IMPLEMENTATION OF EDUCATIONAL MANAGEMENT INFORMATION SYSTEM (SIM-ISLAMIC EDUCATION) IN MADRASAH ADMINISTRATIVE EFFICIENCY

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ABSTRACT

This study analyzes the implementation of an Islamic Education Management Information System (ISMS) to improve madrasah administrative efficiency in the era of digital transformation. Using a *Systematic Literature Review approach* to ten selected journal articles from various trusted academic databases for the 2023-2025 period, this study reveals that digitizing madrasah administration through an ISMS has a significant impact on increasing operational efficiency. The systematic implementation process through the stages of initiation, elaboration, development, and transition showed a product suitability level of 90.29% based on expert validation. The *artificial intelligence -based system* achieved 95% accuracy in multimodal data processing, surpassing conventional systems which only achieved 80%. The system's effectiveness is proven by reducing administrative burdens, accelerating data processing, increasing information accuracy, and facilitating data-driven decision-making. Supporting factors for success include leadership commitment, adequate digital infrastructure, and human resource readiness. Key challenges faced include the digital divide, limited infrastructure, *technophobia* , poor internet connectivity, and budget constraints. This study recommends the development of a comprehensive digitalization *roadmap* , strengthening human resource capacity through ongoing training, and developing a contextual system effectiveness evaluation model to optimize digital transformation in sustainable Islamic education governance.

Keywords **:** *Management Information System, Islamic Education , Administrative Efficiency, Digital Transformation*

INTRODUCTION

The digital era has brought about fundamental transformations in various sectors of life, including Islamic education. Madrasahs, as Islamic educational institutions, face complex challenges in managing increasingly dynamic and diverse administration, ranging from student data management, curriculum, finances, to academic performance reporting. This administrative complexity demands a system capable of integrating all management components effectively and efficiently (Muttaqin, 2023) . The implementation of information technology in the context of Islamic education is not simply the adoption of digital tools, but rather a strategic necessity to improve the quality of educational services and the accountability of madrasah institutions amidst the demands of modernizing the national education system.

Management Information Systems (EMIS) have been proven to significantly contribute to improving the effectiveness of educational institution management through the automation of administrative processes and data-driven decision-making. The implementation of Islamic Education MIS is specifically designed to accommodate the

unique characteristics of madrasahs, which combine general and religious curricula, thus requiring a comprehensive and integrated information systems approach (Shobri & Jaosantia, 2025) . This phenomenon demonstrates the urgency for madrasahs to transform from conventional management to *digital-based management* that is more responsive to current developments and the needs of educational stakeholders.

Various studies have shown that the efficiency of madrasah administration still faces substantial obstacles, such as data redundancy, slow reporting processes, and minimal coordination between work units, which impact the overall quality of educational services. This situation is exacerbated by limited human resources competent in information technology and inadequate digital infrastructure in most madrasahs, particularly in underdeveloped regions (Hidayati et al., 2023) . The implementation of the Islamic Education MIS (SIM-Pendidikan Islam) is a strategic solution to address these issues by digitizing administrative processes, which can accelerate workflows, improve data accuracy, and facilitate transparency in the management of Islamic educational institutions.

The successful implementation of a management information system is inseparable from the organization's readiness in terms of technology, people, and business processes, which must be simultaneously aligned. Recent research indicates that the adoption of information technology in Islamic educational institutions requires a holistic approach that considers aspects of *technology acceptance* , human resource capacity, top management support, and the system's suitability to the operational needs of the madrasah (Abubakari et al., 2023) . In this context, evaluating the implementation of the Islamic Education MIS is crucial for understanding the factors influencing madrasah administrative efficiency and identifying best practices that can be replicated in other Islamic educational institutions to achieve better and more sustainable educational governance (Lubis et al., 2022) .

