Digitalizing Islamic Education Management in the Industry 5.0 Era: From Digital Administration to Value-Based Governance

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Abstract. This article examines the digitalization of Islamic education management in the Industry 5.0 era by emphasizing a shift from mere "digital administration" to value-based governance. The focus goes beyond adopting applications; it highlights a deeper transformation in how institutions manage processes, data, services, and decision-making to enhance effectiveness, accountability, and alignment with the broader purposes of Islamic education. The article synthesizes key pillars of transformation, including system integration across academic, financial, and learning services, strengthened data governance, capacity building for human resources, and cultural change management. While digitalization may improve efficiency and transparency, the article also discusses recurring risks such as digital divides, organizational resistance, vendor dependency, and ethical/privacy concerns, along with practical mitigation strategies. The main contribution is a conceptual governance framework that connects service performance indicators with institutional values, enabling digital transformation to remain meaningful, trustworthy, and sustainable rather than purely technical or procedural.

Keywords: Digital Transformation; Digitalization; Industry 5.0; Islamic Education Management; Value-Based Governance.

1. INTRODUCTION

Digitalization in Islamic education management is frequently understood as moving forms, reports, and administrative routines into software. This narrow view can produce quick wins, but it often stops at "digital administration" and fails to reshape how institutions govern decisions, services, and accountability in a coherent way. Industry 5.0 invites a different direction: technology should strengthen human well-being, resilience, and responsible governance rather than merely accelerating workflows. (European Commission Community of Practice 5.0, 2024) A similar spirit is echoed in Society 5.0, where digital innovation is expected to serve social benefit through human-centered design. (Cabinet Office Government of Japan, 2021) Therefore, the key question is not whether an institution uses digital tools, but whether it can align digital systems with institutional purpose, trust, and public value. (Díaz-García et al., 2022)

In higher education and school systems, digital transformation is increasingly described as a comprehensive change that affects strategy, culture, processes, and organizational capability. (Castro Benavides et al., 2020) When transformation is treated only as "technology adoption," institutions commonly face fragmented platforms, duplicated data, inconsistent reporting, and user fatigue. (Díaz-García et al., 2022) Islamic education institutions encounter these challenges while also carrying distinctive missions: nurturing adab, safeguarding spiritual formation, and ensuring that managerial efficiency does not replace educational meaning. A

humanistic approach is necessary because digitalization reshapes relationships—between leaders and staff, teachers and students, institutions and families—through new channels of communication, data visibility, and performance measurement. (Paños-Castro et al., 2024) In this context, governance becomes the central lens for designing digitalization that is coherent, ethical, and sustainable. (Thamrin et al., 2024)

Within Islamic education, digitalization already appears in multiple forms: e-learning platforms, online content curation, digital literacy initiatives, and hybrid learning communities. (Habibi, 2025) At the same time, the development of "virtual pesantren" and other digitally mediated learning spaces shows that transformation is not limited to classrooms but includes broader institutional ecosystems. (Mukhibat, 2019) Digital literacy becomes a strategic issue because it shapes how teachers, students, and administrators interpret information, navigate platforms, and practice responsible online behavior. (Fadli, 2021) However, expansion of platforms does not automatically improve management quality; it can also amplify inequalities when connectivity, devices, and digital competencies vary across regions and communities. (UNESCO, 2023) Consequently, Islamic education management needs a framework that connects technological choices with inclusive service design and capacity building. (Redecker, 2017)

A practical entry point for governance-based digitalization is system integration and data management. Education Management Information Systems (EMIS) are designed to support planning, monitoring, and service delivery through structured, reliable, and interoperable data flows. (UNESCO, 2018) In Indonesia, operational data practices such as Dapodik illustrate how standardized data can strengthen planning and accountability, yet they also demand consistent data quality and institutional discipline. (Pusdatin Kemendikbudristek, 2024) For madrasah governance, tools like e-RKAM and its related planning–budgeting workflow show how digital systems can connect resource allocation with institutional priorities when implemented with clear procedures. (Kementerian Agama Republik Indonesia, 2020) Likewise, technical guidance for e-learning content emphasizes instructional design and content quality as non-negotiable elements of meaningful digital learning. (Kementerian Agama Republik Indonesia, 2021) Evidence from the EDM–e-RKAM context indicates that efficiency gains are strongest when governance, workflow clarity, and monitoring mechanisms are aligned. (Raharjo et al., 2024)

