



Educational Management Information System Governance in Islamic Secondary Schools

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ABSTRACT

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The rapid advancement of information and communication technology has made Management Information Systems (MIS) an essential component in modern educational institutions. This study aims to examine the management of infrastructure and human resources in supporting the operation of Educational Management Information Systems. A qualitative descriptive approach was employed. Data were collected through observations, in-depth interviews, and documentation to obtain a comprehensive understanding of MIS management practices. The findings reveal that infrastructure management is carried out through continuous improvement of hardware and software capacity, as well as the enhancement of internet network reliability. Meanwhile, human resource management focuses on improving staff competencies through information technology training and capacity-building programs. These efforts contribute to more effective, efficient, and responsive administrative services within educational organizations. The study implies that successful implementation of Educational Management Information Systems requires integrated management of technological infrastructure and human resources. Educational institutions are encouraged to prioritize digital readiness and continuous professional development to ensure the sustainability and effectiveness of MIS-based services in the digital era.

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INTRODUCTION

In the contemporary digital era, Management Information Systems (MIS) have become a crucial foundation for organizational sustainability, including in the education sector (Stamenkov & Zhaku-Hani, 2023; Zhang et al., 2023). Rapid technological change has reshaped how societies communicate, manage data, and make strategic decisions, forcing educational institutions to adapt to increasingly complex information environments. The growing demand for transparency, accountability, and efficiency in public services further strengthens

the urgency of effective MIS implementation. Evidence from global organizational practices shows that institutions capable of managing information systems effectively are more responsive to societal needs and better positioned to improve service quality (Kumar & Singh, 2023; Park et al., 2023). Conversely, institutions that fail to adapt tend to experience inefficiency, weak decision-making, and declining competitiveness. Therefore, the management of educational MIS is not merely a technical issue but a strategic societal concern, as education plays a central role in preparing human resources for future challenges (Kusumawati et al., 2025). Understanding how MIS can be managed effectively is essential for ensuring that educational institutions remain relevant, adaptive, and socially accountable.

Despite the recognized importance of Management Information Systems, many educational institutions continue to struggle with ineffective system management (Sivagnanam et al., 2023; Van Slyke et al., 2023). The core problem lies not only in limited technological infrastructure but also in the absence of integrated management strategies that align technology with organizational goals. In many cases, information systems exist merely as administrative tools rather than as strategic instruments supporting planning, coordination, and decision-making (Arifin & Zaini, 2024; Sanjani, 2023). The rapid growth of information flows, driven by technological advancement and societal expectations, often exceeds the institutional capacity to manage data effectively. As a result, information becomes fragmented, delayed, or underutilized, weakening managerial performance. This condition creates a significant gap between the potential benefits of MIS and its actual implementation in educational settings. The problem is further intensified by disparities in access to technology, uneven digital literacy, and weak institutional commitment to continuous system development, making MIS management a persistent challenge in the education sector.

Empirical phenomena in educational institutions indicate that MIS implementation frequently operates under conditions of limitation and improvisation (Hodgkinson et al., 2025; Trivedi & Srivastava, 2025). Information services are often managed manually or semi-digitally, resulting in slow data processing and limited accuracy. Infrastructure such as hardware, software, and network connectivity may exist but is frequently outdated, poorly maintained, or inconsistently utilized. In addition, human resources responsible for operating information systems often lack sufficient technical competence, leading to operational errors and system dependency on a small number of individuals (Norman et al., 2024; Wisudaningsih et al., 2025). These conditions hinder the optimal use of MIS as a managerial support system. Instead of facilitating effective planning and evaluation, MIS becomes a routine administrative burden.

Such phenomena illustrate that the challenge of MIS management is not solely technological but also organizational and human-centered, highlighting the need for comprehensive strategies that integrate infrastructure development with capacity building.

Previous studies have conceptualized Management Information Systems as computer-based systems designed to support managerial decision-making through accurate and timely information (Al-Hattami, 2024; Kumanireng, 2023). Classical organizational theories emphasize that MIS integrates hardware, software, databases, procedures, and human resources into a unified system. Scholars argue that effective MIS enhances efficiency, coordination, and strategic control within organizations (Makiyah, 2024; Sain et al., 2024). Research has also highlighted that MIS plays a vital role in supporting mid-level and top-level management by transforming raw data into meaningful information. However, much of the existing literature focuses predominantly on technical system design or organizational outcomes, often treating infrastructure and human resources as separate variables. This fragmented approach limits a holistic understanding of how MIS functions operationally within educational institutions, particularly in contexts characterized by limited resources and rapid environmental change.

Further examination of existing literature reveals that studies on educational MIS frequently emphasize policy frameworks, technological adoption, or system effectiveness indicators. While these contributions are valuable, they often overlook the practical management processes that sustain system operation over time (Khoiroh et al., 2025; Kholifatunnisak, 2024). Specifically, limited attention has been given to how infrastructure management and human resource development interact to support daily MIS operations (Kambur & Yildirim, 2023; Shakir et al., 2024). Moreover, previous research tends to generalize findings from well-resourced institutions, leaving contextual gaps regarding institutions operating under structural and capacity constraints. This gap is critical, as MIS effectiveness depends not only on system availability but also on continuous maintenance, user competence, and organizational commitment. Addressing this gap requires research that integrates infrastructure management and human resource readiness as interdependent components of educational MIS management.