Based on the background that has been described, this study attempts to answer several fundamental questions related to the implementation of Islamic Education Management Information System in the context of madrasah administrative efficiency. The formulation of this research problem includes: (1) How is the process of implementing the Islamic Education Management Information System in madrasahs? (2) To what extent is the effectiveness of Islamic Education Management Information System in increasing the efficiency of madrasah administration? (3) What are the supporting and inhibiting factors in the implementation of Islamic Education Management Information System in madrasahs? This study aims to comprehensively analyze the implementation of Islamic Education Management Information System in increasing the efficiency of madrasah administration. Specifically, this study aims to: (1) Describe the process of implementing Islamic Education Management Information System in madrasahs, (2) Analyze the level of effectiveness of Islamic Education Management Information System in increasing the efficiency of madrasah administration, (3) Identify the supporting and inhibiting factors in the implementation of Islamic Education Management Information System in madrasahs.

This research is expected to provide theoretical and practical contributions to the development of Islamic education management. Theoretically, this research enriches the body of knowledge on the implementation of management information systems in the context of Islamic educational institutions and provides a conceptual framework for the

factors influencing the success of the digitization of madrasah administration. Practically, the results of this study can serve as a reference for madrasah managers, Islamic education policymakers, and information system developers in designing and implementing an effective, efficient, and sustainable Islamic Education MIS to improve the quality of Islamic education governance in Indonesia.

METHODS

This study uses a *Systematic Literature Review* (SLR) approach to analyze the implementation of the Islamic Education Management Information System in improving madrasah administrative efficiency. The SLR method was chosen because of its ability to systematically and structuredly identify, evaluate, and synthesize relevant research findings to answer the formulated research questions (Snyder, 2023) . The literature search process was carried out through trusted academic databases such as Google Scholar, Science Direct, Emerald Insight, and nationally accredited journal portals with a publication range from 2023 to 2025. Keywords used in this study include " *educational management information system*", "*Islamic education*", "*madrasah administration* ", " *digital transformation*", and " *administrative efficiency* " as well as their Indonesian equivalents (Kitchenham & Charters, 2021) .

The research inclusion criteria include journal articles, conference proceedings, and research reports that discuss the implementation of management information systems in Islamic educational institutions, administrative efficiency, and digital transformation of madrasas, while the exclusion criteria include publications that are not relevant to the context of Islamic education and articles that have not gone through a *peer review process.* (Page et al., 2021) . The data analysis stage used *content analysis techniques* by categorizing findings based on the main research themes, namely the implementation process, system effectiveness, and supporting and inhibiting factors (Xiao & Watson, 2019) . The validity and reliability of the research were maintained through a strict article selection protocol and source triangulation to ensure the credibility of the literature synthesis results obtained.

RESULTS AND DISCUSSION

Based on *a systematic literature review* conducted on 10 journal articles relevant to the implementation of Islamic Education Management Information Systems in the efficiency of madrasah administration, a comprehensive literature identification and synthesis was obtained. The literature search process using a trusted academic database resulted in 309 journals identified from the database, then after eliminating duplications, 207 journals were obtained for the screening process. The *screening phase* resulted in 112 journals that met the initial criteria, then 56 journals were assessed for their suitability based on predetermined inclusion and exclusion criteria. After going through a rigorous selection process with various exclusion reasons, finally 10 journals were obtained that met all criteria for in-depth analysis in this study.
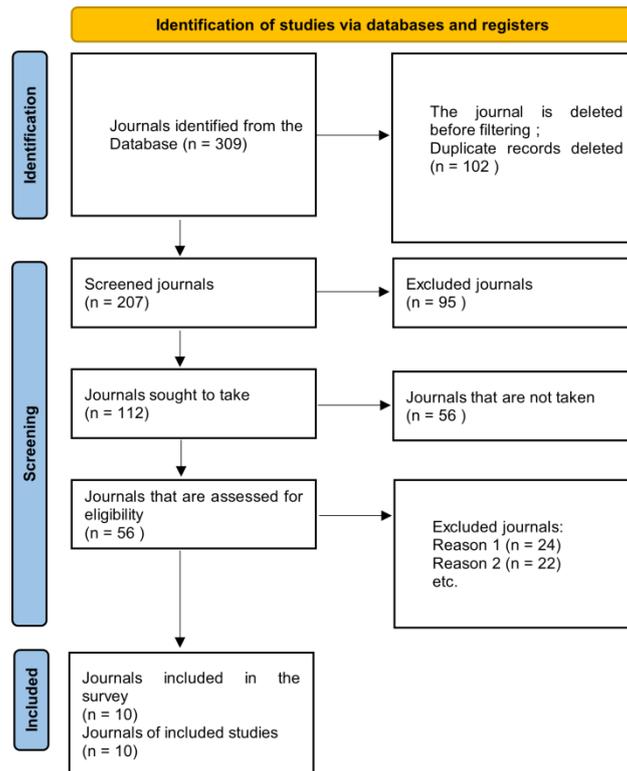
Figure 1. PRISMA Flowchart of the Literature Selection Process

