

Research Article

Analysis and Evaluation of the Digitalization Policy for Islamic Education through Madrasah Digital

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Abstract

This study analyzes and evaluates the digitalization policy of Islamic education through the Madrasah Digital program by examining the relationship among data governance, administrative services, learning, human-resource capacity, equitable access, and digital ethics. It applies qualitative policy document analysis to regulations, guidelines, official platforms of the Ministry of Religious Affairs, and empirical studies published between 2018 and 2026. The data were coded using six criteria: policy coherence, effectiveness, pedagogical relevance, equity, data governance, and sustainability. The findings show that madrasah digitalization has developed through EMIS 4.0, e-RKAM/EDM, the Madrasah Digital Report Card, Pusaka SuperApps, and diverse learning innovations. The policy's main

strengths lie in data standardization, reporting efficiency, and broader service coverage. However, the policy remains fragmented, is stronger in administration than in instructional transformation, lacks tiered readiness standards, and has not fully addressed infrastructure gaps and uneven teacher competence. The study recommends an integrated policy architecture, readiness mapping, needs-based capacity development, system interoperability, data protection, and evaluation centered on learning outcomes and Islamic values.

Keywords: Islamic Education Digitalization, Madrasah Digital, Policy Evaluation, Digital Transformation.

INTRODUCTION

Digital transformation has changed how educational institutions plan programs, manage data, organize learning, assess achievement, and provide public services. In madrasahs, this shift is more than replacing paper with applications. It reshapes national policy, institutional capacity, teachers' work, students' experiences, and the purposes of Islamic education. Madrasah Digital should therefore be understood as an ecosystem linking technology with educational goals, not merely as device procurement or additional reporting.

Madrasahs have a distinctive institutional character because they combine general education, Islamic Religious Education, Arabic, character formation, and a religious school culture. Their digitalization must therefore meet two demands at once. Madrasahs need effective, transparent, and data-informed public services, while technology must also be used with due attention to adab, trust, student protection, the reliability of information, and learning purposes aligned with Islamic values. A sustainable Islamic Education 4.0 agenda requires technological adaptation to be accompanied by a clear ethical and educational framework (As'ad, 2021).

At the national level, madrasah digitalization has advanced through several channels. EMIS 4.0 supports Islamic education data and policy decisions; e-RKAM and Madrasah Self-Evaluation support budgeting and quality improvement; the Madrasah Digital Report Card manages learning results; and Pusaka SuperApps integrates Ministry services. Madrasahs also use learning platforms, videoconferencing, social media, and artificial intelligence. Madrasah Digital has consequently become an umbrella for data, administration, services, and learning.

The development of EMIS 4.0 underscores the importance of valid, reliable data that can be used across Islamic education services. The Ministry of Religious Affairs positions the platform both as a policy foundation and as an integration point for Islamic education applications (Ministry of Religious Affairs of the Republic of Indonesia, 2024a). This direction is consistent with the One Data Indonesia framework, which requires common data standards, metadata, interoperability, and reference codes. Conceptually, an integrated data system can reduce repeated entry, accelerate verification, and improve the accuracy of program targeting.

The digitalization of assessment has also expanded considerably. In January 2025, the Ministry of Religious Affairs reported that the Madrasah Digital Report Card had been used by more than 55,000 madrasahs at the MI, MTs, and MA levels (Ministry of Religious Affairs of the Republic of Indonesia, 2025a). This scale is significant because it demonstrates the policy's capacity to promote nationwide adoption. Nevertheless, a large number of users does not by itself prove improvement

in assessment quality, feedback, or instructional decision-making. Policy evaluation must distinguish administrative outputs from pedagogical effects.

The leadership of the madrasah principal is central to digital change. A case study in an Islamic elementary school showed that leaders must build technological awareness, formulate strategy, appoint capable personnel, reshape organizational culture, encourage innovation, and monitor implementation (Sholeh et al., 2022). National policy becomes meaningful only when institutional leaders translate broad directives into coherent routines and provide teachers and staff with practical support.