Nevertheless, the move toward data-driven management raises ethical and legal responsibilities that cannot be treated as secondary. Data protection compliance is essential, especially in environments where student data, financial records, and learning analytics

intersect across platforms. (Republik Indonesia, 2022) Security governance must translate into concrete controls—role-based access, encryption, audit logs, incident response, and continuity planning—so that digitalization does not increase institutional vulnerability. (National Institute of Standards & Technology, 2020) When AI and analytics are introduced, institutions must also consider transparency, accountability, and human oversight to prevent harmful profiling or biased decision-making. (Organisation for Economic Co-operation & Development, 2019) Global ethical guidance reinforces that AI in education should be designed to protect human dignity and rights, and technology should be evaluated in terms of who benefits and under what terms. (UNESCO, 2021; UNESCO, 2023)

This article responds to these challenges by arguing that Islamic education institutions need to evolve from digital administration to value-based governance. The value basis is not symbolic; it must be operationalized into governance rules, roles, and measurable practices that keep digital systems aligned with educational purpose and moral responsibility. (Misno, 2021) In the Indonesian Islamic tradition, Aswaja principles can function as an ethical compass for moderation, balance, fairness, and social harmony in institutional decision-making. (PWN U Jawa Timur, 2015) At the same time, Islamic ethical engagement with AI suggests the need for pluralist ethical benchmarking that can translate moral commitments into practical governance criteria. (Elmahjub, 2023) Therefore, the objective of this article is to propose a conceptual governance framework and implementation logic for digitalization in Islamic education management in the Industry 5.0 era, emphasizing integration, data governance, human capacity, and ethical safeguards. (European Commission Community of Practice 5.0, 2024)

2. METHOD

This article employs a qualitative, conceptual approach grounded in library-based research. The purpose is not to test a hypothesis statistically, but to build an explanatory framework that clarifies how Islamic education institutions can move from "digital administration" to value-based governance within the Industry 5.0 context. The analysis treats digitalization as a socio-technical phenomenon, meaning that technologies, organizational processes, leadership decisions, and institutional values are examined as an interconnected system. Accordingly, the method prioritizes interpretive understanding and structured synthesis of arguments, concepts, and implementation logic relevant to management digitalization in Islamic education settings.

The primary data source is the Digitalization of Islamic Education Management book provided by the author, including its conceptual discussions, implementation roadmap, and

internal references to policy and best-practice cases. Data were collected using document analysis, conducted through close reading and systematic extraction of key statements related to governance structures, system integration (EMIS–LMS–ERP), data management, human capacity development, risk mitigation, and ethics. The extracted content was organized into analytic memos and then grouped into thematic clusters. Each cluster was refined to identify recurring assumptions, causal links, and recommended actions that can be translated into an article-level framework suitable for journal publication.

Data analysis followed three steps: coding, synthesis, and model articulation. First, open coding was applied to label recurring themes and practical components (e.g., governance roles, interoperability, offline-first strategy, security controls, and KPI layers). Second, axial synthesis was used to connect codes into higher-level dimensions that represent a coherent governance pathway. Third, the resulting framework was articulated into structured arguments and implementation recommendations, ensuring consistency between problems, risks, and proposed strategies. To enhance trustworthiness, the analysis maintained an audit trail of codes and theme decisions, checked internal coherence across sections, and ensured that all claims presented in the article remain traceable to the book's content and its internal reference base.

3. FINDING & DISCUSSION

Reframing Digitalization in Islamic Education Management (Industry 5.0 Lens)

Digitalization in Islamic education management is often initiated as a practical response to administrative overload—digitizing attendance, reporting, budgeting, or learning delivery. Yet the book's core finding is that this "tool-first" approach frequently produces fragmented systems, duplicated work, and weak accountability when it is not guided by governance and process redesign. Digitalization should therefore be reframed as a socio-technical transformation: institutions redesign workflows, clarify decision rights, and build an integrated data architecture so that technology becomes an enabler of service quality and educational purpose. The Industry 5.0 perspective strengthens this reframing by insisting that transformation must remain human-centered, not merely efficient, and must be evaluated by how well it supports dignity, inclusion, and institutional resilience. (European Commission, 2024)