This study introduces a managerial perspective that emphasizes the integration of infrastructure management and human resource development in sustaining Educational Management Information Systems. Unlike previous studies that isolate technical or organizational dimensions, this research positions MIS as a dynamic system shaped by continuous interaction between technology and human agency. The novelty lies in examining how capacity-building initiatives, such as information technology training, function alongside

infrastructure improvement to enhance system effectiveness. By focusing on operational management rather than system adoption alone, this study contributes to a more contextual and practice-oriented understanding of MIS in education. This perspective is particularly important for institutions facing structural limitations, as it highlights adaptive strategies that can optimize existing resources rather than relying solely on technological expansion.

Based on the issues and gaps identified, this study addresses the problem of how Educational Management Information Systems are managed to support organizational effectiveness. The central argument of this research is that effective MIS management depends on the balanced integration of infrastructure readiness and human resource competence. The study assumes that improvements in hardware, software, and network systems must be accompanied by systematic capacity building for system users to ensure sustainability. By analyzing management practices related to these two dimensions, this research contributes theoretically by enriching MIS management discourse and practically by offering insights for educational institutions seeking to strengthen their information systems. Ultimately, the study argues that MIS should be viewed not merely as a technological tool but as a strategic managerial system that requires continuous organizational investment.

RESEARCH METHOD

This study employed a qualitative research approach using a case study design. The qualitative case study was chosen to gain an in-depth and contextual understanding of the management of Educational Management Information Systems as a complex social and organizational phenomenon. This design allows the researcher to explore processes, interactions, and managerial practices that cannot be adequately captured through quantitative measurement. The case study approach was considered appropriate because it facilitates a holistic examination of infrastructure management and human resource practices within their real-life setting. The research was conducted in a private Islamic secondary educational institution. The site was selected purposively due to its relevance to the research focus and its representativeness of educational institutions operating under limited technological and organizational resources, making it suitable for exploring adaptive MIS management practices.

Data were collected using multiple qualitative techniques to ensure data richness and credibility. These techniques included direct observation of MIS-related activities, in-depth interviews with key informants involved in system management and institutional administration, and document analysis of institutional records, reports, and policy documents related to information

system operations. The use of multiple data sources enabled methodological triangulation, which enhanced the trustworthiness of the findings by cross-validating information obtained from different methods and perspectives.

Data analysis was conducted concurrently with data collection using an interactive qualitative analysis model. The process involved data condensation through selection, focusing, and simplification of relevant information, followed by data display in the form of narrative descriptions and thematic matrices to facilitate interpretation. The final stage consisted of drawing and verifying conclusions by identifying patterns, relationships, and recurring themes related to MIS management practices. Verification was carried out through continuous comparison of data sources and member checking to ensure the validity and reliability of the findings.

RESULT AND DISCUSSION

Infrastructure Management

Management Information Systems consist of several interrelated components, including hardware, software, and human resources (brainware) (Fradito et al., 2023). These components form the technical foundation required to support administrative and academic management processes in educational institutions. In the context of this study, infrastructure plays a critical role in enabling data collection, processing, and dissemination within the madrasa. MIS is utilized to ensure that administrative data are processed accurately and efficiently, thereby supporting institutional effectiveness. Without adequate infrastructure, MIS cannot function optimally as a managerial tool. This finding reinforces the view that infrastructure readiness is not merely a supporting element but a prerequisite for the operational sustainability of educational information systems.

However, the findings indicate that the madrasa has not yet maximized the management of its Management Information System to support administrative services. This limitation is primarily caused by insufficient infrastructure availability, particularly in terms of hardware and network capacity. The shortage of adequate computers and laptops significantly constrains administrative efficiency and delays information processing. As a result, MIS implementation remains suboptimal, affecting service quality. This condition demonstrates how infrastructural inadequacy directly influences the performance of MIS, positioning infrastructure as a structural bottleneck rather than a neutral technical issue within educational management systems.

The infrastructure limitations also contrast sharply with increasing stakeholder expectations, especially from parents, who demand transparent, accurate, and timely access to educational information. Parents expect schools to

provide reliable internet connectivity, sufficient digital devices for learning activities, and technology-based assessment systems. These expectations reflect broader societal demands for accountability and transparency in education management. The gap between stakeholder expectations and institutional capacity highlights a structural tension within MIS implementation. When infrastructure fails to meet user needs, MIS cannot function as an effective communication and service platform, undermining trust between educational institutions and their stakeholders.

Further analysis reveals that infrastructural constraints extend beyond the quantity of devices to their technical quality. The madrasa faces limitations in accessing high-specification computers and stable internet connectivity, which restricts the implementation of technology-based learning and administrative platforms such as CBT, ARD, and SIMPATIKA. These systems require adequate processing capacity and reliable networks to function effectively. As a consequence, MIS-supported learning and administrative processes remain fragmented and inconsistent. This finding emphasizes that infrastructure management must address both availability and performance quality to support integrated digital systems within educational institutions.

