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Application of Management Information Systems and Artificial Intelligence in the Governance of Islamic Education

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Abstract: This study investigates the implementation of Management Information Systems (MIS) and Artificial Intelligence (AI) in Islamic education governance at MIN 9 Magetan. Driven by digital transformation demands, the research aims to analyze the integration of these technologies, identify supporting and inhibiting factors, and evaluate their impact on educational service quality. Employing a qualitative case study design, data were collected through observations, in-depth interviews, and documentation, and analyzed using the interactive model of Miles, Huberman, and Saldaña. The findings reveal that the deployment of specific MIS platforms, such as EMIS 4.0 and ERKAM, significantly enhances administrative efficiency, financial transparency, and data-driven decision-making by the madrasah leadership. Concurrently, the grassroots adoption of AI tools, including ChatGPT, Gemini, and Canva AI, empowers teachers to accelerate lesson planning, design Higher Order Thinking Skills (HOTS) assessments, and foster pedagogical innovation through interactive learning media. While visionary leadership commitment and adequate digital infrastructure strongly support this transformation, several challenges persist. These include a digital literacy gap among senior educators experiencing cultural resistance, as well as operational disruptions caused by central server instability during critical data synchronization periods. Ultimately, the synergistic integration of MIS and AI positively impacts service quality, transparency, and accountability. Therefore, prioritizing targeted digital literacy programs and allocating dedicated budgets for comprehensive AI training are recommended to ensure sustainable implementation. This study contributes to the development of a modern Islamic education governance model that harmonizes digital technology, human resource competence, and good governance principles grounded in Islamic values.

Keywords: Management Information Systems; Artificial Intelligence; Islamic Education Governance; Digital Transformation; Good Governance.

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1. Introduction

The rapid advancement of digital technology in the era of the Fourth Industrial Revolution and Society 5.0 has fundamentally reshaped various sectors, including education. Educational institutions are now expected to leverage information technology to enhance organizational effectiveness, efficiency, transparency, and accountability (Islam *et al.*, 2025; Laudon & Laudon, 2020; Parhusip & Sitanggang, 2025; Vanditta *et al.*, 2025). In this context, Management Information Systems (MIS) and Artificial Intelligence (AI) have emerged as critical instruments for supporting modern and adaptive educational governance (UNESCO, 2022). Institutions can no longer function solely as learning centers; they must also manage information and data rapidly, accurately, and in an integrated manner to support sound decision-making. This digital transformation represents a complex process that involves not only technological adoption but also organizational change, human resource development, and cultural adaptation. MIS provides an integrated framework for managing data related to students, educators, curriculum, finances, and school administration systematically, enabling the provision of timely and accurate information for organizational decision-making (Laudon & Laudon, 2020). Concurrently, AI offers transformative opportunities by automating administrative tasks, analyzing educational data, and facilitating data-driven policy recommendations (Russell & Norvig, 2021). Furthermore, the integration of generative AI platforms enables educators to accelerate lesson planning, develop interactive learning media, and create personalized learning experiences, thereby enhancing overall pedagogical creativity (Holmes *et al.*, 2024; UNESCO, 2022). The synergy between these two technologies empowers educational institutions to manage resources more effectively and deliver responsive, high-quality services to learners and other stakeholders (Kaplan & Haenlein, 2020). The integration of MIS and AI in education aligns closely with the principles of good governance, which emphasize transparency, accountability, effectiveness, efficiency, and stakeholder participation (Rusydi, 2023). Within the framework of Islamic education governance, effective management must also be grounded in core Islamic values such as trustworthiness (*amanah*), justice, consultation (*musyawarah*), and public welfare (*maslahah*). Therefore, the implementation of digital technology in Islamic educational institutions must support the achievement of organizational objectives while preserving the Islamic values that define their operational identity (Rusydi, 2023). This dual orientation requires educational leaders to balance technological innovation with the preservation of Islamic ethical principles, ensuring that digital tools are utilized with moral responsibility and integrity (Bashori *et al.*, 2024; Prasetyowati *et al.*, 2025).