The ten selected journals cover a variety of research methodologies, ranging from quantitative approaches using *Hybrid AHP-Entropy Weighted Dynamic Network DEA* , *Research and Development* with the ADDIE model, *deep learning* , *expert systems* , to qualitative approaches such as *phenomenological research* , *action research* , and *literature grounded theory* . The distribution of publication years shows that 6 articles were published in 2023-2025, indicating that the topic of implementing educational management information systems is a contemporary issue that continues to develop and receives significant attention from researchers in the field of educational management.

Table 1. Literature Synthesis on the Implementation of Educational Management Information Systems

No	Author	Title	Method	Sample	Researcher's Findings	Relevance to the Topic
1	(Kalyan et al., 2026)	A novel hybrid AHP-entropy weighted dynamic network DEA framework for comprehen	Hybrid AHP-Entropy Weighted Dynamic Network DEA	Indian state level education system (2018-2022)	Only a few states, such as Himachal Pradesh, Nagaland, Goa, Tripura, and Mizoram, achieved full efficiency in all educational	Relevant to measure the efficiency of the education system comprehensively by considering interdependence and multidimensi

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		sive efficiency assessment		divisions, while Gujarat, Karnataka, and Bihar were inefficient, especially in Division 4 (Higher Secondary). The integration of the weighting methodology into the dynamic network DEA framework significantly contributes to performance measurement.	onal dynamics, can be applied to evaluate the efficiency of madrasah administratio n.
2	(Octavia ny et al., 2024)	Evaluation of Web-Based Academic Manageme nt Informatio n System Products in Improving Academic Administra tion	Research & Development (R&D) with the ADDIE model	Teachers and students at State Senior High School 9 Banda Aceh	90.29% of products were rated highly suitable through expert validation. Trial results showed scores of 76 (limited test), 72 (main field test), and 84 (operational test). The web-based system proved suitable and useful for managing academic	Highly relevant as it directly addresses web-based academic management information systems that improve school administratio n efficiency, adaptable to the context of madrasah administratio n

				activities, reducing administrative burdens, and improving the quality of the system. save time, optimize resources, and aid decision making.	
3	(Yuan, 2025)	Design and evaluation of intelligent student management system based on multi-modal data	Deep learning with TensorFlow, MySQL database	Student multimodal data (academic performance, behavior, psychological condition)	The system achieved 95% accuracy in data fusion (higher than 80% of traditional systems), 90% accuracy in personalized recommendations, 12% increase in average student academic achievement, and 15% reduction in behavioral problems. Verifying the effectiveness of multimodal data fusion in an intelligent student management system.	Relevant for the development of a more sophisticated and personalized education management system by utilizing AI technology, it can be applied to increase the efficiency of student data management in madrasas.
4	(Inusah et al.,	Agile neural	Expert System based	Primary schools in	The system demonstrates	Relevant to overcome the