From this lens, "human-centered" is not a slogan but an operational commitment. The book emphasizes that Islamic education institutions must protect learners and educators from harmful side effects of digital expansion—such as increased workload, confusion from multiple platforms, and unequal access across regions. A practical implication is the need for

design principles that acknowledge real constraints, including offline-first delivery, staged synchronization, and clear minimum service standards for low-connectivity contexts. This direction resonates with the broader idea that digital transformation should serve social benefit and reduce structural inequality rather than amplify it. (Cabinet Office, Government of Japan, 2021; UNESCO, 2021)

The discussion also highlights that the shift from digital administration to transformative digitalization depends on how institutions manage data and accountability. When data becomes the basis for planning, monitoring, and decision-making, the institution must be prepared for higher expectations regarding quality, security, and ethics. The book connects this to practical governance controls—role-based access, audit logs, incident response routines, and compliance orientation—so that data-driven management strengthens trust instead of creating new risks. This is particularly relevant when institutions begin to explore learning analytics or AI-assisted services, which must be bounded by transparency, human oversight, and ethical safeguards to avoid biased profiling or opaque decisions. (OECD, 2019; NIST, 2020; UNESCO, 2021)

Table 1. From Digital Administration to Value-Based Governance.

Dimension	Digital Administration (Narrow)	Value-Based Governance (Transformative)
Primary aim	Speeding up routines	Strengthening purpose, trust, and service quality
Main focus	Tools and digitized forms	Workflow redesign + roles + policy + culture
Data orientation	Data as reporting artifact	Data as governed asset (quality, access, audit)
System design	Standalone apps, silos	Integrated EMIS–LMS–ERP, interoperability
Equity strategy	Assumed connectivity	Offline-first, staged sync, inclusive access
Risk approach	Reactive troubleshooting	Security/privacy controls and ethical guardrails
Success indicator	"System installed/used"	Use–Quality–Impact measurement logic

Value-Based Governance as the Core Operating System

A central finding from the book is that many digital initiatives fail not because the technology is weak, but because governance is unclear. When decision rights, accountability lines, and operating standards are not defined, institutions tend to adopt multiple tools that overlap in function, fragment data, and increase workload. In practice, this appears as repeated reporting, inconsistent records across units, and confusion about "which system is official." This is why the transition from digital administration to digital transformation must begin with

governance: rules that define who decides, who owns data, how risks are controlled, and how performance is measured. The Industry 5.0 framing strengthens this argument by positioning technology as an enabler for human-centered outcomes, which requires institutions to protect users from overload and ensure systems serve educational purpose rather than bureaucracy. (European Commission, 2024)

The book also shows that value-based governance becomes meaningful only when values are translated into operational mechanisms. In Islamic education institutions, Aswaja principles—tawassuth, tawazun, i'tidal, and tasamuh—can function as a practical compass for institutional decision-making in the digital space. These values help leaders avoid extreme choices (either blind techno-enthusiasm or total rejection), balance innovation with tradition, enforce fairness in service design, and protect participation for diverse user groups. (Hadi, n.d.) At the same time, maqāṣid-oriented reasoning provides boundary conditions: digital systems must safeguard dignity, intellect, wealth, and honor by preventing harm such as data leakage, stigma, and unjust profiling. (Hadi, n.d.) This approach aligns with the book's emphasis that ethics and compliance should be embedded from the start, not added after incidents occur. (Hadi, n.d.)

From a governance perspective, the transformation pathway requires a minimum set of institutional "controls" that can be audited: policy, structure, process, and measurement. Policy clarifies data classification, consent, retention, and acceptable use. Structure assigns roles such as system owner, data steward, and security focal point. Process defines workflow standards, integration procedures, and incident response routines. Measurement connects governance to performance indicators so leaders can distinguish between installation success and real service improvement. The book highlights that such controls become even more critical when institutions adopt learning analytics or AI-assisted services, where transparency, accountability, and human oversight must be enforced to avoid harmful outcomes. (OECD, 2019; UNESCO, 2021)

Table 2. Translating Aswaja Values into Digital Governance Controls.

