



Implementation of Management Information Systems in Managing Educational Institutions: Chances and Challenges

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Abstract

The implementation of management information systems in managing educational institutions plays an important role in improving the efficiency and quality of management. The implementation of management information systems in madrasah in the face of educational disruption that has occurred globally. This study aims to analyze the implementation of management information systems in managing educational institutions. This research uses a qualitative method with a case study approach. Data analysis was conducted using the Miles & Huberman model. The results of this study show that one educational institution has succeeded in taking advantage of the great opportunities in the implementation of management information systems to face educational disruption. This success was realized through strengthening the technological infrastructure which reached 60%, as well as increasing the mastery of human resources by 30%. The implementation of this system also accelerates data-based decision-making that supports the quality of education services. However, challenges remain, albeit minimal. The findings of this study provide important implications for improving education management in madrasahs. The implementation of management information systems enables the digitalization of administration, improving efficiency, transparency and data-based decision-making.

INTRODUCTION

The rapid development of digital technology has had a significant impact on the life sector, including education, especially in Indonesia. Digitalization of education is currently an issue that is so relevant and urgent to study (Danuri, 2019; Hidayatullah et al., 2023; Mutiasari, 2020; Sadriani et al., 2023; Tuhuteru et al., 2019).

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Technological disruption that has changed the way of learning, teaching, and managing educational institutions has created a new challenge that must be faced by today's educational institutions, including madrasah. As an educational institution that has strong Islamic principles, it combines general education and religious education (Alam et al., 2023; Lasmawan, 2019; Salim et al., 2023).

In addition, implementing management information system technology in madrasah is also faced with various obstacles, both from limited infrastructure and adequate human resources (Fradito et al., 2023; Purwaningsih, 2022; Sirojuddin et al., 2022; Sonia, 2020). This shows how important the right solution is to answer the various challenges of digitalization in madrasah. The process of digitalization in madrasah requires more attention, especially in terms of information system integration and human resource training. Although limited infrastructure and human resources are obstacles for madrasahs, developing digitalization, implementing management information systems is the right solution to overcome these obstacles. Management information systems have the capacity to integrate various important data, including student administration, curriculum, learning evaluation, and other resource management in one more efficient system (Hariyanto, 2016; Prabowo et al., 2023; Puspaningrum & Sudarmilah, 2020; Sholeh & Wahyudin, 2021).

The application of management information systems is one of the developing concepts and is expected to be able to overcome various challenges. Certainly, this system allows administrative and data management of an educational institution, especially madrasah, to be more efficient and organized. Management information systems can increase transparency in the management of education in madrasah by providing real-time access to integrated data. This makes it easier for policy-making to make decisions that are certainly faster and more precise. With management information systems, the management of academic data, finance, attendance, and scheduling of learning activities can be done more systematically and structured. However, the potential offered by management information systems is enormous. The challenges faced in its implementation remain significant, especially in madrasahs that have constraints in terms of technological readiness and limited skilled human resources.

The disruption of education that occurs globally has accelerated the need for technology-based managerial systems (Febrianti et al., 2023; Harini et al., 2023; Hidayah & Hermansyah, 2018; Rahmadi et al., 2021; Widodo et al., 2023). One of the most obvious changes is the shift from conventional learning methods to technology-based learning. Such changes are a big challenge for educational institutions, especially madrasahs, which must balance the preservation of religious values and adapt to the times. Madrasahs often face a dilemma in adopting technology for fear of losing the essence of religious education that has become their identity. However, with the right planning and strategies, madrasahs can implement technology without losing religious values and keep up with the times.

Meanwhile, the role of the head of administration in madrasah is crucial in ensuring the implementation of management information systems can run smoothly. Administration is not only an administrative manager, but also the main driver in utilizing technology to improve work efficiency. Administration needs to have a clear vision in implementing technology, in order to accelerate various administrative processes that have been done manually. Technology can be used to analyze data quickly, assist in decision-making, and automate various administrative processes that were previously time-consuming. Therefore, the utilization of technology in the management system in madrasah is not only to

improve efficiency but also to enrich the learning experience for students (Liriwati, 2023; Nikmah et al., 2023).