Previous studies have demonstrated that digital technology contributes significantly to improving educational governance. Wang (2024) found that AI-based technology enhances decision-making effectiveness in educational organizations through faster and more accurate data analysis. Similarly, Pesek (2026) argued that educational governance in the AI era is transforming toward more adaptive, predictive, and data-driven systems. However, most existing research has examined MIS or AI implementation separately and has predominantly focused on higher education and public schools. Most existing research has not adequately addressed the contextual challenges specific to Islamic educational institutions, such as integrating technology with Islamic governance principles while simultaneously overcoming digital literacy gaps and infrastructure limitations. Studies exploring the integration of both MIS and AI within Islamic education governance, particularly at the *madrasah ibtidaiyah* level, remain notably scarce, indicating a significant research gap that requires contextual investigation. MIN 9 Magetan, an Islamic educational institution under the Ministry of Religious Affairs of the Republic of Indonesia, has implemented various MIS platforms—including EMIS 4.0, ERKAM, RDM, and SIMPATIKA—alongside AI tools to support administrative and instructional activities. This study aims to analyze the implementation of MIS and AI in Islamic education governance at MIN 9 Magetan, identify the supporting and inhibiting factors, and examine their impact on governance effectiveness and educational service quality. By examining how platforms like EMIS 4.0 function as central data repositories and how teachers independently adopt AI for instructional design, this study seeks to provide a practical reference for other Islamic educational institutions navigating the complexities of digital transformation. Through this research, a comprehensive understanding of a digital-based Islamic education governance model is expected—one that integrates MIS, AI, human resource competencies, and good governance principles rooted in Islamic values.

2. Related Work

2.1 Management Information Systems in Educational Context

Management Information Systems (MIS) represent integrated frameworks that combine human and technological resources to provide timely, accurate, and relevant information for organizational operations, management, and decision-making processes (Biswas *et al.*, 2024). In educational institutions, MIS enables systematic management of student data, educators, curriculum, finances, and administrative functions,

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thereby generating quality information as a foundation for planning, implementation, and evaluation of educational programs (O'Brien & Marakas, 2023). The digital transformation era has elevated the importance of MIS, as educational institutions are now required to manage information rapidly, accurately, and in an integrated manner to support evidence-based decision-making (Turban *et al.*, 2018). Recent studies demonstrate that MIS implementation significantly enhances organizational efficiency, transparency, and accountability in educational governance by streamlining administrative processes and providing real-time data access for stakeholders (Wang, 2024).

2.2 Artificial Intelligence in Education

Artificial Intelligence (AI) has emerged as a transformative force in education, defined as the study of intelligent agents capable of perceiving their environment and taking actions to achieve specific goals (Russell & Norvig, 2021). In educational contexts, AI applications range from automating administrative tasks and analyzing educational data to providing policy recommendations and supporting data-driven decision-making processes (Kaplan & Haenlein, 2020). The integration of AI tools such as ChatGPT, Gemini, and other generative AI platforms has enabled educators to accelerate lesson planning, develop interactive learning media, and create personalized learning experiences (UNESCO, 2022). Holmes *et al.* (2024) argue that AI has the potential to enhance learning quality through content personalization, pedagogical creativity, and strengthened learning experiences for students. However, the implementation of AI in education must be guided by ethical considerations, emphasizing moral responsibility, information validity, and character development aligned with educational values (Holmes *et al.*, 2024).

2.3 Islamic Education Governance and Good Governance Principles

Good governance in educational institutions emphasizes transparency, accountability, effectiveness, efficiency, and stakeholder participation in organizational management (Hussen & Onia, 2024). Within the framework of Islamic education governance, effective management must be grounded in core Islamic values such as trustworthiness (*amanah*), justice, consultation (*musyawarah*), and public welfare (*maslahah*) (Muhaimin, 2012). Rusydi (2023) asserts that the application of good governance principles in Islamic educational institutions can enhance transparency, accountability, and the quality of educational services. The integration of digital technology in Islamic education must therefore support organizational objectives while preserving the Islamic values that define the institution's operational identity (Bashori *et al.*, 2024; Prasetyowati *et al.*, 2025). This dual orientation requires educational leaders to balance technological innovation with the preservation of Islamic ethical principles in governance practices.

2.4 Digital Transformation in Islamic Educational Institutions

The digital transformation of Islamic educational institutions represents a complex process that involves not only technological adoption but also organizational change, human resource development, and cultural adaptation. Recent research indicates that digital technology contributes significantly to improving educational governance by enabling faster and more accurate data analysis, supporting adaptive and predictive decision-making systems, and enhancing service quality for stakeholders (Pesek, 2026; Wang, 2024). However, the successful implementation of digital technologies in Islamic education requires addressing several challenges, including digital literacy gaps, infrastructure limitations, teacher competency development, and the integration of technology with Islamic values (UNESCO, 2022). The literature suggests that leadership commitment, adequate technological infrastructure, and continuous professional development are critical success factors for digital transformation in Islamic educational institutions (Holmes *et al.*, 2024).