Aswaja Value	Governance Meaning	Practical Control Examples
Tawassuth (Moderation)	Avoid extremes in technology adoption	phased rollout, minimum viable system, change-readiness gate
Tawazun (Balance)	Balance efficiency with educational meaning	workload audits, digital well-being checks, role clarity to prevent overload
I'tidal (Justice)	Ensure fairness in access and decision-making	offline-first service design, equity monitoring, bias checks for analytics
Tasamuh (Inclusivity)	Enable participation and reduce exclusion	accessible UI, user training/mentoring, feedback and grievance channel

Integrated Architecture: EMIS–ERP–LMS and Interoperability

Another key finding is that integration determines whether data becomes a strategic asset or remains isolated in silos. The book repeatedly stresses that EMIS should not stand alone as a reporting tool, but should connect with ERP functions (finance, HR, assets) and LMS activities (content, assessment, engagement) so leadership can see a unified operational picture. (Hadi, n.d.) Without integration, institutions typically face duplicated inputs and inconsistent records that weaken planning and reduce trust in dashboards. The Indonesian experience with standardized education data practices illustrates both the benefit and the discipline required: data becomes powerful when it is consistent, but it can also become burdensome when workflows are unclear and quality is not governed. (Hadi, n.d.)

In practical terms, interoperability should be treated as a governance decision, not merely an IT preference. The book highlights risks such as vendor lock-in and fragmented procurement, which can trap institutions into expensive, inflexible systems. (Hadi, n.d.) A more resilient approach is staged integration: start by defining a "single source of truth" for key datasets, then connect systems through clear interfaces and data standards. This approach also supports accountability because integration reduces manual workarounds that often become invisible sources of error. When systems are connected, performance monitoring becomes realistic: institutions can measure service speed, quality, and impact using consistent data flows rather than anecdotal reporting. (Hadi, n.d.)

Finally, the book emphasizes that integration must be paired with security and privacy discipline, because connected systems expand the attack surface and increase the consequences of misuse. Governance therefore needs basic controls such as role-based access, audit logs, and incident response routines to ensure that interoperability does not compromise trust. (Hadi, n.d.) This is consistent with compliance orientation in data protection and with security baselines referenced in the book's discussion of control frameworks. (Republik Indonesia, 2022; NIST, 2020) In other words, integration is not the finish line; it is the infrastructure that enables a human-centered, accountable, and measurable transformation. (European Commission, 2024)

Human Capacity and Change Management in Islamic Education Institutions

A major finding is that digitalization success is determined less by the sophistication of platforms and more by the institution's human readiness. When teachers, staff, and leaders do not share a clear "why" and "how," technology tends to add tasks instead of removing them—creating platform fatigue, parallel manual reporting, and inconsistent data practices. The book emphasizes that transformation must be accompanied by a staged capability pathway, so users

can move from basic operational literacy toward data-informed decision making and governance awareness. This progression also reduces dependence on a small group of "operators" who carry institutional risk when knowledge is concentrated in a few individuals. Capacity building, therefore, should be designed as an institutional system rather than an occasional training event. (Redecker, 2017)

Change management is also presented as a social process rooted in communication, mentoring, and shared practice. The book suggests blending synchronous–asynchronous training with peer mentoring, communities of practice, and contextual project assignments, so learning is continuously reinforced in daily work. Practical guidance can be anchored to national operational standards that users already recognize, such as the Dapodik reference for operational data elements and the Kemenag e-learning guidance for content quality and learning delivery. (Pusdatin, 2024; Kemenag, 2021) This approach makes training immediately relevant: teachers learn to build digital lesson evidence, operators learn to maintain data quality, and leaders learn to interpret dashboards and enforce workflow discipline without creating new burdens.

The Industry 5.0 lens strengthens this design by insisting that transformation is human-centered, meaning it must protect well-being while improving service. Digitalization can unintentionally increase workload if institutions adopt too many tools without redesigning roles, simplifying workflows, and establishing a clear "single source of truth." In practice, the book recommends workload audits, role clarity, and micro-credentials as structured recognition so competencies become visible and sustainable over time. By treating professional learning as continuous and evidence-based, institutions can reduce resistance, build legitimacy, and ensure that digital routines are perceived as helpful rather than coercive. (European Commission, 2024)

Data Governance, Privacy, and Security Guardrails (Compliance-Ready)

The book's findings show that when institutions become data-driven, governance responsibilities rise sharply. Management digitalization expands the collection and circulation of sensitive data—student identities, learning records, financial information, and staff documentation—across devices and platforms. Without data governance, institutions often drift into informal practices such as sending sensitive files through chat applications or storing data on personal devices, which increases exposure and weakens accountability. Data governance is therefore framed as the institutional "rulebook" for classification, access, retention, and acceptable use, including clear ownership (who is responsible) and auditability

(how decisions can be traced). This is not merely technical; it is part of institutional amanah to protect dignity and trust in educational services. (Republic of Indonesia, 2022)

