatically alongside technological change (Zhao et al., 2021). These challenges are particularly relevant in Indonesia, where empirical research has identified contextual, technical, and cultural barriers that require institutional prioritization rather than merely additional technology investment (Aditya et al., 2022).

These issues acquire additional significance within Indonesian Islamic Religious Higher Education Institutions (Perguruan Tinggi Keagamaan Islam, PTKI). PTKI are required to respond to the same pressures experienced by higher education more broadly - technological change, organizational modernization, academic competitiveness, digital learning, and service efficiency - while simultaneously maintaining their distinctive educational and religious missions. Empirical research involving Islamic higher education institutions in Indonesia indicates that institutional performance in the digital era is associated with technological capability, knowledge management, infrastructure, and dynamic organizational capacity (Hamdani, 2023). At the academic-service level, studies have shown how information systems and enterprise architecture can be used to integrate processes within State Islamic Higher Education Institutions, illustrating that digital transformation extends beyond classroom technology into institutional management (Syaripudin & Jahari, 2022). Digital learning research within Islamic education similarly highlights the importance of digital content, curriculum design, lecturer capability, and supporting infrastructure rather than treating technology as an autonomous driver of educational quality (Firdaus et al., 2023). Moreover, evidence from Islamic higher education demonstrates that online learning can support specific dimensions of professional competence when its implementation is appropriately structured, although infrastructure and implementation conditions continue to matter (Musthofa et al., 2023). Taken together, these studies suggest that PTKI digital transformation must simultaneously address governance, infrastructure, human capability, learning design, and

institutional adaptation.

However, the institutional mandate of PTKI cannot be fully explained through technologically oriented transformation frameworks alone. Islamic higher education has an explicit formative responsibility related to ethical conduct, religious identity, social responsibility, and the cultivation of moderate religious orientations. Research conducted in technology-mediated educational environments has shown that increased digital access does not automatically guarantee the constructive development of religious understanding; Kamaludin et al. (2021), for instance, emphasize the need to safeguard religious moderation in virtual educational spaces. At the university level, Syahbudin et al. (2023) demonstrate that religious moderation can be intentionally developed through structured educational interventions, while Mukhibat et al. (2024) show that moderation can be institutionalized through curriculum development and evaluation in Indonesian Islamic higher education. Purwanto et al. (2024) similarly report that structured moderation-oriented learning can strengthen pre-service teachers' awareness of tolerance and their capacity to engage with religious difference. These studies are important because they demonstrate that values such as tolerance, moderation, responsibility, and ethical judgment are not external to higher education governance; they constitute educational outcomes that must be considered when institutions redesign curricula, communication environments, academic services, and technology-mediated interactions.

The policy dimension further complicates this institutional transformation. Islamic education in Indonesia has historically developed through continuing interaction between state policy, modernization agendas, institutional autonomy, and the religious expectations of Muslim communities (Kosim et al., 2023). In contemporary higher education, digitalization introduces a new layer to this policy relationship because institutions must respond simultaneously to demands for organizational effectiveness, digital competitiveness, academic quality, and responsible technology adoption. Broader research on Education 4.0 confirms that digital transformation alters not only technological environments but also educational systems, pedagogical models, and organizational arrangements (Mukul & Büyüközkan, 2023). Within Indonesia, Aditya et al. (2022) demonstrate that digital-transformation barriers need to be prioritized at the policy and institutional levels, whereas Hamdani (2023) shows that Islamic higher education institutions differ in their technological and organizational capacities. Thus, a uniform technology-driven policy is unlikely to be sufficient for PTKI. Policy direction needs to connect digital capability with institutional governance, human-resource development, learning transformation, research capacity, and the distinctive purposes of Islamic higher education.

A comparison of these research streams reveals a more specific gap than the general assertion that digital transformation in PTKI remains insufficiently studied. The international higher education literature has developed increasingly sophisticated accounts of digital maturity, digital leadership, organizational strategy, staff competence, and barriers to institutional transformation (Castro Benavides et al., 2020; Fernández et al., 2023; Ghamrawi & Tamim, 2023). Indonesian Islamic higher education research, meanwhile, has generated evidence on institutional capability and information technology, digital learning, online academic services, and the pedagogical implementation of religious moderation (Firdaus et al., 2023; Hamdani, 2023; Mukhibat et al., 2024). Nevertheless, these two bodies of scholarship largely address different analytical levels. General digital-transformation frameworks tend to prioritize strategic and organizational capability without explicitly incorporating the

normative identity of Islamic higher education, whereas PTKI-related studies commonly examine technology, learning, institutional capability, or Islamic values as separate issues. Consequently, the literature provides limited explanation of how institutional digital-transformation domains can be connected systematically with Islamic normative principles within a coherent PTKI policy architecture. This gap matters because an institution may improve technological efficiency while leaving unresolved questions concerning ethical governance, equitable access, academic integrity, religious responsibility, and the preservation of institutional identity.