2.5 Research Gap and Contribution

While previous studies have examined the implementation of MIS or AI separately and predominantly focused on higher education and public schools, research exploring the integration of both MIS and AI within Islamic education governance, particularly at the *madrasah ibtidaiyah* level, remains limited. Most existing research has not adequately addressed the contextual challenges and opportunities specific to Islamic educational institutions, including the integration of digital technology with Islamic governance principles. This study addresses this research gap by examining the comprehensive implementation of MIS and AI at MIN 9 Magetan, analyzing their synergistic role in enhancing Islamic education governance effectiveness, and identifying the supporting and inhibiting factors that influence successful implementation. By doing so, this research contributes to the development of a digital-based Islamic education governance model that integrates MIS, AI, human resource competencies, and good governance principles rooted in Islamic values.

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3. Methodology

This study employed a qualitative approach with a case study design to explore the implementation of Management Information Systems (MIS) and Artificial Intelligence (AI) in Islamic education governance at MIN 9 Magetan, an Islamic elementary school under the Ministry of Religious Affairs of the Republic of Indonesia. The case study approach was selected because it enables an in-depth investigation of a contemporary phenomenon within its real-life context, particularly when the boundaries between the phenomenon and its context are not clearly evident (Wang, 2024). MIN 9 Magetan was specifically chosen as the research site because it represents a proactive educational institution that simultaneously integrates centralized government MIS platforms and experiences grassroots AI adoption by its educators. Informants were selected through purposive sampling, consisting of the head of the *madrasah*, vice heads, school operators, teachers, and administrative staff. The primary inclusion criterion for these informants was their direct, hands-on involvement in utilizing digital technology for governance, administration, or instructional activities, ensuring that the participants possessed relevant knowledge and rich experiential data regarding the research focus (Creswell, 2014). Data were collected through three complementary techniques: non-participant observation, in-depth semi-structured interviews, and documentation studies. Observations were systematically conducted to capture the actual practices of digital utilization, specifically focusing on how administrative staff operated platforms like EMIS 4.0 and ERKAM, and how teachers interacted with AI tools such as ChatGPT and Canva AI in their workspaces. Furthermore, interviews were designed to explore the nuanced experiences, perceptions, and underlying challenges faced by the informants, including issues related to digital literacy and cultural resistance.

These interview sessions were recorded with the participants' consent and transcribed verbatim to preserve the authenticity of their responses. To triangulate these primary data sources, documentation studies were performed by examining institutional reports, digital financial records, AI-assisted lesson plans, and relevant school policy guidelines. The collected data were analyzed using the interactive model proposed by Miles & Huberman (2014), which involves three concurrent flows of activity. First, during data condensation, the raw interview transcripts and field notes were filtered and coded to identify emerging themes related to digital transformation, supporting factors, and inhibiting challenges. Second, in the data display phase, the coded information was organized into thematic matrices to map the relationships between MIS/AI integration and the quality of educational services. Finally, conclusion drawing and verification involved synthesizing these patterns to answer the research questions comprehensively. To ensure the trustworthiness and academic rigor of the findings, the study applied source triangulation (cross-verifying information among different informants) and technique triangulation (comparing interview data with observations and documents). Additionally, member checking was conducted by returning the preliminary findings to key informants for confirmation, thereby enhancing the credibility, transferability, dependability, and confirmability of the research results (Lincoln & Guba, 1985).

4. Results and Discussion

4.1 Results

4.1.1 Implementation of Management Information Systems in Islamic Education Governance at MIN 9 Magetan

The implementation of Management Information Systems (MIS) at MIN 9 Magetan has been carried out in an integrated manner across various aspects of educational governance, covering institutional data management, employee administration, budget management, academic services, and learning evaluation systems. The *madrasah* utilizes a variety of government-based digital platforms, including EMIS 4.0, SIMPEG, ERKAM, RDM, SIMPATIKA, PPDB Online, PUSAKA Kemenag, Fingerprint, and PINTAR Kemenag, each serving specific administrative and academic functions. This comprehensive digital ecosystem has transformed previously manual administrative processes into systematic, fast, accurate, and easily accessible digital workflows, significantly reducing processing time and minimizing human error in data management. The integration of these systems demonstrates the *madrasah*'s serious commitment to embracing digital transformation as a strategic foundation for improving organizational governance in line with the demands of the digital era.