A compliance-ready posture begins by translating legal requirements into practical daily controls. The book highlights how Indonesia's Personal Data Protection Law implies concrete steps: defining lawful bases for processing, appointing responsible roles (including DPO functions), conducting DPIA for high-risk projects, and preparing breach notification routines. (Republic of Indonesia, 2022) In parallel, security baselines must be operationalized into feasible controls such as role-based access, encryption for sensitive datasets, audit logs, and incident response playbooks. The text explicitly points to control-based thinking—such as NIST SP 800-53—as a reference to ensure safeguards are not ad hoc but structured and reviewable. (NIST, 2020)

Importantly, the book treats privacy-by-design and security-by-default as governance habits rather than one-time compliance. Institutions are encouraged to adopt routine risk reviews, conduct incident response simulations, and establish escalation paths so support does not stall when systems fail. This matters because interoperability and cloud adoption increase the attack surface: a connected ecosystem can amplify both benefits and harms. By embedding controls into workflows—who can access what, how changes are logged, and how incidents are handled—digitalization supports accountability instead of creating new vulnerability. In value-based governance terms, protection becomes a measurable institutional practice, not only a moral statement. (NIST, 2020; Republic of Indonesia, 2022)

Ethical Use of Analytics and AI for Learning and Services

The book finds that learning analytics and AI can be beneficial when they are positioned as decision support rather than automated judgment. By integrating attendance, assessment records, LMS interactions, and mentoring notes, institutions can detect early risk, personalize support, and allocate resources more precisely. However, the same capabilities can generate stigma, bias, and opacity if predictive outputs are treated as final labels or if stakeholders cannot understand how conclusions are produced. For this reason, the book emphasizes guardrails for human oversight, explainability, and rights-respecting design, aligning with global ethical guidance that prioritizes dignity and accountability in AI deployment. (UNESCO, 2021; OECD, 2019)

A practical outcome of this discussion is the requirement for "human-in-the-loop" governance. The book suggests that institutions should begin with low-risk use cases—summarization, formative quizzes, content tagging, and teacher-supervised feedback—before expanding to higher-stakes analytics such as early-warning systems. For every AI-enabled

service, governance should include simplified model documentation (model cards), clarification of data sources, stated limitations, and an appeal mechanism when outputs affect learners. This makes ethics operational: decisions remain accountable to educators, and learners are not reduced to algorithmic profiles. Such mechanisms reflect transparency and accountability principles articulated in widely used AI ethics references. (OECD, 2019; UNESCO, 2021)

The Islamic ethical contribution is articulated through maqāṣid reasoning and pluralist ethical benchmarking. The book cites Elmahjub's argument that ethical evaluation should recognize moral diversity and contextual needs, enabling Islamic education institutions to define boundaries that protect learners from harm while maximizing real benefit. This framework supports concrete decisions, such as restricting behavioral tracking that is not educationally necessary, avoiding profiling that may stigmatize, and requiring ethical impact assessment for high-risk analytics. In this way, value-based governance is not abstract: it becomes a structured process that checks whether an AI service serves maslahah without violating dignity, justice, and trust. (Elmahjub, 2023)

Financing and Sustainability (TCO and Evidence-Based Budgeting Logic)

The book emphasizes that many digitalization efforts collapse after initial rollout because sustainability is not planned as a governance issue. Institutions often budget for procurement or licensing but underestimate recurring costs: maintenance, security updates, helpdesk capacity, integration work, and continuous training cycles. When these costs surface later, systems degrade, staff return to manual workarounds, and leaders lose trust in digital dashboards. The book therefore proposes a Total Cost of Ownership (TCO) mindset that connects spending to service improvement and long-term maintainability rather than to short-term "technology presence." TCO also helps institutions choose durable devices, plan realistic refresh cycles, and avoid hidden costs in cloud subscriptions and data egress. (Pusdatin, 2024)

A key Indonesian practice discussed is the orchestration of planning–budgeting–reporting through EDM–e-RKAM, which strengthens transparency and evidence-based funding in madrasah contexts. The book frames this as more than administrative compliance: budgeting should be linked to measurable improvements in learning service quality and equity outcomes. When financing is aligned with governance, institutions can justify investments in connectivity, training, and integration based on documented needs and performance indicators, not personal preference or vendor influence. This approach also reduces the risk of "digital inequality" where only well-resourced units can sustain platforms. Digitalization becomes more just when funding is coordinated with evidence and service priorities. (Kemenag, n.d.)