The present study addresses this gap by conceptualizing PTKI digital transformation as a value-based institutional process rather than as a collection of technological projects. Its proposed contribution is not to introduce new digital technologies, nor to claim that Islamic values have been absent from previous PTKI scholarship. Instead, it seeks to integrate two analytical dimensions that have generally been treated separately: the operational architecture of digital transformation and the normative orientation of Islamic higher education. Drawing on an integrative review of scholarship and policy-oriented literature, the study organizes digital transformation around adaptive leadership, digital governance, digital human-resource development, learning transformation, and research and innovation, while positioning amanah (trustworthiness), 'adl (justice), ihsan (excellence and benevolence), maslahah (public benefit), and religious moderation as normative principles that guide institutional choices. This positioning is consistent with the wider argument that digital transformation requires changes in institutional strategy and value creation rather than technology adoption alone (Vial, 2019; Verhoef et al., 2021), while research in Islamic higher education demonstrates the continuing importance of organizational capacity and values-oriented educational development (Hamdani, 2023; Mukhibat et al., 2024). Accordingly, this study aims to analyze the concept and characteristics of digital transformation in the PTKI context, examine the policy direction of Indonesian PTKI in responding to digital transformation, identify the principal institutional challenges associated with this process, and formulate a Value-Based Digital Transformation Policy Model that integrates digital capability with the distinctive ethical and educational values of Islamic higher education.

Method

This study employed a qualitative integrative literature review to examine the conceptual development of digital transformation in Islamic Religious Higher Education Institutions (Perguruan Tinggi Keagamaan Islam, PTKI), analyze the direction of relevant Indonesian higher-education policies, and construct a Value-Based Digital Transformation policy framework. An integrative review was considered appropriate because the research questions required the synthesis of heterogeneous evidence, including empirical studies, conceptual scholarship, higher-education research, PTKI-specific studies, and official policy documents, rather than the aggregation of homogeneous intervention outcomes. Integrative reviews are particularly useful when a research problem spans theoretical, empirical, and policy domains because they allow different forms of evidence to be compared and synthesized into higher-order conceptual interpretations (Badu et al., 2019; Lubbe et al., 2020; Snyder, 2019). Nevertheless, methodological flexibility can reduce transparency if literature selection and synthesis are conducted informally. Therefore, the present review adopted explicit procedures for problem formulation, literature identification, source selection, data extraction, analysis, and conceptual synthesis. This approach is consistent with contemporary methodological

recommendations that literature reviews should be designed as independent research methodologies rather than as descriptive summaries of existing publications (Paul & Criado, 2020; Snyder, 2019).

The literature search was conducted across Scopus, Dimensions, Google Scholar, and GARUDA, supplemented by official repositories of the Indonesian Ministry of Religious Affairs for regulatory and policy documents. The use of more than one bibliographic source was intended to accommodate the interdisciplinary character of the topic, which intersects higher-education studies, organizational transformation, educational technology, Islamic education, governance, and public policy. Bibliographic databases differ in disciplinary coverage and document indexing; consequently, combining established multidisciplinary databases with complementary discovery systems can reduce the likelihood that conceptually relevant scholarship is overlooked (Martín-Martín et al., 2018; Visser et al., 2021). Scopus and Dimensions were used primarily to identify internationally published scholarly literature, while Google Scholar was used as a supplementary discovery source because of its broader coverage of academic materials. GARUDA was included to improve the retrieval of Indonesian scholarly publications relevant to PTKI and national higher-education policy. Government repositories were treated separately from scholarly databases because regulations, ministerial strategic plans, and director-general decisions constituted primary policy evidence rather than secondary academic interpretations.

The search covered publications issued primarily between 2021 and 2026, reflecting the period specified in the original research design and capturing the acceleration of institutional digital transformation following the pandemic period as well as the current Indonesian PTKI policy cycle. Earlier literature was retained only when it provided essential methodological or conceptual foundations that could not be adequately represented by more recent publications. Search terms were organized around the concepts reported in the original study, including digital transformation, digital governance, Islamic higher education, Islamic Religious Higher Education Institutions, PTKI, digitalization of higher education, and PTKI policy, with Boolean operators such as AND and OR used where supported by the database interface. Search terms were iteratively combined to capture literature addressing both institutional digital transformation and the specific characteristics of Islamic higher education. Such explicit specification of databases, temporal boundaries, concepts, and search procedures is important because rigorous reviews require a traceable connection between the research question, retrieval strategy, screening decisions, and subsequent synthesis (Chong et al., 2022; Page et al., 2021; Snyder, 2019).

Eligibility was determined according to relevance, publication quality, document type, and accessibility. Scholarly sources were considered eligible when they addressed at least one of the following areas: digital transformation in higher education; institutional digital governance; digital leadership or organizational capability; digital learning and educational innovation; digital human-resource development; digital transformation within Islamic higher education; or policy and governance relevant to PTKI. Priority was given to peer-reviewed journal articles published in reputable international journals and accredited Indonesian journals. Official government documents - including ministerial regulations, strategic plans, director-general decisions, and other policy instruments directly related to PTKI - were included as primary documentary evidence where they informed national policy direction. Publications were excluded when they consisted solely of news reports, editorials, non-substantive opinion pieces, non-peer-reviewed proceedings, duplicate records, inaccessible

full texts, or publications whose substantive focus did not correspond to the research questions. Bibliographic information was checked before inclusion, and sources whose authorship, publication venue, year, or document identity could not be adequately verified were not used as core evidence. Transparent eligibility decisions are particularly important in integrative synthesis because combining heterogeneous sources without explicit criteria can introduce conceptual inconsistency and selection bias (Badu et al., 2019; Flemming & Noyes, 2021; Lubbe et al., 2020).