Table 1. Implementation of Management Information Systems at MIN 9 Magetan

Field	System Used	Main Function
Madrasah Data	EMIS 4.0	Management of student, teacher, and facility data
Personnel	SIMPEG	Civil servant administration

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Finance	ERKAM	Planning and reporting of school operational funds
Academic	RDM	Processing grades and report cards
Student Admission	PPDB Online	New student registration
Teacher Human Resources	SIMPATIKA	Teacher and educator data and allowances
Attendance	PUSAKA and Fingerprint	Employee attendance
Human Resource Development	PINTAR Kemenag	Teacher training programs

The table above illustrates that the MIS implementation at MIN 9 Magetan covers a wide spectrum of governance functions, ranging from core institutional data management to human resource development and employee attendance monitoring. Each system is specifically designed to address particular administrative needs, ensuring that data flows systematically across different organizational units without duplication or inconsistency. The use of EMIS 4.0 as the central data repository, for instance, enables real-time updates of student and teacher information, which directly supports evidence-based decision-making by the *madrasah* leadership. Similarly, the integration of ERKAM for financial reporting and SIMPATIKA for teacher administration ensures that budg*et al*ocation and human resource management are conducted transparently and accountably. From the perspective of Islamic education governance, the implementation of MIS has substantively supported the principles of trustworthiness (*amanah*), transparency, and accountability, as every administrative activity is digitally documented and can be verified by authorized stakeholders at any time. The digital documentation system eliminates the potential for data manipulation and ensures that all governance processes are traceable, which aligns with the Islamic value of maintaining integrity in organizational management. Furthermore, the systematic nature of these information systems enables the *madrasah* to produce timely and accurate reports required by the Ministry of Religious Affairs, thereby strengthening the institution's compliance with national educational standards. This technological foundation has positioned MIN 9 Magetan as a progressive Islamic educational institution capable of adapting to the demands of modern governance while upholding Islamic ethical principles in its operational practices.

4.1.2 Implementation of Artificial Intelligence in Supporting Islamic Education Governance

The utilization of Artificial Intelligence (AI) at MIN 9 Magetan has not yet been formally integrated into the institutional governance system; however, it has been actively adopted by teachers to support their professional duties and instructional administration. Teachers independently leverage various AI-powered platforms, including ChatGPT, Gemini, Canva AI, CapCut AI, and Google Form, to enhance the quality of lesson planning, develop interactive learning media, and conduct digital-based assessments. This grassroots adoption of AI tools reflects the teachers' initiative to improve their pedagogical competencies and respond to the increasing demands for innovative and engaging learning experiences in the digital era. Although the implementation remains decentralized and primarily driven by individual teacher initiatives, the impact on instructional quality and administrative efficiency has been notably significant across the *madrasah*.

Table 2. Implementation of Artificial Intelligence at MIN 9 Magetan

AI Platform	Utilization
ChatGPT	Development of learning objective flows, teaching modules, and HOTS-based questions
Gemini	Reference for learning materials and instructional planning
Canva AI	Reference for learning materials, instructional planning, and media team development
CapCut AI	Interactive learning videos and media team development
Google Form	Digital-based madrasah examinations

The table above demonstrates that AI tools are predominantly utilized in the academic domain, particularly in supporting teachers' instructional design and media production activities. ChatGPT and Gemini serve as intelligent assistants that help teachers rapidly generate teaching modules, design higher-order thinking skills (HOTS) assessment instruments, and explore innovative pedagogical approaches. Meanwhile, Canva AI and CapCut AI empower teachers to create visually appealing and interactive learning media, including infographics, presentation slides, and educational videos that enhance student engagement. The use of Google Form for digital examinations further illustrates how AI-integrated platforms are gradually transforming assessment practices, enabling faster grading, automated data analysis, and more efficient feedback delivery to students. An interview with one of the senior teachers revealed that the adoption of AI tools has significantly reduced the time required for lesson preparation while simultaneously improving the quality of instructional materials produced. The teacher stated, "Before using ChatGPT, I spent almost two days preparing a complete teaching module. Now, I can draft a structured module in just a few hours, and the quality is even better

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because I can explore various references and innovative approaches suggested by the AI." This testimony highlights how AI functions as an assistive technology that amplifies teachers' professional capabilities rather than replacing their pedagogical expertise. Within the framework of Islamic education, the use of AI remains guided by ethical principles that emphasize moral responsibility, information validity, and the cultivation of student character, ensuring that technological advancement serves the broader educational mission of the *madrasah*.