Teacher digital competence should not be reduced to the ability to operate devices. It includes selecting technology in relation to learning goals, creating content, managing interaction, conducting assessment, protecting data, and evaluating the consequences of technology use. Research on digital competence in educational settings emphasizes the need to connect technical knowledge with pedagogical, organizational, and professional judgment (Pettersson, 2018).

A further concern is the gap between administrative digitalization and pedagogical transformation. Administrative processes are easier to standardize because forms, data fields, and reporting schedules can be centrally defined. Learning is more complex because it varies by subject, learner age, local setting, teacher competence, and madrasah culture. Research on digital learning in schools shows that technology availability is only an initial condition; teachers' ability to design meaningful learning activities is more decisive for the quality of students' experiences (Sailer et al., 2021).

Madrasah Digital also faces the risk of fragmented systems. Each application may serve a legitimate function, yet users can be required to enter similar data repeatedly, manage multiple accounts, or work with inconsistent standards. Pusaka SuperApps, launched in 2022, was intended to simplify access and reduce the number of separate Ministry applications (Ministry of Religious Affairs of the Republic of Indonesia, 2022). This integration agenda is appropriate, but it requires a clear data architecture, identity governance, allocation of authority, and data-protection mechanisms.

In Islamic education, the ethical dimension extends beyond technical security compliance. Students need guidance in verifying information, respecting copyright, avoiding bullying, protecting the dignity of others, and using artificial intelligence responsibly. The challenges of Islamic Religious Education in the digital era demonstrate that technological competence must be integrated with moral responsibility and critical religious literacy (Zubairi & Nurdin, 2022). Madrasah Digital should therefore develop digital capability and digital adab together.

Previous studies often focus on one application, institution, leadership aspect, or instructional medium. Although useful for understanding local practice, they do not fully explain how policy layers interact. This study treats madrasah digitalization as a policy architecture covering data, administration, services, learning, human resources, equity, and ethics, enabling evaluation of policy consistency, system functions, and links between program outputs and educational outcomes.

Against this background, the study addresses three questions. First, how is the digitalization policy architecture of Islamic education through Madrasah Digital

shaped by existing regulations and platforms? Second, to what extent does the policy meet the criteria of coherence, effectiveness, pedagogical relevance, equity, data governance, and sustainability? Third, what improvements are required so that digitalization moves beyond administration and supports high-quality learning, equitable services, and digital practices consistent with Islamic values?

RESEARCH METHODS

This study uses a qualitative approach with a policy document analysis design. Document analysis was selected because the research objects consist of regulations, guidelines, service designs, official government statements, and studies that record the implementation of madrasah digitalization. Documents were treated as data sources whose context, purposes, actors, policy language, implementation instruments, and relationships with other documents required systematic examination. This approach is suitable for assessing how policy is designed, translated into programs, and interpreted through available implementation evidence (Bowen, 2009).

The primary corpus included Law Number 20 of 2003, Presidential Regulation Number 39 of 2019 on One Data Indonesia, madrasah curriculum guidelines, and official materials on EMIS 4.0, e-RKAM/EDM, the Madrasah Digital Report Card, Pusaka SuperApps, and related Ministry initiatives. Secondary sources were journal articles published from 2018 to 2026 on digital leadership, teacher competence, educational technology, madrasah digitalization, Islamic Education 4.0, and implementation gaps. Sources were selected for relevance, institutional authority, methodological clarity, and recency.

The analysis followed five stages. Documents were first classified by function: regulation, data, budgeting, assessment, service, learning, or capacity development. Open reading then identified goals, target groups, instruments, indicators, actors, and assumptions. Deductive coding applied six criteria: coherence, effectiveness, pedagogical relevance, equity, data governance, and sustainability. Inductive coding captured recurring concerns, including fragmented applications, repeated data entry, teacher readiness, technical support, and administrative dominance. Findings and recommendations were then organized in analytical matrices.