The selection process followed sequential stages of identification, preliminary screening, eligibility assessment, and final source determination. At the identification stage, records were retrieved through the designated scholarly databases and government repositories. Titles and abstracts were then screened for alignment with the research focus, after which potentially relevant sources were examined in full text. Full-text eligibility was assessed against the predetermined topical, methodological, and document-type criteria. Duplicate and substantively redundant sources were removed where they reproduced the same publication or policy content. The methodological logic of this sequence follows established review practice in which searching, screening, data extraction, synthesis, and reporting are treated as distinct but interconnected stages (Chong et al., 2022; Page et al., 2021). PRISMA 2020 principles were used only as guidance for transparent reporting of search and selection decisions; the present study was not retrospectively redesignated as a PRISMA-compliant systematic review because its primary methodological orientation remained an integrative review. Importantly, the original research materials available for this manuscript do not report the exact numbers of records identified, duplicates removed, titles and abstracts screened, full texts assessed, and sources finally included. Those numbers should therefore be inserted only if they can be recovered from the authors' original search log and must not be reconstructed retrospectively without documentary evidence.

Data extraction was conducted using a structured conceptual matrix designed to retain both bibliographic information and analytically relevant content from each source. For scholarly publications, the extracted information included author and year, publication context, research focus, methodological orientation, major findings or arguments, institutional dimensions of digital transformation, identified barriers and enabling factors, and implications for PTKI. For policy documents, extraction focused on policy objectives, governance priorities, institutional responsibilities, digitalization directives, human-resource provisions, research and innovation priorities, and explicit implications for Islamic higher education. Separating contextual information from analytical findings supports more transparent qualitative synthesis because it allows interpretations to remain connected to the characteristics and purposes of the original sources (Flemming & Noyes, 2021; Johnston et al., 2020). Policy documents were additionally read as institutional texts rather than treated as equivalent to empirical journal articles. This distinction is methodologically important because policy documents communicate formal priorities, institutional responsibilities, and authorized policy positions, whereas scholarly articles provide empirical or conceptual interpretations of those policies and their implementation. The analytic treatment of official documents was informed by systematic document-analysis principles emphasizing preparation of materials, structured extraction, interpretation of content and context, and distillation of policy meaning (Dalglish et al., 2020).

The extracted evidence was analyzed using qualitative content analysis combined with thematic synthesis. The first analytical stage involved repeated reading of the selected sources

and identification of meaning units related to digital-transformation definitions, governance arrangements, leadership, digital infrastructure, human-resource capabilities, teaching and learning, research and innovation, organizational culture, implementation barriers, Islamic educational identity, ethical considerations, and policy priorities. These meaning units were condensed and coded while retaining their connection to the original source context. In the second stage, conceptually related codes were compared across sources and organized into broader descriptive categories. Qualitative content analysis requires movement between description, abstraction, and interpretation; therefore, themes were not generated solely through keyword frequency but through analysis of conceptual relationships and recurring institutional patterns (Lindgren et al., 2020). Thematic-analysis principles were also applied to ensure that themes represented coherent patterns relevant to the research questions rather than merely topic labels (Kiger & Varpio, 2020). In the final analytical stage, descriptive themes were elevated into analytical themes where sufficient evidence supported an interpretive synthesis, consistent with contemporary approaches to qualitative evidence synthesis (Flemming & Noyes, 2021; Johnston et al., 2020).

The conceptual model was developed through iterative comparison between three evidence streams: the general literature on higher-education digital transformation, studies specifically addressing PTKI or Islamic higher education, and official Indonesian policy documents. This comparative procedure was designed to distinguish broadly applicable institutional transformation requirements from elements that reflect the distinctive normative identity of PTKI. Initial categories concerning leadership, governance, human resources, learning, and research were compared across the evidence corpus and subsequently synthesized into interconnected policy domains. Islamic normative principles were analyzed separately to avoid conflating organizational functions with ethical orientations. The final conceptual synthesis therefore distinguishes the institutional domains through which transformation occurs from the value principles intended to guide policy decisions across those domains. The objective of this stage was not to count the frequency of individual concepts but to construct an explanatory framework capable of organizing convergent, complementary, and contrasting evidence. Qualitative synthesis permits this movement beyond simple description when interpretation remains traceable to the underlying evidence and the reviewer explicitly distinguishes source-derived findings from higher-order conceptual inference (Drisko, 2020; Flemming & Noyes, 2021; Lindgren et al., 2020).