This discussion aims to dig deeper into the implementation of management information systems in madrasas in the face of educational disruption that has been happening globally. In addition to discussing the challenges and opportunities that arise in the implementation of management information systems, this article will also explore the role of administration in utilizing technology to improve the quality of administration in madrasah. And this article is expected to contribute to the development of theories related to the digitalization of education and provide some clear understanding of the important role of management information systems in answering the challenges of educational disruption.

Management information systems can improve accountability and transparency in education management. With management information system technology, madrasahs can also design a more efficient and integrated management system. With all these potentials, the implementation of management information systems in madrasahs is an important step to advance education in the midst of technological disruption that occurs today.

Thus, the findings provide a more comprehensive picture of the challenges and opportunities that exist in the implementation of management information systems in one madrasah and the administration can play an important role in utilizing technology to improve and increase administrative effectiveness. This study differs from previous studies by focusing on the implementation of management information systems in madrasahs, especially related to technological readiness, mastery of human resources, and challenges faced. While previous studies more generally focused on the theory or application of technology in general in education, this study reviews the practical impact of management information systems in administrative efficiency and the role of administrative heads in utilizing technology. The main benefit of this research is to provide insights for madrasah managers and policy makers in facing the challenges of educational disruption, and to help improve administrative effectiveness through the use of technology.

METHODS

This research uses a qualitative method with a case study approach (Engkizar et al., 2024; Iskandar et al., 2023; Tariq et al., 2020; Yusnita et al., 2018). The case study approach was chosen because this research aims to dig deeper into the challenges and opportunities faced by madrasahs in implementing management information systems in the midst of educational disruption, which emphasizes contextual understanding at the level of certain educational institutions. Data sources were taken from five informants consisting of the head of the madrasah, the head of the administrative office, and system administration personnel involved in the implementation of management information systems in madrasah (Engkizar et al., 2023). Informants were selected using purposive sampling technique with the criteria of understanding the problem being studied, still active in the management of management information systems, and providing information that is relevant to the facts that occur in the field (Afifatun et al., 2022; Dias-Oliveira et al., 2024; Mukhibat et al., 2024).

Data collected through three methods participatory observation in the madrasah environment, documentation of administrative archives and relevant reports, and in-depth interviews with selected informants. Participatory observation provided a direct picture of the implementation of the

management information system, while documentation provided objective data on relevant administration and reports. In-depth interviews were conducted to obtain more detailed and contextualized information from informants who were directly involved. These stages were chosen because they enabled the research to sift through relevant data, present it in a way that is easy to understand, and draw valid and insightful conclusions. This approach ensured that the research results reflected the reality on the ground and provided a comprehensive picture of the implementation of management information systems in madrasahs.

RESULT AND DISCUSSION

Application use forms of management information system implementation in managing educational institutions

In order to digitize administrative governance, one Islamic education institution has implemented various management information system applications. The use of these applications supports operational efficiency and better data management. The following pictures show the use of management information system applications in this madrasah.



Fig 1. Agency level financial application system

The agency-level financial application system used to manage state finances is used to support the implementation of the state treasury and budget system (Amriani & Iskandar, 2019; Prabowo, 2017; Rahman et al., 2023). This application integrates all existing work unit applications, so that all transactions are carried out electronically. The features in the agency-level financial application system application include: Single database, Single entry point, Concept of MAKER, CHECKER, APPROVER, Journal Tracing, Application of Access Control List, Application of Closing Period, Application of 14 Periods.