Coherence was assessed through alignment of objectives, clarity of responsibilities, and relationships among data, planning, assessment, and learning. Effectiveness concerned speed, accuracy, usability, and decision-making. Pedagogical relevance covered learning goals, interaction, assessment, differentiation, and Islamic values. Equity included infrastructure, cost, location, institutional status, disability needs, and competence. Data governance covered interoperability, quality, security, privacy, and accountability, while sustainability covered financing, maintenance, capacity development, technical support, and use of evaluation results.

Analytical credibility was strengthened through source triangulation. Policy statements were compared with system documentation and empirical research. Claims of benefit were not accepted merely because they appeared in promotional materials; they were examined against evidence of use, constraints, and reported implications. Coding was documented in an audit trail containing the source, a

concise extract, category, interpretation, and rationale for each finding. Thematic analysis was used to integrate patterns across different types of documents (Braun & Clarke, 2021).

The study did not include interviews with administrators, principals, operators, teachers, students, or parents, and it lacked access to usage logs, disruption records, operating costs, and individual learning outcomes. It therefore evaluates policy design and available implementation evidence rather than conducting a technical audit of every platform. The recommendations should be tested through field studies in public and private madrasahs with different levels of digital access.

RESULTS AND DISCUSSION

The Policy Architecture of Madrasah Digital

Madrasah Digital has not yet been established through one comprehensive regulation defining its concepts, goals, components, readiness standards, indicators, financing, and evaluation. Instead, policy has developed incrementally through programs and platforms with different functions. This has enabled rapid innovation but produced a dispersed architecture. In practice, Madrasah Digital may refer to EMIS use, digital report cards, device-supported classrooms, learning platforms, or an integration of these functions.

The first layer is institutional data and identity through EMIS 4.0. This layer is foundational because data on students, teachers, education personnel, and institutions are required for planning assistance, verification, reporting, and program development. EMIS 4.0 has also been expanded to replace earlier systems and integrate services for madrasah teachers and education personnel (Ministry of Religious Affairs of the Republic of Indonesia, 2025b). From a policy perspective, this is a sound direction because digitalization without a reliable master-data source will generate duplication, inconsistent identities, and inaccurate decisions.

The second layer is planning and quality governance through e-RKAM and the Madrasah Self-Evaluation system. These instruments connect problem identification with work plans and budgets. Ideally, evidence from self-evaluation is used to determine priorities, after which funding is directed toward needs that most strongly affect quality. This shift can improve accountability because decisions are no longer based only on annual habits. Its value, however, still depends on honest reporting, the ability to interpret evidence, and follow-up by supervisors.

The third layer is assessment through the Madrasah Digital Report Card. The system simplifies score management, descriptions of achievement, report-card production, and reporting. A national system can also improve consistency of format. The 2024 version was introduced to improve usability and respond to madrasah needs (Ministry of Religious Affairs of the Republic of Indonesia, 2024b). Yet a report-card application records teachers' assessment decisions; if instruments, rubrics, and feedback are weak, digitalization merely accelerates record keeping without improving the quality of assessment.

The fourth layer is service integration through Pusaka SuperApps. The superapp concept responds to the problem of numerous separate applications that users find difficult to remember and navigate. Within a One Data framework, a single

service gateway can reduce confusion and improve access. Interface integration, however, is not the same as data integration. Users may enter through one application while still encountering different databases, accounts, and verification procedures. Success should therefore be measured through reduced repeated entry, consistent identities, service-completion time, system stability, and resolution of complaints.

The fifth layer is digital learning. This layer is the most diverse because no single platform serves every madrasah. Institutions use Microsoft 365, Google Workspace, Moodle, mobile applications, social media, instructional videos, and interactive classroom devices. Diversity creates room for adaptation but also complicates common quality standards and support. Experience with Google Classroom in Arabic instruction shows that a platform can assist material distribution and interaction, although its effectiveness still depends on pedagogical design and user readiness (Kusuma et al., 2019).