Methodological credibility was strengthened through source triangulation and iterative checking of the relationship between codes, themes, policy evidence, and the proposed framework. Findings derived from general higher-education literature were compared with PTKI-specific studies before being interpreted as relevant to Islamic higher education, while normative or regulatory statements were checked against primary policy documents wherever available. Conceptual categories were reconsidered when evidence from different source types diverged rather than being forced into predetermined themes. Such iterative movement between extraction, comparison, abstraction, and interpretation is consistent with rigorous qualitative synthesis, in which transparency of analytical decisions is essential to the credibility of the resulting conceptual model (Badu et al., 2019; Lindgren et al., 2020; Paul & Criado, 2020). Nevertheless, this methodological approach has an important boundary: because the review integrates heterogeneous literature and policy sources and the original study documentation does not contain a complete reproducible search audit, the resulting Value-Based Digital Transformation framework should be understood as an analytically

derived conceptual-policy model rather than an empirically validated causal model. Subsequent research is therefore required to operationalize its dimensions and test the framework across multiple public and private PTKI settings.

Results

Policy Shift from Service Digitization to Institutional Digital Transformation

The integrative synthesis indicates that the policy direction of Islamic Religious Higher Education Institutions (Perguruan Tinggi Keagamaan Islam, PTKI) in Indonesia is shifting from fragmented service digitization toward a broader model of institutional digital transformation. Digitalization is no longer positioned only as the implementation of academic information systems, Learning Management Systems, or electronic administrative services. Instead, the reviewed policy documents and scholarly literature consistently frame digital transformation as an institutional process involving governance reform, human-resource development, learning innovation, research strengthening, and organizational adaptation.

This shift is reflected in the current national policy environment. The Ministry of Religious Affairs Strategic Plan for 2025-2029 places governance improvement, digital public services, human-resource development, and improvement of higher-education quality within the institutional reform agenda (Kementerian Agama Republik Indonesia, 2025). In parallel, the National Research Agenda for PTKI 2025-2029 positions digital transformation, institutional governance, learning innovation, and research development as relevant dimensions of PTKI development (Direktorat Jenderal Pendidikan Islam, 2024). The synthesis further shows that the transformation agenda should not be interpreted as a technology-acquisition program. Rather, the institutional objective is to create a digitally supported ecosystem in which information, services, decision-making, academic activities, and institutional development are increasingly interconnected.

Table 1 Transition from service digitization to institutional digital transformation in PTKI

Dimension	Predominant service-digitization orientation	Emerging institutional-transformation orientation
Governance	Separate electronic administrative systems	Integrated, data-informed, transparent, and accountable digital governance
Human resources	Training in individual software applications	Continuous development of digital, pedagogical, managerial, and ethical capabilities
Learning	Use of LMS and online learning platforms	Redesign of learning, assessment, interaction, and academic support through digital technologies
Research	Digital tools used primarily for publication and information access	Digitally supported research management, collaboration, innovation, and interdisciplinary networking
Leadership	Technology adoption delegated to technical units	Institution-wide digital transformation led strategically by university leadership
Institutional values	Values treated separately from technology policy	Islamic values embedded as normative criteria for digital governance and decision-making
Expected outcome	Improved operational efficiency	Adaptive, accountable, competitive, and value-oriented Islamic higher education

The transition summarized in Table 1 indicates that digital transformation requires the coordination of multiple institutional functions. Consequently, the effectiveness of PTKI digital transformation cannot be assessed only by the number of digital systems implemented, but

also by the extent to which those systems are connected to institutional governance, academic quality, organizational capacity, and educational mission.

Strategic Domains of PTKI Digital Transformation

The thematic analysis generated five interconnected strategic domains that characterize the direction of PTKI digital transformation: adaptive digital leadership, integrated digital governance, digital human-capital development, digitally enabled learning, and collaborative research and innovation. These dimensions emerged from the synthesis of policy documents and literature discussing governance, digital capability, academic transformation, and institutional competitiveness. Adaptive digital leadership functions as the principal driver of institutional change because transformation requires leadership capable of translating technological opportunities into institutional priorities, coordinating change across organizational units, allocating resources, and responding to differences in infrastructure and organizational readiness.

Integrated digital governance constitutes the institutional foundation of the proposed transformation. This domain includes not only technical integration of academic, financial, research, community-service, and student-service systems but also data-based decision-making, accountability, service transparency, institutional coordination, and responsible information management. Digital human-capital development emerged as another essential domain because transformation depends on the readiness of lecturers, professional staff, and university leaders to use digital technologies effectively. The required capability extends beyond basic digital literacy and includes digital pedagogy, artificial-intelligence literacy, data use, information management, and the capacity to integrate technology with the educational values of PTKI.

Digitally enabled learning represents the academic dimension of transformation. The findings indicate that the use of Learning Management Systems, blended learning, artificial intelligence, and other technologies should be directed toward improving curriculum responsiveness, teaching quality, learner participation, assessment, and access rather than merely shifting conventional instruction to digital platforms. The fifth domain concerns collaborative research and innovation. PTKI policy is increasingly oriented toward strengthening research productivity, multidisciplinary collaboration, technological innovation, and national and international academic networks. The digital environment therefore functions not only as a teaching infrastructure but also as an enabling mechanism for research management, collaboration, dissemination, and institutional knowledge production.