4.1.3 The Role of MIS and AI in Enhancing the Effectiveness of Islamic Education Governance

The integration of Management Information Systems and Artificial Intelligence has produced a significant transformation in enhancing the effectiveness of Islamic education governance at MIN 9 Magetan, particularly in streamlining administrative processes and strengthening data-driven decision-making. MIS platforms such as EMIS 4.0, SIMPEG, and ERKAM serve as the primary pillars for presenting accurate, up-to-date, and integrated data to the *madrasah* leadership, enabling them to formulate strategic plans, accelerate information access, and ensure high levels of transparency in financial management. The availability of valid and reliable data allows decision-makers to bypass slow bureaucratic chains and make faster, more precise decisions grounded in empirical evidence. This shift toward data-driven governance represents a fundamental change in how the *madrasah* operates, moving from intuition-based management to evidence-based organizational leadership that aligns with contemporary governance standards. On the academic front, the application of AI has directly impacted the quality of teaching and learning by automating and optimizing educators' tasks, enabling them to design instructional materials, develop assessment instruments, and create interactive learning media with greater speed and efficiency. The synergy between administrative efficiency generated by MIS and pedagogical innovation facilitated by AI has created a modern Islamic educational ecosystem that enhances both institutional productivity and the quality of the teaching-learning experience. Teachers are now able to focus more on instructional delivery and student engagement, as routine administrative tasks have been significantly reduced through digital automation. This dual technological integration not only strengthens the operational effectiveness of the *madrasah* but also enriches the educational experience by providing students with more dynamic, interactive, and relevant learning opportunities.



Figure 1. Integration Model of MIS and AI in Islamic Education Governance at MIN 9 Magetan

The diagram above illustrates the synergistic integration model between MIS and AI in enhancing Islamic education governance at MIN 9 Magetan, demonstrating how institutional data systems and intelligent instructional tools converge to support effective organizational management. The model shows that MIS functions as the foundational infrastructure for administrative governance, ensuring data accuracy, transparency, and accountability across all organizational units, while AI operates as the innovation driver in the academic domain, enhancing pedagogical quality and learning experiences. Both technological dimensions are interconnected through the shared goal of improving educational service quality and are anchored in the principles of good governance and Islamic values, including trustworthiness, transparency, accountability, effectiveness, and public welfare. This integrated model represents a novel contribution to the concept of Islamic education management, expanding the traditional administrative focus to encompass data-driven and AI-enhanced governance that remains faithful to Islamic ethical foundations. The findings further reinforce the principles of good governance, which emphasize effectiveness, efficiency, accountability, and transparency as primary indicators of sound organizational management, while simultaneously extending the concept of Islamic education management proposed by previous scholars. The integration of MIS and AI at MIN 9 Magetan

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demonstrates that modern technological tools can be harmoniously combined with Islamic governance values to produce an educational management model that is both contemporary and ethically grounded. This model proves that digital transformation in Islamic educational institutions does not necessarily conflict with religious values; rather, when implemented thoughtfully, technology can amplify the institution's capacity to fulfill its educational mission with greater integrity and excellence. The *madrasah*'s experience thus provides a practical reference for other Islamic educational institutions seeking to navigate the complexities of digital transformation while preserving their distinctive Islamic identity.

4.1.4 Supporting and Inhibiting Factors in MIS and AI Implementation

The successful implementation of Management Information Systems and Artificial Intelligence at MIN 9 Magetan is supported by several crucial factors, with leadership commitment emerging as the primary driving force behind the digital transformation agenda. The head of the *madrasah* has demonstrated visionary leadership by actively promoting internal regulations that mandate application-based reporting and facilitating regular training programs for both teaching and administrative staff. In addition to leadership commitment, the availability of adequate digital infrastructure, including stable Wi-Fi networks in office and classroom areas and sufficient hardware provisions such as laptops and computers, has significantly facilitated the smooth operation of various MIS platforms. The high readiness and motivation of teaching staff, particularly younger teachers who are digital natives, have also provided positive stimulus, as they enthusiastically explore AI tools like ChatGPT, Canva AI, and Quizizz AI to accelerate the development of teaching modules and interactive learning media. Furthermore, systematic support from the Ministry of Religious Affairs, including technical assistance and regular system updates, has helped *madrasah* operators minimize technical obstacles in using government applications such as ERKAM and EMIS. Despite the positive trajectory of digitalization, MIN 9 Magetan still faces several challenges that may hinder the optimal implementation of MIS and AI-based governance. A notable inhibiting factor is the digital literacy gap among some senior teachers who experience culture shock or resistance toward technological changes, requiring longer adaptation periods to independently operate MIS platforms or utilize AI tools. Another significant challenge is the instability of central servers, particularly during critical periods such as EMIS data synchronization or year-end ERKAM budget input, when server downtime or heavy traffic frequently disrupts information access and reduce operational efficiency. Additionally, although basic infrastructure is adequately available, the *madrasah*'s budg*et al*location for conducting in-depth and certified AI training programs for teachers remains limited, causing most AI utilization to be self-taught and potentially inconsistent in quality. The transition from manual to fully digital financial reporting through ERKAM has also occasionally triggered data input inconsistencies due to human error in the initial stages, requiring time-consuming verification processes that temporarily reduce operational efficiency.