The findings place policy coherence at a moderate level. The general goals of digitalization, integrated services, and data-informed decision-making are broadly consistent. Operational relationships among layers, exchange standards, and educational outcome indicators are not yet sufficiently explicit. The policy needs an architecture document that identifies the authoritative source for each data element, data flows, process owners, access rights, updating schedules, correction procedures, and the use of information for quality improvement.

Administrative Effectiveness and the Limits of Transformation

The clearest strength of madrasah digitalization is administrative efficiency. Digital systems accelerate information retrieval, reduce physical documents, simplify aggregation, and create audit trails. Central databases support data updates, report-card systems standardize formats, and budgeting platforms connect programs with expenditure. These benefits matter because excessive administrative work reduces the time principals and teachers can devote to academic responsibilities.

Effectiveness should not be measured only by the number of accounts, the number of institutions completing a form, or the percentage of reports submitted. Such indicators reflect adoption and compliance rather than final benefit. Policy should examine whether working time is reduced, data errors decline, assistance is better targeted, school decisions are faster, assessment improves, and learning outcomes become stronger. Improvement-oriented evaluation requires a clear relationship among context, input, process, and product (Stufflebeam & Zhang, 2017).

User acceptance is an essential component of effectiveness. Slow systems, frequent changes without adequate guidance, and repeated data entry can erode trust. Perceived usefulness and ease of use influence teachers' acceptance of educational technology (Scherer et al., 2019). Platform development should therefore include iterative testing with operators, teachers, principals, and supervisors from varied regions. Version changes should be accompanied by concise release notes, short tutorials, transition periods, and responsive support channels.

Administrative digitalization can open the way to transformation, but it does not automatically change organizational culture. Principals need to use dashboards to identify problems rather than merely confirm that every field is complete. Supervisors

should discuss evidence as part of professional guidance instead of treating it only as a compliance checklist. Teachers should use assessment results to plan follow-up instruction. The contribution of madrasah principal leadership to teachers' work in a digital environment confirms that organizational use of technology depends on purposeful leadership (Abdullah & Ratnawati, 2023).

Effectiveness also depends on system stability and continuity. Madrasahs organize their work around reporting deadlines, so service interruptions during grading, data updating, or program disbursement can create substantial pressure. Policy should define service-level expectations, peak-load capacity, recovery procedures, and incident communication. Informal messaging groups are not sufficient. Users need a ticketing system that records the issue, priority, response time, resolution, and recurring patterns for product improvement.

Pedagogical Relevance and Islamic Educational Values

The evaluation shows that Madrasah Digital is more mature in governance than in pedagogy. Official documents and platforms strongly support data, budgeting, services, and reporting, while instructional transformation depends heavily on local initiatives, teachers, partners, and platform choices. This flexibility can encourage innovation but also produce wide variation in quality. Studies of digital pesantren similarly show that technological revitalization requires institutional adaptation and cannot be reduced to installing platforms (Nikmatullah et al., 2023).

Problems arise when technology use is treated as synonymous with instructional innovation. Displaying slides through a projector does not automatically make students active. Sending a PDF through a messaging group does not guarantee understanding, and a digital multiple-choice quiz can still encourage shallow memorization. Standards for Madrasah Digital should assess the quality of student activity: whether learners analyze, discuss, solve problems, create products, receive feedback, and reflect on values. Meaningful digital learning depends on instructional design rather than device availability alone (Sailer et al., 2021).

Madrasah Digital therefore requires a framework for digital adab. At a minimum, it should address intention and purpose, tabayyun, respect for teachers and peers, privacy, attribution of intellectual work, communication ethics, control of screen time, and responsibility for digital footprints. Islamic Education 4.0 should connect digital literacy with maqasid al-shariah and social awareness (Velly et al., 2025). Ethics should not be presented as an additional topic; it must be enacted through assignments, assessment, school rules, and teachers' example.