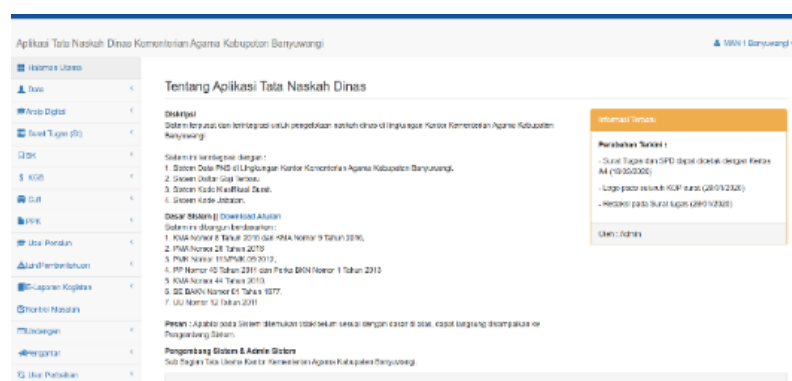


Fig 2. Naskah.online Application

The application Naskah.online application is a correspondence application used by all Ministry of Religious Affairs work units. Naskah.online is used to support the management of official documents within the Ministry of Religious Affairs of Banyuwangi Regency and the work units under it. In this application, you can create assignment letters, invitation letters, cover letters and others.



Fig 3. Application of state asset management information system

The state asset management information system application has modules that can be used for the management of state property, one of which is the Wasdal module. The Wasdal module is used to monitor, order, investigate, and report the results of supervision and control of state property.

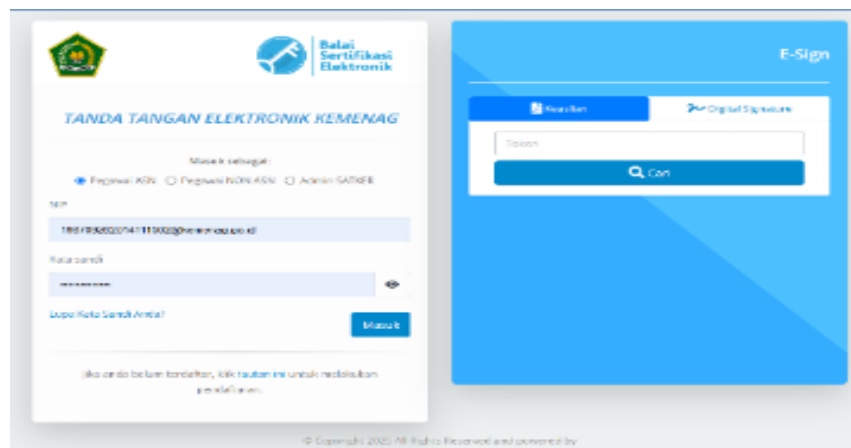


Fig 4. Electronic signature application

The Ministry of Religious Affairs electronic signature application is an application used to perform digital signatures on official documents of the Ministry of Religious Affairs. Electronic signatures are a substitute for manual signatures used to ensure the authenticity of the document sender's identity (Sihombing, 2020). Electronic signatures are used to improve the quality of administrative services, especially in official manuscripts and document archiving. Some functions of the Ministry of Religious Affairs electronic signature application, namely: Login, view dashboard, change password, manage list. The Ministry of Religious Affairs implements electronic signatures

as part of digital transformation and the implementation of an electronic-based government system.



Fig 5. Application education management information system

The education management information system application is an education data collection system managed by the Ministry of Religious Affairs. Education management information system stands for education management information system (Chaw & Tang, 2018). The Ministry's education management information system application is used to input data on schools, boarding schools, and Islamic higher education, report on school progress, obtain valid data on madrasah, support planning and policy making in the field of education, and improve the quality of madrasah education services. The Ministry's education management information system application is also integrated with other applications, such as e-RKAM, Simpatika, BOS, AKSI, and Alert). For education management information system applications used by education institutions.

Based on the findings, one Islamic education institution has adopted various management information system applications to digitize all administrative governance, covering almost all aspects of madrasah operations. Applications such as agency-level financial application systems, online manuscripts, state asset management information systems, electronic signatures and education management information systems are used to manage finance, correspondence administration, state assets, electronic signatures and education data. The use of these applications supports operational efficiency, better data management, and accelerates administrative processes that previously required a lot of time and effort. In this regard, administrative digitization reduces the potential for human error and increases transparency in the management of the budget and state assets.

The implementation of an integrated management information system can improve operational efficiency and accelerate the data-based decision-making process. In addition, the use of information technology in education administration not only increases efficiency but also enables more transparent and accountable management. With the implementation of these various applications, one Islamic education institution is able to face the challenges of the digital era, optimize administrative performance, and support better quality of education services.