An interview with the *madrasah* operator provided valuable insight into the practical dynamics of technology implementation, revealing that human resource factors and policy support are the most dominant determinants of successful digital transformation. The operator stated, "The technology itself is actually ready and well-supported by the Ministry, but the main challenge lies in adapting the human resources. Some senior teachers need extra guidance and patience, while the server instability during peak periods often disrupts our workflow. However, with the headmaster's strong commitment and the enthusiasm of younger teachers, we continue to find solutions and improve the system gradually." This testimony underscores that technological infrastructure alone is insufficient to guarantee successful implementation; rather, the human element, including digital literacy, adaptability, and leadership support, plays a more decisive role in determining the sustainability of digital transformation efforts. The experience of MIN 9 Magetan thus highlights the importance of a holistic approach that addresses not only technological readiness but also human resource development and organizational culture in implementing digital governance systems.

4.1.5 Impact of MIS and AI Implementation on Educational Service Quality

The implementation of Management Information Systems and Artificial Intelligence at MIN 9 Magetan has produced positive impacts on the quality of educational services, particularly in enhancing administrative efficiency, data accuracy, instructional quality, and stakeholder satisfaction. The deployment of digital platforms such as EMIS 4.0, ERKAM, RDM, and SIMPATIKA has significantly accelerated administrative services by enabling real-time, integrated data management that minimizes processing time and reduces recording errors. The integration of various governmental systems allows student, teacher, financial, and facility data to be stored in a more systematic and well-documented database, supporting the principle of evidence-based decision-making where policies are formulated based on valid and measurable data. Furthermore, the utilization of AI tools such as ChatGPT and Gemini has enabled teachers to design Higher Order Thinking Skills (HOTS) assessment instruments, develop innovative learning methods, and produce interactive visual and video learning media through Canva and CapCut, thereby enriching the learning experience for students. The use of these AI platforms also indirectly strengthens teachers' digital literacy, instructional design capabilities, and technology integration skills, contributing to their ongoing professional development. The positive impact

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extends to stakeholder satisfaction, as digital-based student admission systems, academic reporting platforms, and administrative services provide easier access to information, greater service transparency, and improved time efficiency for students and parents. Parents can now obtain academic information more quickly and conveniently, while students benefit from more engaging learning experiences through AI-based digital learning media. The implementation of ERKAM as the *madrasah*'s financial management system has also contributed to enhanced transparency and accountability in the use of school operational funds, as all planning, implementation, and reporting processes are digitally documented, facilitating effective monitoring and evaluation. These outcomes demonstrate that digital transformation not only improves internal organizational effectiveness but also strengthens the quality of public educational services, aligning with the broader goals of good governance in the educational sector.