Table 2 Strategic domains identified in the PTKI digital-transformation synthesis

Strategic domain	Core institutional function	Main policy orientation
Adaptive digital leadership	Directing and sustaining institutional change	Digital roadmap, organizational coordination, strategic decision-making, and change management
Integrated digital governance	Integrating institutional systems and decision processes	Transparency, accountability, data integration, service quality, and governance effectiveness
Digital human capital	Developing institutional digital capability	Lecturer, staff, and leadership competence; digital literacy; digital pedagogy; AI capability
Digitally enabled learning	Transforming academic processes	Curriculum adaptation, blended learning, LMS, assessment, learning analytics, and student support

Strategic domain	Core institutional function	Main policy orientation
Collaborative research and innovation	Strengthening knowledge production	Digital research infrastructure, interdisciplinary collaboration, international networks, and innovation

The five domains should not be interpreted as independent components. Adaptive leadership enables the transformation process, governance provides the institutional structure, while human resources, learning, and research constitute major implementation areas. Their effectiveness depends on the extent to which PTKI can coordinate these domains within a consistent institutional strategy.

Islamic Values as a Normative Foundation for Digital Transformation

A distinctive finding of the review concerns the role of Islamic values within PTKI digital transformation. The synthesis indicates that technology is not positioned as an institutional objective in itself but as an instrument for improving educational quality, governance, academic services, research capacity, and institutional competitiveness while preserving the normative identity of Islamic higher education. Five values are positioned within the proposed framework: amanah, 'adl, ihsan, maslahah, and religious moderation. Rather than functioning as an additional pillar comparable to governance or human-resource development, these principles are interpreted as cross-cutting criteria that guide all dimensions of institutional transformation.

Amanah can be associated with responsible stewardship of institutional information, technological resources, academic responsibilities, and digital services. 'Adl provides an orientation toward fairness in access, resource allocation, digital services, and institutional decision-making. Ihsan emphasizes excellence, responsible innovation, and continuous improvement. Maslahah directs technological policies toward demonstrable educational and social benefit, while religious moderation provides a normative basis for balanced, responsible, and non-extremist engagement within digital academic environments. This distinction between operational domains and normative principles strengthens the conceptual coherence of the model because digital leadership, governance, human resources, learning, and research describe the institutional areas in which transformation occurs, whereas Islamic values provide the ethical orientation by which decisions within those areas can be evaluated.

Value-Based Digital Transformation Model for PTKI

Based on the integration of the five strategic domains and the normative Islamic principles, this study develops the Value-Based Digital Transformation Model for PTKI. The model proposes that institutional transformation begins with adaptive leadership, which provides strategic direction and mobilizes organizational change. Digital governance functions as the institutional architecture through which academic, administrative, financial, research, community-service, and student-service systems are coordinated. The implementation layer comprises digital human-resource development, digitally enabled learning, and collaborative research and innovation. Across all dimensions, Islamic values function as a normative layer that influences policy formulation, technology selection, access, governance, data use, academic interaction, and institutional evaluation.

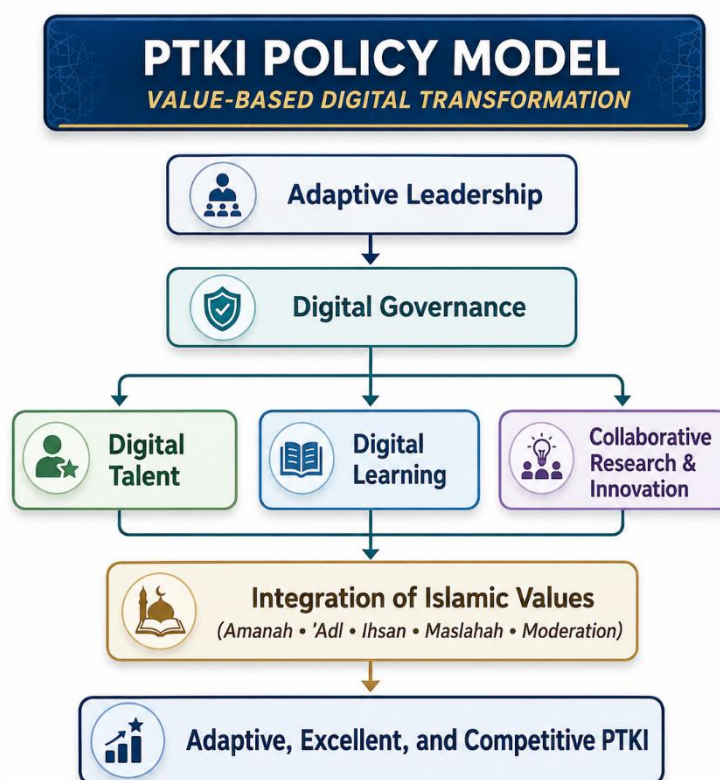


Fig. 1 Value-Based Digital Transformation Policy Model for Islamic Religious Higher Education Institutions (PTKI)

Source: Developed by the authors based on the synthesis of literature and policy documents.

Figure 1 illustrates the relationship among the major components of the proposed framework. Adaptive leadership occupies the upper level as the driver of institutional transformation, followed by digital governance as the organizational foundation. The implementation layer consists of digital human resources, digital learning, and research and collaborative innovation. These domains converge within the integration of Islamic values and are ultimately directed toward the development of PTKI that are adaptive, high-performing, and competitive while maintaining their Islamic institutional identity. The revised interpretation clarifies that the five Islamic values do not constitute another operational activity but rather provide normative criteria across the entire transformation architecture.