Artificial intelligence creates a need for more detailed policy. AI can assist with question variation, simplification of reading, initial feedback, translation, and personalization. It can also generate incorrect information, obscure authorship, increase dependence, and reproduce bias. A model of Islamic Religious Education transformation in the AI era indicates that madrasahs require an institutional strategy, infrastructure, collaboration, and value-based content filtering (Wedi et al., 2025). Policy should distinguish permitted uses, uses that require disclosure, and prohibited uses.

Pedagogical relevance also requires accessibility. Digital materials must be usable by students with visual, hearing, motor, or specific learning needs. Videos need captions, documents require structure, contrast should be adequate, and assignments should not always depend on expensive devices. A policy that celebrates innovation without universal design can deepen exclusion. Accessibility must therefore be included as a quality criterion rather than treated as an optional feature.

Overall, the pedagogical relevance of the policy is moderate but uneven. The policy creates space for innovation, yet standards for instructional processes, examples of high-quality practice, professional-development support, and indicators of learning impact are not strongly integrated into the national architecture. Policy improvement should place learning at the center, with data and administrative systems functioning in support of that purpose.

Readiness, Equity, and Capacity Development

Madrasah digitalization takes place under highly unequal conditions. A public madrasah in a large city may have reliable connectivity, laboratories, devices, trained operators, and stronger budgets. A small private madrasah or an institution in a remote area may share devices, rely on unstable connections, and depend on individual teachers' personal capacity. Research on the technological transformation of Islamic education in Aceh also illustrates how local conditions shape the depth of adoption (Nasir et al., 2024). Uniform requirements therefore impose unequal burdens: well-prepared institutions benefit more quickly, while less prepared madrasahs risk administrative sanctions or deeper disadvantage.

Policy needs tiered readiness standards. A foundational level may require stable electricity, minimum connectivity, official accounts, a trained operator, backup procedures, and basic security. A developing level may add data integration, learning platforms, teacher training, and technical support. An advanced level may include learning analytics, content production, responsible AI, and collaboration among madrasahs. Tiered standards offer a fairer and more realistic improvement pathway than a binary ready-or-not label.

Teacher capacity development should avoid generic one-off training. Educators need continuous professional learning based on authentic tasks and connected to their subjects. Training should begin with diagnosis, continue through practice and observation, and include feedback and professional communities. Digital competence must be developed within teachers' pedagogical and professional contexts rather than as a detached set of technical skills (Falloon, 2020).

Research in Palembang found variation in teachers' digital literacy even where the general level was relatively adequate, confirming the need for prior mapping (Wigati et al., 2022). Beginning teachers need support with basic operation and security; intermediate users need help with activity design and assessment; and advanced users need content development, analytics, peer leadership, and ethical AI use. These pathways should be connected to professional development and recognition of performance.

Equity also concerns costs borne by families. Digital assignments may require mobile data, smartphones, or laptops. Policy should prevent operational costs from

being shifted to students. Offline options, shared devices, lending arrangements, laboratory access, and low-data design should be available. Studies of online components in blended learning identify access, user competence, and time management as common barriers for students, teachers, and institutions (Rasheed et al., 2020).

Equity remains one of the policy's most important weaknesses. National platforms extend service coverage, but support packages do not always reflect different readiness levels. Equal access does not mean identical treatment; it requires proportionate assistance so that every madrasah can achieve a minimum standard of service.

Data Governance, Interoperability, and Sustainability

Data are a central asset of Madrasah Digital. Their value depends not merely on completeness but also on accuracy, timeliness, connectivity, and responsible use. EMIS 4.0 is intended to serve as the gateway for Islamic education data and to support policy and integrated services (Ministry of Religious Affairs of the Republic of Indonesia, 2024a). To fulfill this role, every element should have a definition, owner, authoritative source, updating frequency, validation rules, and correction procedure.