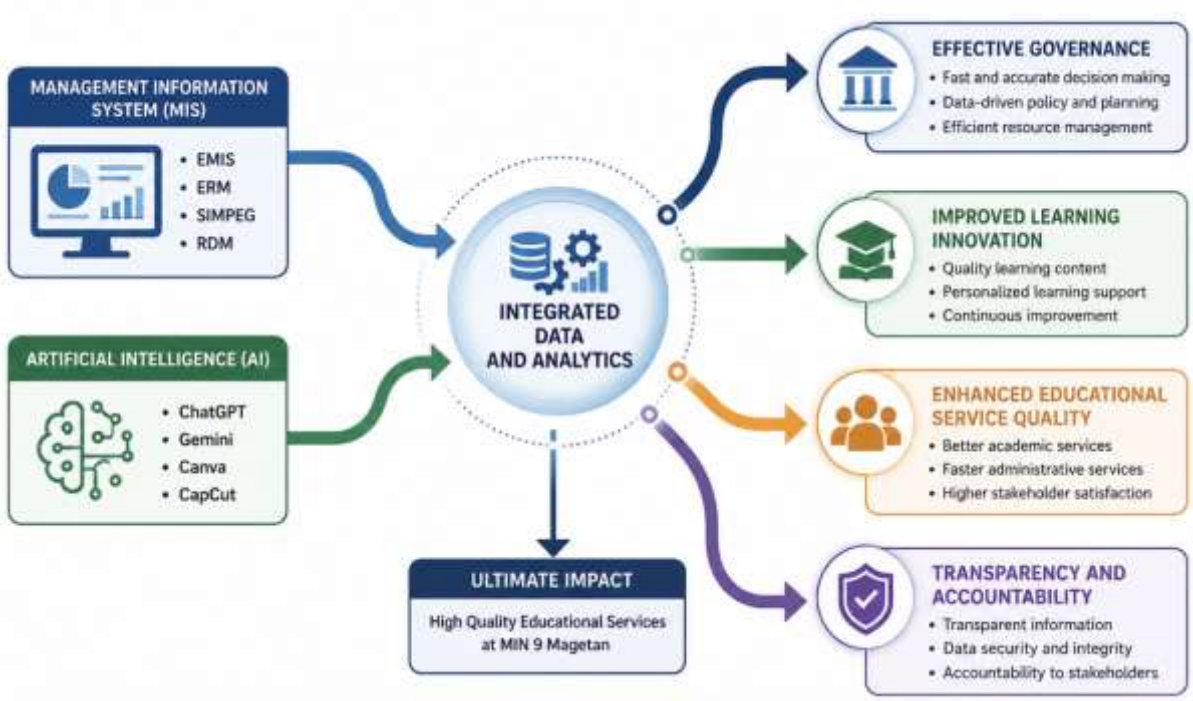


Figure 2. Impact Model of MIS and AI Implementation on Educational Service Quality at MIN 9 Magetan

The diagram above presents a comprehensive model illustrating the multidimensional impacts of MIS and AI implementation on educational service quality at MIN 9 Magetan, showing how technological integration influences various aspects of institutional performance and stakeholder experience. The model demonstrates that MIS implementation primarily enhances administrative efficiency, data accuracy, and financial transparency, while AI implementation predominantly improves instructional quality, teacher competency, and student engagement. Both technological dimensions collectively contribute to increased stakeholder satisfaction, strengthened institutional accountability, and the overall enhancement of Islamic education governance quality. This impact model confirms that the successful integration of digital technology in Islamic educational institutions produces measurable benefits across administrative, academic, and service dimensions, validating the strategic importance of digital transformation as a catalyst for institutional improvement. The model also highlights that these impacts are mediated by supporting factors such as leadership commitment, infrastructure availability, and human resource competency, emphasizing the need for a holistic approach to digital governance implementation in Islamic educational contexts.

4.2 Discussion

The findings of this study reveal that the integrated implementation of Management Information Systems (MIS) at MIN 9 Magetan—encompassing platforms such as EMIS 4.0, SIMPEG, ERKAM, RDM, and SIMPATIKA—has significantly transformed administrative governance by enabling faster, more accurate, and more accessible data management. This finding strongly aligns with the assertion of Ragazou *et al.* (2023) and Saremi (2025), who emphasize that digital information systems enhance organizational efficiency by providing rapid, accurate, and easily accessible information for decision-makers. Similarly, Bashori *et al.* (2024) and Prasetyowati *et al.* (2025) argue that the quality of information produced by information systems is a primary factor in improving the effectiveness of modern organizational management. The experience of MIN 9 Magetan further corroborates these theoretical positions, demonstrating that the systematic digitization of administrative processes not only reduces processing time but also minimizes human error and strengthens

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institutional accountability. From the perspective of Islamic education governance, this digital transformation reflects the principle of *amanah* (trustworthiness), as every administrative activity is digitally documented and can be verified by authorized stakeholders at any time. The utilization of Artificial Intelligence (AI) by teachers at MIN 9 Magetan—particularly through platforms such as ChatGPT, Gemini, Canva AI, and CapCut AI—has significantly enhanced instructional design, media production, and assessment development. This finding is consistent with the research of Alfiyanto *et al*. (2026) and Lin & Chen (2024) who argue that AI has the potential to improve learning quality through content personalization, pedagogical creativity, and strengthened learning experiences for students. Furthermore, Ng *et al*. (2023) and Zou *et al*. (2025) emphasize that the development of educators' digital competencies is a key factor in the success of technology- and AI-based educational transformation. The grassroots adoption of AI tools by teachers at MIN 9 Magetan demonstrates that AI functions as an assistive technology that amplifies teachers' professional capabilities rather than replacing their pedagogical expertise. This finding also resonates with Abulibdeh *et al*. (2025) and George & Wooden (2023), who highlight that AI enables educational institutions to manage resources more effectively and deliver responsive, high-quality services to learners and other stakeholders.