Sustainability is also connected to procurement governance and vendor risk. The book warns that fragmented procurement can create vendor lock-in and brittle systems, forcing institutions into expensive renewals and limiting interoperability. A governance-based approach recommends staged implementation, clear interoperability requirements, and exit plans as part of vendor contracts, so institutions remain in control of their data and workflow evolution. This logic supports resilience: even if leadership changes or budgets tighten, the institution can continue improving the system incrementally because financing, infrastructure, and human capability development are planned as a multi-year cycle tied to governance and measurable outcomes. (European Commission, 2024)

Measurement System: KPI Layers (Use–Quality–Impact)

A core finding is that digitalization is often mismeasured. Institutions may celebrate installation, user registration, or log activity, yet these metrics do not demonstrate better service quality or educational benefit. The book proposes a layered KPI system—Use, Quality, and Impact—so leaders can evaluate transformation honestly and consistently. "Use" captures adoption and discipline (e.g., how many workflows are actually executed through the system). "Quality" captures performance (e.g., response time, data accuracy, reduced duplication). "Impact" captures whether governance and service improvements translate into better learning support, equity, and institutional resilience. This logic prevents superficial reporting because it forces leaders to connect digital activity to meaningful outcomes rather than to symbolic modernization. (Pusdatin, 2024)

The KPI logic is also designed to support governance maturity. When institutions track Use metrics, they can identify where adoption stalls and whether the problem is training, workflow design, or tool overload. When they track Quality metrics, they can detect whether integration is functioning (e.g., sync rates) and whether data governance is working (e.g., validity rules). When they track Impact, they can evaluate whether analytics and service improvement reduce student risk, improve feedback timeliness, and narrow access gaps. The book operationalizes this logic through a practical indicator table (see Table 3.2), which connects metrics to sources, frequency, and responsible roles so measurement becomes routine rather than episodic. (Kemenag, n.d.)

Finally, the book argues that KPI systems must include ethical and compliance indicators once analytics and AI are introduced. Measuring only academic or operational outcomes is insufficient when decisions are increasingly data-driven. Institutions should therefore monitor DPIA coverage, incident response speed, documentation availability (model cards), and fairness safeguards as part of performance governance. This aligns with the idea

that trustworthy AI and responsible digitalization require continuous oversight, not one-time approval. By embedding ethical indicators into KPI dashboards, institutions make value-based governance visible and auditable, ensuring that transformation remains human-centered and aligned with institutional purpose in the Industry 5.0 era. (UNESCO, 2021; OECD, 2019)

4. CONCLUSION

The results of this synthesis underline that digitalizing Islamic education management in the Industry 5.0 era should not be limited to converting administrative routines into digital formats. The most meaningful transition is moving from tool-centered adoption toward value-based governance, where technology is intentionally aligned with educational aims, institutional trust, and human well-being. When governance is explicit—covering decision rights, workflow standards, data ownership, and performance measurement—digital systems function as a coherent ecosystem rather than scattered applications. Under this approach, digitalization can strengthen accountability and service quality while reducing platform overload, minimizing data misuse, and addressing unequal access.

The synthesis also indicates that sustainable transformation depends on the alignment of five interconnected elements: integrated architecture (EMIS–ERP–LMS), human capacity and cultural readiness, compliance-oriented data governance, ethical guardrails for analytics and AI, and financing that anticipates total cost of ownership. If any element is neglected, predictable problems emerge—fragmented data, duplicated reporting, weak security practices, vendor dependency, and declining user trust. In contrast, institutions that treat digitalization as socio-technical change are better positioned to build resilience, improve responsiveness, reduce duplication, and strengthen evidence-based planning. The KPI logic of Use–Quality–Impact offers a practical way to distinguish symbolic modernization from measurable improvement in services and outcomes.

On this basis, a phased and governance-first pathway is recommended. Initial steps should prioritize workflow simplification, the definition of a single source of truth for key datasets, and the establishment of minimum controls for privacy, security, and accountability. In parallel, capacity development needs to be structured as a progressive pathway supported by mentoring and practice-based evidence, so users gain ownership rather than experiencing compliance fatigue. After operational stability is achieved, analytics and AI may be introduced through low-risk use cases first, supported by human oversight, transparent documentation, and appeal mechanisms to prevent harm. Long-term sustainability should be secured through multi-year budgeting, procurement clauses that protect interoperability and reduce lock-in, and

continuous measurement so digitalization remains aligned with institutional values, trustworthy, and educationally meaningful.

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