Data-quality problems often arise when the same information is entered into several systems. Differences in the spelling of names, student identity, teacher status, and institutional codes create mismatches. Interoperability should ensure that shared information is retrieved from an authoritative source instead of retyped. The One Data Indonesia framework provides a basis for standards and interoperability (President of the Republic of Indonesia, 2019). Its application in madrasahs requires a data dictionary, reference codes, secure exchange interfaces, and rules governing access across units.

Student privacy requires particular attention. Children do not always understand the long-term consequences of disclosing identities, photographs, locations, or learning results. Madrasahs need clear consent procedures for publication, rules for messaging groups, account management, and storage of student work. Teachers should recognize that convenient free applications may collect data for third parties. Platform selection must consider security, storage location, content rights, and the ability to delete data.

Security cannot be delegated entirely to a central technical team. Many incidents begin with weak passwords, shared accounts, unlocked devices, deceptive links, or the transfer of data through personal channels. Madrasah Digital should establish minimum practices, including strong authentication, prompt access changes when personnel move, backup, device updating, incident reporting, and recovery exercises. Security training should be simple and repeated because user behavior is as important as technical controls.

Financial sustainability must be calculated from the beginning. Digitalization costs include devices, licenses, connectivity, electricity, maintenance, replacement, support, training, and system development. Free platforms can change their policies or restrict features, while locally developed systems require maintenance teams and documentation. Every program therefore needs a total-cost-of-ownership estimate

and a transition plan. e-RKAM can connect digital needs with budgeting, but priorities should be based on a careful assessment of benefits and risks.

Policy monitoring needs dashboards that balance technical and educational indicators. Technical measures include service availability, response time, synchronization failures, data quality, and ticket resolution. Capacity indicators include competence, use of core features, and the continuity of professional learning communities. Educational indicators include student engagement, feedback quality, variation in learning activity, and progress in achievement. Ethical indicators include privacy incidents, academic-integrity violations, and the quality of information literacy.

The analysis shows that data governance has a strong direction but remains incomplete. A commitment to integration is visible through EMIS and Pusaka, yet standards, identities, data flows, security, and use of results still need to be aligned. Sustainability additionally requires life-cycle financing and continuing capacity development.

Table 1. Evaluation Matrix for the Madrasah Digital Policy

Criterion	Strength	Main gap	Status
Coherence	The direction of data and service integration has been established.	Programs and applications are not yet organized within one operational policy architecture.	Moderate
Effectiveness	Administration, reporting, and service access are faster.	Indicators still emphasize adoption and compliance rather than quality effects.	Moderate-strong
Pedagogical relevance	There is room for media, LMS, assessment, and AI innovation.	Learning-quality standards and examples of effective practice remain uneven.	Moderate
Equity	National services can reach a large number of madrasahs.	Infrastructure, cost, and competence vary considerably.	Weak-moderate
Data governance	EMIS is intended to become the master source and integration base.	Interoperability, privacy, role-based access, and auditing require strengthening.	Moderate
Sustainability	Institutional support and platform development continue.	Life-cycle costs, technical support, and impact evaluation are not yet consistent.	Moderate

A Policy Improvement Model

Policy improvement requires a shift from an application-centered approach to an ecosystem-centered approach. Applications are instruments; the policy goals are quality services, effective learning, equity, and character formation. A Madrasah Digital framework should define five connected layers: data foundations, service governance, learning, human capacity, and ethics and security. Each layer needs minimum standards, indicators, accountable actors, and a source of financing.

The first stage is consolidation of the foundations. The Ministry of Religious Affairs should publish a policy architecture map explaining the function of every platform and the relationships among their data. A single identity, a common data dictionary, exchange standards, and correction mechanisms should be established. At the same time, every madrasah should undergo readiness mapping. Results can be grouped into foundational, developing, and advanced levels, with a different improvement plan for each level.