The synergistic role of MIS and AI in enhancing the effectiveness of Islamic education governance at MIN 9 Magetan is strongly supported by recent scholarly work on digital transformation in education. Wongmahesak *et al*. (2025) found that AI-based technology enhances decision-making effectiveness in educational organizations through faster and more accurate data analysis, a finding that directly mirrors the experience of MIN 9 Magetan, where data-driven decision-making has replaced intuition-based management. Similarly, Champaneria (2025) and Mariam *et al*. (2024) argue that educational governance in the AI era is transforming toward more adaptive, predictive, and data-driven systems, which is evident in how MIN 9 Magetan leverages EMIS 4.0 and ERKAM for strategic planning and financial transparency. The integration of administrative efficiency generated by MIS and pedagogical innovation facilitated by AI has created a modern Islamic educational ecosystem that enhances both institutional productivity and the quality of the teaching-learning experience. This dual technological integration not only strengthens the operational effectiveness of the *madrasah* but also enriches the educational experience by providing students with more dynamic, interactive, and relevant learning opportunities. The identification of supporting and inhibiting factors in the implementation of MIS and AI at MIN 9 Magetan provides important insights into the dynamics of digital transformation in Islamic educational institutions. Leadership commitment, adequate digital infrastructure, educators' digital competencies, and systematic support from the Ministry of Religious Affairs emerged as crucial supporting factors, while the digital literacy gap among senior teachers, central server instability, limited training budgets, and data validation challenges constituted significant inhibiting factors. These findings align with Putrini *et al*. (2026), who asserts that the experience of MIN 9 Magetan underscores that technological infrastructure alone is insufficient to guarantee successful implementation; rather, the human element—including digital literacy, adaptability, and leadership support—plays a more decisive role in determining the sustainability of digital transformation efforts. This finding highlights the importance of a holistic approach that addresses not only technological readiness but also human resource development and organizational culture in implementing digital governance systems. The positive impact of MIS and AI implementation on the quality of educational services at MIN 9 Magetan—manifested in accelerated administrative services, improved data accuracy, enhanced instructional quality, strengthened teacher digital competencies, and increased stakeholder satisfaction—represents a significant contribution to the discourse on digital transformation in Islamic education. This finding is strongly supported by Ho & Tang (2024) and Lively & Hutson (2025), who argue that AI can enhance learning quality through content personalization, pedagogical creativity, and strengthened learning experiences, as well as by UNESCO (2022), which emphasizes that digital transformation in education must be guided by ethical considerations and aligned with educational values. The implementation of ERKAM as the *madrasah*'s financial management system has also contributed to enhanced transparency and accountability in the use of school operational funds, aligning with the principles of good governance emphasized by Sugandi (2026), Ummi (2025), and Zahirah & Suhaedi (2025). Collectively, these findings demonstrate that digital transformation in Islamic educational institutions not only improves internal organizational effectiveness but also strengthens the quality of public educational services, validating the strategic importance of integrating MIS, AI, human resource competencies, and good governance principles rooted in Islamic values to produce a contemporary yet ethically grounded educational management model.

5. Conclusion and Recommendations

This study concludes that the integrated implementation of Management Information Systems (MIS) and Artificial Intelligence (AI) at MIN 9 Magetan has significantly transformed Islamic education governance by enhancing administrative efficiency, data accuracy, and instructional innovation. While MIS platforms streamline institutional management and financial transparency, AI tools empower teachers to develop

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interactive learning media and data-driven assessments. This digital transformation is driven by visionary leadership, adequate infrastructure, and strong teacher motivation, despite challenges such as the digital literacy gap among senior educators and central server instability. Ultimately, the synergy of these technologies has positively impacted educational service quality, stakeholder satisfaction, and the overall accountability of the *madrasah*, effectively expanding the traditional concept of Islamic education management into a modern, data-driven, and AI-enhanced governance model rooted in Islamic values. Based on these findings, it is highly recommended that the *madrasah* leadership and the Ministry of Religious Affairs prioritize targeted digital literacy programs, specifically designed to support senior educators in seamlessly adapting to MIS and AI technologies. Furthermore, allocating a dedicated institutional budget for certified, in-depth AI training and advocating for more stable central government servers are crucial steps to optimize digital governance operations. For future research, it is suggested to conduct quantitative or multi-site studies to statistically measure the impact of MIS and AI integration on student learning outcomes, as well as to explore the ethical implications and long-term sustainability of AI utilization across diverse Islamic educational contexts.

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