Institutional Challenges and Conditions for Implementation

The synthesis also identifies several conditions that may constrain the implementation of the proposed model. The first concerns uneven digital infrastructure, particularly differences in institutional capacity and accessibility between PTKI contexts. The second is variation in digital competence among lecturers, professional staff, and institutional leaders. The third concerns organizational culture and possible resistance to changes in established academic and administrative practices. The fourth relates to digital ethics and religious literacy, particularly because increased use of artificial intelligence, online religious information, and digitally mediated interaction may create new challenges for academic integrity and the responsible interpretation of religious knowledge. The findings therefore indicate that policy implementation should proceed through coordinated institutional development rather than isolated technological investment.

Table 3 Major implementation challenges and required institutional responses

Identified challenge	Institutional risk	Required policy response
Unequal digital infrastructure	Uneven access and service quality	Prioritized infrastructure investment and minimum institutional digital-service standards
Uneven digital competence	Technology remains underused or inconsistently applied	Continuous professional development for leaders, lecturers, staff, and students
Fragmented governance	Duplication of systems and weak institutional coordination	Integrated data governance and institution-wide digital architecture
Organizational resistance	Slow adoption and weak implementation sustainability	Change management, participatory planning, and leadership support
Digital ethics and academic integrity	Misuse of technology, data, or AI	Ethical guidelines, academic-integrity policy, access control, and digital-literacy programs
Weak integration of Islamic values	Digital modernization becomes disconnected from institutional identity	Apply amanah, 'adl, ihsan, maslahah, and religious moderation as policy-evaluation criteria

Taken together, the results suggest that the proposed Value-Based Digital Transformation framework is best understood as an institutional policy architecture rather than as a technology implementation model. The results identify what PTKI need to transform - leadership, governance, human capability, learning, and research - and simultaneously specify the normative principles through which those transformations should be governed. The model therefore provides a conceptual basis for translating current policy directions and fragmented strands of literature into a coherent PTKI-specific transformation framework.

Discussion

The findings of this study indicate that digital transformation in Islamic Religious Higher Education Institutions (Perguruan Tinggi Keagamaan Islam, PTKI) should be understood as an institution-wide transformation rather than as the incremental digitization of existing academic and administrative services. This finding is consistent with Marks et al. (2020), whose maturity assessment of higher education digital transformation identified the absence of a holistic institutional vision, insufficient digital-transformation competence, and weaknesses in data structures as major constraints on transformation. Rodríguez-Abitia and Bribiesca-Correa (2021) similarly demonstrate that university digital transformation involves multiple organizational dimensions that cannot be adequately represented by technology adoption alone. More recently, Gkrimpizi et al. (2024) argue that the scope of digital transformation in higher education extends across operating models, institutional capabilities, academic functions, and evidence-informed decision-making. The present study converges with these studies in rejecting a technology-centred understanding of transformation but extends the discussion by locating institutional change within the organizational and normative characteristics of Indonesian Islamic higher education. In this sense, the movement identified in PTKI from fragmented service digitization toward strategic institutional transformation represents not merely technological modernization but a reconfiguration of governance, academic capability, organizational responsibility, and institutional purpose.

The finding that leadership, governance, human resources, learning, and research should function as interconnected transformation domains is also supported by systems-oriented studies of higher education. Teixeira et al. (2021) show that higher education institutions contribute to digital development not only by deploying technologies but by reshaping

education, innovation, and their relationships with surrounding economic and social systems. Cerdá Suárez et al. (2021) similarly conceptualize university digital transformation through a systemic perspective in which organizational, social, managerial, and environmental dimensions interact rather than operate independently. Abad-Segura et al. (2020), from a sustainability-oriented perspective, further demonstrate that digital transformation research in higher education has increasingly expanded toward integrated institutional management. These studies reinforce the present finding that PTKI digital transformation should not be organized as a series of independent projects owned by separate technical or academic units. Instead, the five strategic domains identified in this study are mutually dependent. Weakness in one domain - for example, limited human capability or fragmented governance - may constrain progress in other domains even when adequate technological infrastructure exists. The contribution of the PTKI framework is therefore its effort to translate systemic transformation into a policy architecture suited to an Islamic higher education context.

Adaptive digital leadership emerged as a particularly important component of this architecture. This finding is consistent with Indonesian evidence reported by Akbari and Pratomo (2022), who identified culture and mindset, human-resource competence, and infrastructure as three fundamental challenges to higher education digital transformation and emphasized the catalytic role of institutional leadership. Their findings are particularly relevant because they demonstrate that technological change in Indonesian universities is mediated by organizational rather than purely technical factors. International evidence provides a similar but more nuanced interpretation. Sangrà et al. (2022) show that university leaders face institutional tensions when attempting to integrate digital education into existing academic structures, while Laufer et al. (2025) demonstrate that trust-based leadership can stimulate educational-technology innovation when staff are empowered and supported, but that delegating digital-change responsibilities without sufficient infrastructure, funding, and guidance may instead suppress innovation. The PTKI framework therefore advances the leadership discussion by suggesting that adaptive leadership should combine strategic direction, institutional support, and normative accountability. In Islamic higher education, leadership effectiveness is not adequately represented by the capacity to accelerate technology adoption; leaders must also evaluate whether digital initiatives remain consistent with educational quality, equitable access, academic responsibility, and the institution's Islamic mission.