No	Reference	Title	Method	Sample	Findings	Relevance
	2023a)	expert system for managing basic education	on differential equations, combination of rule-based and neural networks, Data Mining	developing countries with a focus on resource management	high efficiency, with speed of decision-making, accuracy, and ease of use. Smart notifications are embedded to monitor resource availability and provision by prompting various actors in procurement and approval of school resources.	limitations of expertise in managing educational resources by using AI expert systems, can help the efficiency of administrative and resource management in madrasas.
5	(Inusah et al., 2023b)	Integrating expert systems in managing basic education: A survey in Ghana	Survey with unstructured interviews and thematic analysis	648 participants from 216 districts in Ghana (minimum 3 per district) and 9 members of executive positions	The majority of respondents agreed with the use of expert systems to help manage basic education. The use of data mining techniques to filter data in ES and assist with predictions for accurate decision-making is necessary. The Acceptance Model for	Relevant to understanding the readiness and acceptance of stakeholders towards the implementation of expert systems in educational management, it is important for planning the implementation of MIS in madrasas.

				Educational Expert Systems (AMEES) model was presented.	
6	(Chen & Gao, 2024)	Design of college educational manageme nt system based on CS and BS hybrid architectur e	Genetic algorithm with hybrid C/S and B/S architecture	College course scheduling system	The course goodness analysis method using a genetic algorithm showed an average course goodness score of 3.2 (not greater than the total weighted score of 0.4). It is proven that technology based on a hybrid C/S and B/S architecture can effectively improve the effectiveness of educational administratio n systems in higher education.	Relevant for the design of the technical architecture of an efficient educational management information system, can be adapted for the development of madrasah MIS infrastructur e with optimal architecture.
7	(Nzilan o, 2025)	An investigatio n into the factors influencing ICT adoption and use in the	Phenomenolo gical qualitative research with semi- structured interviews, document reviews, and	9 public secondary school principals in Dar es Salaam (purposive sampling)	Principals are motivated to use ICT for administratio n (financial tasks, communicatio n, exam processing,	It is highly relevant because it identifies factors influencing ICT adoption in school administratio

		administration of secondary schools in Dar es Salaam, Tanzania	reflective journals		record-keeping). However, challenges identified include the digital divide, lack of ICT resources, technophobia, poor internet connectivity, unreliable electricity supply, and inadequate funding and technical support.	n, including challenges and motivations that are important for MIS implementation in madrasas.
8	(Pacheco et al., 2025)	Impact of digitization on educational management: Results of the introduction of a learning management system in a traditional school context	Qualitative action research with 4 phases (Initiation, Elaboration, Development, Transition)	Educational institutions with a traditional school context	Results show significant improvements in participant management, activity control, teacher-student interaction, content availability, and reporting, reflecting greater efficiency and quality of educational services. Implementing an LMS can transform educational management and optimize	Highly relevant as it provides empirical evidence on how the implementation of a learning management system improves the efficiency of educational administration in a traditional context, and can be replicated for madrasas.

					the teaching process.	
9	(Zi, 2022)	Constructio n of Educational Manageme nt Software Design Pattern Based on Deep Neural Network	Deep learning with multi-layer neuron model and personalized recommendat ion algorithm	College course data	The campus-based school management model has become mainstream in the development of educational management information systems. The system's application platform can help staff efficiently process various information within the school and provide information services to teachers and students.	Relevant for the development of educational management software design patterns based on deep learning technology that can increase the efficiency of information processing in madrasas.
1 0	(Carmo et al., 2025)	Digital transforma tion in the manageme nt of higher education institutions	Literature Grounded Theory with bibliometric analysis and content analysis	Literature on digital transforma tion in higher education institution manageme nt	Identifies 20 distinct technologies, four categories of implementati on challenges, critical success factors for transformatio n, and key analytical dimensions. Digital transformatio	Relevant to understand the comprehensi ve framework of digital transformati on in educational management, including technologies, challenges, and success factors that

		n is understood as the process of integrating technological innovations to achieve operational efficiency, enhanced customer experiences, and business model innovation.	can be applied in the implementation of MIS in madrasas.