To address these challenges, the head of the madrasa has undertaken several strategic initiatives focused on strengthening infrastructure management. These efforts include motivating the school community to develop collective responsibility for institutional improvement and implementing technical upgrades. Specifically, actions have been taken to increase internet bandwidth capacity and upgrade both software and hardware components. Additionally, efforts have been directed toward improving the accuracy and functionality of EMIS and SIMPATIKA data systems. These initiatives demonstrate leadership commitment to gradually improving MIS performance through adaptive and context-sensitive strategies, despite existing resource constraints.

The improvement of EMIS and SIMPATIKA data systems has contributed to better accessibility of institutional information for parents and the wider community. EMIS data related to madrasa profiles, educators, staff, and infrastructure can now be accessed more effectively, while SIMPATIKA provides transparent information regarding teaching loads and subject assignments. These efforts align with the core objectives of Management Information Systems, which aim to transform raw data into meaningful information that enhances efficiency, effectiveness, and productivity (Enstroem et al., 2025; Nuryadin et al., 2025). Thus, infrastructure management emerges as a strategic mechanism for strengthening institutional accountability and service quality through MIS optimization.

Human Resource Management

Effective management of Educational Management Information Systems (MIS) requires high-quality human resources capable of ensuring that organizational objectives are achieved. In the context of the madrasa, the complexity of MIS implementation demands personnel who are not only professionally competent but also continuously updated with technological advancements. The head of the institution plays a pivotal role in overseeing human resource management to align personnel capabilities with the operational needs of MIS. This ensures that the planning, coordination, and execution of information processes are conducted efficiently. The emphasis on skilled personnel highlights that MIS is not merely a technological tool but a human-mediated system requiring active professional engagement to achieve institutional effectiveness.

Planning for MIS implementation constitutes a foundational stage in aligning organizational goals with system functionality (Fadilah & Utari, 2025). In this madrasa, the head initiates planning by conducting meetings with all relevant stakeholders, including teachers, administrative staff, and system operators. These discussions are designed to define institutional objectives for MIS management and identify the required competencies among human resources. By involving various components of the madrasa community in the planning process, the leadership ensures shared understanding, accountability, and a coordinated approach. This participatory planning enhances organizational readiness and ensures that human resource development directly supports the effective operation of MIS.

The madrasa implements several strategic initiatives to strengthen human resource capacity in supporting MIS management. These initiatives include skill enhancement through targeted training programs for administrative staff, operators, and educators. Additionally, the development of standard operating procedures and policies ensures that personnel have clear guidance on system usage, responsibilities, and workflow processes. Efforts are also made to match the MIS tools to the institution's specific needs, and to assign accountability for system operation through structured schedules. Such systematic human resource management ensures that personnel are not only competent but also aligned with the institution's operational priorities, facilitating smoother information flow and operational efficiency.

Operational implementation of MIS involves collaboration across multiple stakeholders based on defined roles and responsibilities. Educators manage data within the administrative information system efficiently and effectively, ensuring that records are accurate and up-to-date. The head of the madrasa actively coordinates with educators and administrative staff to provide accessible

and transparent information facilities. Specific personnel are designated to manage information requests and responses, while all activities are documented and reported systematically. This operational framework ensures that human resource involvement is structured, accountable, and aligned with institutional goals, transforming raw data into meaningful information that supports decision-making and service delivery.

The integration of well-managed human resources into MIS operations significantly enhances institutional effectiveness. By prioritizing capacity building, clear procedures, and task allocation, the madrasa ensures that information is processed efficiently and is easily accessible to stakeholders, particularly parents. This approach demonstrates that MIS management is inherently human-centric; without competent and motivated personnel, even the most advanced technological systems cannot achieve their intended outcomes. (Januariani & Aziz, 2023) emphasizes, aligning human resource management with system functionality is critical for achieving educational objectives, ensuring transparency, and fostering accountability within educational institutions.

CONCLUSION

The study reveals that effective management of Educational Management Information Systems (MIS) in the madrasa relies on two key dimensions: infrastructure and human resources. Infrastructure management, led by the head of the institution, involves improving internet network capacity, upgrading hardware and software, and ensuring accurate and accessible EMIS and SIMPATIKA data. Human resource management focuses on enhancing staff competencies through training, developing standard operating procedures, selecting appropriate MIS tools, and organizing systematic workflows and responsibilities for data management. The main lesson learned is that the success of MIS depends not only on technological readiness but also on the strategic development and empowerment of personnel. Integrating these two dimensions ensures that information is processed efficiently, transparently, and effectively, supporting institutional decision-making and improving service quality.

From a scientific perspective, this study contributes to the literature by emphasizing the interdependence between infrastructure and human resource management in sustaining MIS performance within educational institutions. It highlights practical strategies that can be applied in similar contexts, particularly for organizations operating under resource constraints. However, the study is limited to a single institutional setting, which may affect the generalizability of the findings. Future research could expand to multiple institutions or explore quantitative measures of MIS effectiveness, as well as investigate the long-term impact of human resource capacity-building initiatives on information system performance in diverse educational contexts.

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