The prominence of integrated digital governance in the findings provides another important point of comparison. Universities increasingly operate within digital ecosystems in which academic, administrative, assessment, communication, and data systems must exchange information while serving different stakeholders. Chirumamilla and Sindre (2021), examining digital assessment ecosystems in higher education, found that interoperability between digital systems remains a significant challenge even when universities have successfully adopted specialized platforms. Brdsee (2021) likewise demonstrates that university e-services can influence organizational and spending efficiency, but their institutional value depends on how digital systems are organized and used. Caspari-Sadeghi (2023) extends this argument by showing that learning analytics can support monitoring, feedback, prediction, intervention, and new forms of assessment, while simultaneously raising issues of infrastructure, human capacity, privacy, and institutional governance. These findings support the present study's emphasis on integrated digital governance rather than platform proliferation. For PTKI, the implication is that academic information systems, learning platforms, research systems,

financial systems, and student-service applications should be governed through coherent data standards, accountability mechanisms, access policies, security procedures, and institutional decision structures. Digital governance therefore becomes an organizational and ethical issue as much as a technical one.

The findings concerning digital human-capital development and digitally enabled learning also correspond with international evidence but reveal an important distinction between access to technology and meaningful transformation. Bond et al. (2018) found that university teachers and students frequently used only a limited range of digital technologies and often employed them primarily for assimilative rather than transformative learning activities. Toader et al. (2021) similarly documented that rapid digitalization of higher education created significant challenges related to online learning, institutional adaptation, and sustainable educational development. Such evidence suggests that digital infrastructure cannot substitute for pedagogical and professional competence. The issue has become even more consequential with the rapid development of artificial intelligence. Zawacki-Richter et al. (2019) found that research on AI in higher education was strongly dominated by computer-science and STEM perspectives, with comparatively limited engagement from educators. Tlili et al. (2023) subsequently demonstrated that generative-AI tools such as ChatGPT present both educational opportunities and significant pedagogical and ethical concerns, while Lim et al. (2023) conceptualize generative AI as inherently paradoxical: simultaneously enabling and constraining educational practice. These studies reinforce the present finding that PTKI human-resource policies should move beyond basic digital literacy toward pedagogical, analytical, AI-related, ethical, and critical digital competence.

The study's emphasis on maintaining Islamic educational identity during digital transformation also finds support in research conducted within Islamic educational settings. Hasan et al. (2023), studying pesantren in Madura, show that digital transformation requires negotiation between technological adaptation and established Islamic educational traditions rather than the simple replacement of conventional practices. Zafi et al. (2021) similarly demonstrate that pesantren can adopt digital technology while maintaining distinctive religious authority and educational structures. These findings are important for PTKI because they show that technology adoption in Islamic institutions is institutionally mediated: technologies are interpreted and incorporated through existing religious, pedagogical, and organizational norms. The current framework extends this insight from learning and institutional adaptation toward university-level policy. Instead of treating Islamic identity as an outcome to be protected after digital transformation occurs, the model positions Islamic values within the transformation process itself. This changes the analytical question from how PTKI can digitalize without losing their identity to how PTKI identity should guide the design, governance, implementation, and evaluation of digital transformation.

Religious moderation provides a particularly important example of why this normative dimension matters. Mustakim et al. (2021) show that Islamic higher education can deliberately cultivate tolerance, inclusivity, flexibility, and objective engagement with religious texts, demonstrating that moderate religious values can be institutionally developed rather than merely assumed. Pamungkas et al. (2024) further demonstrate how digital communities can use social media for nonviolent moderation campaigns while simultaneously facing constraints associated with digitally mediated communication environments. These findings justify the present model's inclusion of religious moderation as more than a symbolic institutional value. In a digitally transformed PTKI, moderation has implications for digital-content governance,

academic communication, AI-mediated religious information, online scholarly interaction, digital literacy, and institutional responses to ideological polarization. The current study therefore expands religious-moderation research from the level of curriculum and communication toward the governance of digitally mediated higher education.

This comparison with previous research also clarifies the novelty of the proposed Value-Based Digital Transformation Model. The novelty does not lie in identifying digital leadership, governance, human resources, digital learning, research collaboration, or Islamic values individually; all of these have been discussed in previous scholarship. Nor does the study claim that value-based education is unique to PTKI. Rather, its conceptual novelty lies in separating operational transformation domains from cross-cutting normative governance principles and then reconnecting them within a PTKI-specific policy architecture. Existing higher-education models primarily focus on digital maturity, institutional capabilities, systems, leadership, or organizational performance (Gkrimpizi et al., 2024; Marks et al., 2020; Rodríguez-Abitia & Bribiesca-Correa, 2021), whereas Islamic-education studies commonly examine technological adaptation, religious identity, moderation, or institutional tradition at more specific pedagogical or organizational levels (Hasan et al., 2023; Mustakim et al., 2021; Zafi et al., 2021). The present model bridges these two research streams by positioning amanah, 'adl, ihsan, maslahah, and religious moderation as criteria that should inform leadership, governance, human-resource development, learning, and research simultaneously. This represents a conceptual-policy contribution rather than a claim of empirical model superiority.