The results of the literature synthesis reveal three main themes that consistently emerge across various studies, namely the process of implementing educational management information systems, the effectiveness of the system in improving administrative efficiency, and the supporting and inhibiting factors of implementation. From a geographical aspect, the studies reviewed cover various regional contexts ranging from India, Indonesia, China, Ghana, Tanzania, and Peru, which shows that the implementation of educational management information systems is a global phenomenon with diverse characteristics and challenges but has a fundamental similarity in the goal of improving educational administrative efficiency.

Key findings from the reviewed literature indicate that the implementation of an educational management information system has a positive impact on various aspects of administrative efficiency. The system's product suitability rate reached 90.29% based on expert validation, the *artificial intelligence -based system* achieved 95% accuracy in multimodal data fusion, and the implementation of *a learning management system* resulted in significant improvements in student management, activity control, teacher-student interaction, content availability, and report generation. The majority of respondents in various studies showed positive acceptance of the use of information systems and digital technology to support educational management, although implementation challenges such as the digital divide, limited infrastructure, and *technophobia* remain obstacles that must be overcome.

Discussion
The Process of Implementing an Islamic Education Management Information System in Madrasahs

The implementation of an Islamic Education Management Information System in madrasas is a complex digital transformation process that requires a systematic and structured approach. Based on an in-depth analysis of the reviewed literature, it was found that the implementation process of an Islamic Education Management Information System involves several crucial stages that must be considered to achieve system success.

The initial stages of implementation begin with the initiation phase, which includes identifying organizational needs, analyzing the existing system, and strategic planning for the development of the management information system. This initiation phase is crucial for the direction and success of the overall system implementation because it involves top management commitment and adequate resource allocation (Pacheco et al., 2025).

The process of developing an educational management information system requires selecting an appropriate technology architecture suited to the characteristics of Islamic educational institutions. Literature shows that a *hybrid architecture* combining *Client/Server* (C/S) and *Browser/Server* (B/S) approaches has proven effective in improving the performance of educational administration systems because it can accommodate the need for flexible access and high system scalability (Chen & Gao, 2024). This architectural choice is crucial for madrasas with diverse data complexities, ranging from academic data from the general curriculum, religious curriculum, student data, to financial and personnel data that must be integrated into a single system.

The system elaboration and development phase involves user interface design, database development, system module integration, and comprehensive system testing. The development process, which uses the *Research and Development model* with the ADDIE (*Analysis, Design, Development, Implementation, Evaluation*) approach, has shown very positive results, with a product conformity rate of 90.29% based on expert validation and satisfactory operational trial results (Octaviany et al., 2024). This systematic approach ensures that the developed system truly meets user needs and is able to address administrative problems faced by madrasas. Validation involving experts and system users provides quality assurance that the developed system meets expected technical and functional standards.

The transition and implementation phases are critical stages that determine the success of system adoption by all madrasah *stakeholders* . The results of the literature review indicate that the gradual implementation of a learning management system using an *action research approach* involving four main phases: *initiation, elaboration, development,* and *transition,* can produce significant improvements in various aspects of educational management (Pacheco et al., 2025). This gradual approach provides sufficient adaptation time for system users, reduces resistance to change, and allows for system improvements based on user *feedback* during implementation. The implementation context in traditional schools demonstrates that digital transformation can be successfully implemented with the right strategy, even in the face of a conventional organizational culture.