The second stage is strengthening use. Training should move away from application completion and toward solving real work and instructional problems. Operators need preparation in data quality and user support; principals need strategy, risk, and evidence-informed decision-making; teachers need learning design, assessment, accessibility, and digital adab; and supervisors need the ability to evaluate impact and provide coaching. Professional preparation is most effective when it is connected to authentic practice and sustained support (Howard et al., 2021).

Affirmative support should operate at every stage. Madrasahs with limited access need connectivity, shared devices, offline options, and intensive assistance. Small private madrasahs require financing schemes that recognize the capacity of their foundations. Students from low-income families should not bear hidden digital costs. Services should function on lower-cost devices and use data efficiently. Support must also include maintenance and replacement, not only initial procurement.

Ethics and security should become standards across all layers. Every madrasah needs policies for accounts, passwords, publication of student data, social-media use, academic integrity, and artificial intelligence. Digital adab should be embedded in learning and institutional culture. Central systems should provide incident-response guidance and reporting channels. Security review should be regular but developmental, so institutions are willing to report problems rather than conceal them.

The improvement model requires collaborative governance. Central directorates should establish standards and architecture; provincial and district offices should map readiness and coordinate support; supervisors should provide academic assistance; and madrasahs should develop needs-based transformation plans. Islamic higher-education institutions can contribute research, training, evaluation, and content development. Technology partners must comply with standards for data, security, interoperability, and sustainability.

Strategically, Madrasah Digital can be judged through three straightforward questions. Does technology reduce workload and improve service quality? Does it improve students' learning experiences and outcomes? Are the benefits distributed fairly without compromising Islamic values, privacy, or sustainability? These questions keep digital policy anchored in the purposes of education.

Table 2. Policy Improvement Road Map

Stage	Focus	Priority action	Outcome indicator
1. Foundation	Architecture and readiness	Single identity, data dictionary, readiness mapping, and minimum security standards.	Repeated entry declines; every madrasah has a readiness profile.
2. Use	Competence and support	Role-based training, coaching, help center, and communities of practice.	Tasks are completed faster; use of core features increases.
3. Impact	Learning and equity	Simple analytics, learning-outcome evaluation, affirmative support, and accessibility audits.	Feedback and engagement improve; readiness gaps decline.
4. Sustainability	Financing and improvement	Life-cycle costing, annual evaluation, documentation, and security testing.	Services remain stable; improvements respond to evidence and user needs.

CONCLUSION

Madrasah Digital has established an important foundation for modernizing madrasah governance. EMIS 4.0 strengthens data; e-RKAM and Madrasah Self-

Evaluation connect planning with quality improvement; the Madrasah Digital Report Card standardizes learning reports; Pusaka SuperApps promotes service integration; and local platforms support instructional innovation. Its main strengths are administrative efficiency, wider service coverage, and potential for data-informed decisions. However, these elements remain dispersed and are not yet unified within a framework linking data, services, learning, competence, equity, security, and Islamic values.

Evaluation across six criteria places coherence, effectiveness, data governance, and sustainability at a moderate level. Pedagogical relevance has strong potential, but the quality of implementation depends heavily on leadership and teacher competence. Equity is the most serious gap because infrastructure, costs, devices, technical personnel, and institutional capacity vary widely. A policy that imposes uniform obligations without differentiated support risks widening the divide between madrasahs that are already prepared and those operating with limited resources.

Improvement should prioritize an integrated policy architecture, tiered readiness standards, affirmative assistance, role-based capacity development, interoperability, data protection, and impact-oriented evaluation. Madrasah Digital should be judged not by the number of applications or devices, but by reduced administrative burden, improved learning, fairer access, and preservation of adab and trust. Future research should test the framework comparatively in public and private madrasahs across urban, rural, and low-connectivity settings.

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