The theoretical implication of this framework is that digital transformation in mission-driven higher education may be better understood through a dual-layer architecture. The first layer concerns institutional capabilities: leadership, governance, people, learning, research, data, and technology. The second concerns normative evaluation: the principles through which institutional decisions are judged. Higher-education transformation literature has repeatedly demonstrated that institutional maturity depends on coordinated capabilities rather than technology alone (Abad-Segura et al., 2020; Cerdá Suárez et al., 2021; Teixeira et al., 2021), while research on university leadership suggests that organizational culture and relational conditions shape whether digital initiatives generate meaningful innovation (Akbari & Pratomo, 2022; Laufer et al., 2025). The PTKI model adds the proposition that institutional capability should not be evaluated exclusively through efficiency, maturity, or competitiveness. In an Islamic higher education context, the legitimacy of transformation also depends on whether digital policy promotes trustworthy stewardship, justice, educational excellence, public benefit, and balanced religious engagement. This provides a basis for future empirical research to examine whether value-oriented governance influences stakeholder trust, digital inclusion, academic integrity, and institutional acceptance of technological change.

The practical implications are equally significant. PTKI leaders can use the five strategic domains as an institutional diagnostic framework rather than beginning digital transformation with a list of technologies to procure. A digital roadmap should first determine leadership responsibility, governance integration, staff capability, learning requirements, research priorities, and data-management arrangements. The normative layer can then function as a policy-screening mechanism. Amanah, for example, can be operationalized through transparent responsibility for institutional data and technology budgets; 'adl through equitable digital access and fair technology-mediated decision-making; ihsan through quality standards and continuous improvement; and maslahah through explicit assessment of educational and social benefits. Religious moderation can guide digital-content policies and institutional

communication. Such safeguards are increasingly important as learning analytics and generative AI expand universities' capacity to collect, infer, and generate information, while simultaneously creating new questions regarding privacy, reliability, academic integrity, and educational responsibility (Caspari-Sadeghi, 2023; Lim et al., 2023; Tlili et al., 2023). The framework therefore encourages PTKI to evaluate transformation through technology, capability, governance, and value alignment rather than technology adoption alone.

Several limitations, however, require the findings and proposed model to be interpreted cautiously. The most important limitation is methodological: the framework results from an integrative synthesis of heterogeneous scholarly and policy sources rather than from empirical testing across multiple PTKI institutions. Consequently, the relationships among adaptive leadership, digital governance, digital human capital, digitally enabled learning, research and innovation, and the five Islamic values should not yet be interpreted as causal relationships. The model also does not establish whether the proposed values constitute statistically distinguishable dimensions or whether stakeholders across different PTKI interpret them consistently. A further limitation concerns the review process itself: the original research materials do not retain complete numerical records for database retrieval, duplicate removal, screening, full-text assessment, and final inclusion, reducing the reproducibility that would be expected of a fully systematic review. Moreover, evidence from digital-transformation research demonstrates substantial variation among universities in digital maturity, organizational conditions, user practices, and leadership arrangements, making uniform implementation unlikely (Bond et al., 2018; Marks et al., 2020; Sangrà et al., 2022). Future research should therefore translate the proposed model into measurable indicators, conduct expert content validation, compare public and private PTKI, examine institutions at different levels of digital maturity, and test the framework using multi-site qualitative studies followed by quantitative validation. Only after such empirical testing should the model be used to evaluate institutional performance or make claims about the effectiveness of value-based digital transformation.

Conclusion

Digital transformation in Indonesian Islamic Religious Higher Education Institutions (PTKI) should be understood as a comprehensive institutional transformation rather than as the mere digitization of academic and administrative services. The findings of this integrative review indicate that a sustainable transformation agenda requires the coordinated development of adaptive digital leadership, integrated digital governance, digital human capital, digitally enabled learning, and collaborative research and innovation. The principal conceptual contribution of this study lies in the proposed Value-Based Digital Transformation framework, which positions amanah (trustworthiness), 'adl (justice), ihsan (excellence and benevolence), maslahah (public benefit), and religious moderation as cross-cutting normative principles that guide institutional decision-making across all transformation domains. This framework extends conventional higher-education digital-transformation perspectives by connecting organizational capability and technological modernization with the ethical and educational identity of Islamic higher education. Practically, the model provides PTKI leaders and policymakers with a structured basis for aligning digital investment, governance reform, staff-capability development, learning innovation, and research collaboration with institutional quality, accountability, inclusion, and Islamic educational values. However, because the framework was derived from an integrative synthesis of heterogeneous scholarly and policy sources rather than from multi-institutional empirical testing, its components should not yet

be interpreted as causal predictors of institutional performance. Future research should therefore operationalize the proposed domains and values into measurable indicators, undertake expert validation, and test the framework across public and private PTKI with different levels of digital maturity to assess its applicability, robustness, and policy relevance.

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