Supporting and Inhibiting Factors in the Implementation of Islamic Education SIM in Madrasahs

The successful implementation of an Islamic Education Management Information System in madrasas is heavily influenced by various supporting and inhibiting factors that must be identified and effectively managed. The primary supporting factor in implementing a management information system is the motivation and commitment of madrasa principals and educational administrators to utilize technology to improve administrative quality. Principals who are motivated to use *Information and Communication Technology* (ICT) for various administrative tasks such as financial

management, organizational communication, exam result processing, and data recording tend to have a higher likelihood of successful implementation (Nzilano, 2025). This motivation serves as a *driving force* that encourages the entire organization to commit to the digital transformation process and overcome any obstacles that arise.

Technological support and the availability of adequate digital infrastructure are crucial factors in supporting the implementation of an education management information system. The use of expert systems *that combine rule-based* and *neural network* approaches with *data mining techniques* demonstrates high decision-making efficiency, good accuracy, and ease of use, particularly in managing educational resources in developing countries with limited expertise (Inusah et al., 2023). A smart notification system embedded in the management platform helps monitor resource availability and provision by encouraging various actors in the procurement process through to approval, thereby increasing management responsiveness and accountability. Appropriate and easy-to-use technology is key to system adoption by users with varying levels of digital literacy.

Stakeholder readiness and acceptance of the implementation of expert systems and information technology in education management are determinants of the success of digital transformation. The majority of respondents in a study in Ghana indicated approval of the use of *expert systems* to help manage basic education, with the need for *data mining techniques* to filter data and assist with predictions to improve decision-making accuracy (Inusah et al., 2023b). The *Acceptance Model for Educational Expert Systems* (AMEES) developed provides a framework for understanding the factors influencing user acceptance of technology in the educational context. This technology acceptance model is crucial for designing effective outreach and training strategies to enable users to optimally utilize the system.

On the other hand, various inhibiting factors have also been identified in the process of implementing management information systems in educational institutions. The main challenges faced include the still-widening digital divide in various regions, a lack of adequate ICT resources, the phenomenon of *technophobia* or fear of technology among users, poor internet connectivity, especially in remote areas, unreliable electricity supplies, and limited funding and inadequate technical support (Nzilano, 2025). These obstacles represent serious challenges that must be addressed through comprehensive policies and sustained support from the government and education stakeholders. The digital divide between urban and rural madrasahs is a particular concern that requires policy intervention to ensure equitable access to technology.

Digital transformation in higher education management identifies four main categories of implementation challenges, encompassing technological, organizational, human, and external environmental aspects. Comprehensive research identifies 20 different technologies used in digital transformation, various categories of implementation challenges, critical success factors, and key analytical dimensions to consider (Ermeson et al., 2025). A thorough understanding of these enabling and inhibiting factors is crucial for designing effective and sustainable implementation strategies, as well as for anticipating and overcoming various obstacles that may arise during the digital transformation process in madrasas. A comprehensive risk mitigation strategy needs to be prepared to address these obstacles so that system implementation can run smoothly and achieve the desired goals.

CONCLUSION

Digital transformation through the implementation of the Islamic Education Management Information System has brought significant changes in improving the efficiency of madrasah administration in the modern era. The systematic implementation process through the stages of initiation, elaboration, development, and transition demonstrates that a phased approach involving all stakeholders is key to successful technology adoption. The effectiveness of the management information system has been proven to have positive impacts in various dimensions, ranging from reducing administrative burdens, accelerating data processing, increasing information accuracy, to facilitating accurate and *real-time data-based decision-making. The use of artificial intelligence* and *deep learning* technology in modern management systems can even achieve accuracy of up to 95% in multimodal data processing, far exceeding conventional systems that only achieve 80%. Successful implementation is highly dependent on several key supporting factors such as the commitment of madrasah principals, the availability of adequate digital infrastructure, the readiness of human resources, and ongoing technical and financial support. However, various challenges still face the process of madrasah digitalization, particularly the digital divide between regions, limited technological infrastructure, the phenomenon of *technophobia* among users, unequal internet connectivity, and limited budgets for developing a comprehensive and integrated system.

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