Based on the research results, it can be concluded that the discovery model in the era of educational disruption is characterized by rapid changes due to digitalization, the readiness of educational institutions to implement technology is the key to survival and development. One Islamic educational institution shows significant readiness in adopting management information systems as part of the strategy to face educational disruption. Based on semi-

structured interviews, participatory observation and related documentation, the results show that one Islamic education institution has achieved significant readiness in implementing management information systems with the following details: 60% strengthening of technological infrastructure, 30% mastery of human resources, and 10% minimal challenges. The following table illustrates the details of the readiness of management information system implementation in one of the Islamic education institutions.

Table 1. Management information system implementation readiness

Aspect	Percentage of readiness
Technology infrastructure strengthening	60%
Mastery of human resources	30%
Minimum challenge	10%

60% of the readiness achieved by one Islamic education institution relates to strengthening the technology infrastructure, which includes the readiness of hardware, software and networks that support the implementation of management information systems. Adequate infrastructure allows management information system applications to run well and facilitates efficient data integration in various sectors, such as student data management, lesson schedules and financial administration. The successful strengthening of this infrastructure is critical, given the challenges of educational disruption that demand rapid adoption of digital technology. 30% of the readiness is related to the mastery of human resources, which includes staff training and understanding of the use of the Management Information System. This was conveyed by the informants as follows.

We have made a lot of efforts to ensure that our infrastructure and human resources are ready for digital transformation. The management information system we implemented helps improve work efficiency, especially in managing student data, lesson schedules and financial administration (informant 1).

This statement shows that human resources in one of the Islamic education institutions are ready to use this technology, with planned training and high awareness of the importance of management information systems in managing education more efficiently. The challenges faced by one Islamic education institution in implementing management information systems are minimal, with a percentage of 10%. These challenges are related to budget limitations and internet access in some areas, which are barriers to the even distribution of technology. Nonetheless, Madrasahs can overcome these obstacles with adaptive strategies, such as revamping the internet network and efficiently allocating budgets to support the implementation of management information systems. Interviews with management information system expert staff also provided important insights related to information system management. This was conveyed by the informant as follows.

We continue to provide technical assistance and training to all staff to ensure maximum use of the management information system. One of our biggest challenges is ensuring that all users understand the functions and benefits of this system to simplify administrative tasks and increase productivity (informant 2)

This statement shows that continuous assistance to staff and a deep understanding of the use of management information systems are necessary to ensure the successful implementation of the system. The implementation of management information systems in one of the Islamic educational institutions has a significant impact on improving the efficiency of education management.

An integrated management information system facilitates data access and accelerates data-based decision-making. an integrated information system can improve operational efficiency and support data-based decision-making. In addition, the application of management information systems can provide access to fast and accurate information, supporting the achievement of better quality education. This was conveyed by the informant as follows.

We feel that the information system implemented has given us an edge in managing various administrative and academic aspects more efficiently. Although challenges remain, we believe this technology opens up great opportunities for further development (informant 3)

This statement confirms that despite the challenges faced, the benefits of implementing management information systems are far greater, especially in improving the quality of education services. With the readiness it has achieved, one Islamic education institution is not only able to adapt to digital changes, but can also utilize technology to improve the quality of education management and operational efficiency. This research shows that the management information system in one Islamic education institution not only facilitates administration, but also supports faster and more accurate data-based decision-making. This provides a positive picture of the madrasah's ability to face educational disruption and take advantage of the opportunities that exist for the advancement of education in the future.

The head of an Islamic education institution stated that the implementation of a management information system in one of the Islamic education institutions had a significant impact on operational efficiency and transparency in education management. However, this administrative digitization process is not without challenges. Some of the main challenges faced by madrasahs in implementing management information systems include equal access to technology, limited internet access, the need for continuous training for human resources, efficient budget management, and integration between the applications used. The first challenge is to ensure that all educational elements in madrasahs have equal access to technology. Not all areas, especially the more remote ones, can access technology in the same way.

Access to adequate equipment and stable internet are the main obstacles. This hinders the effectiveness of the system and causes gaps in data management. To overcome this, it is important for madrasahs to improve internet network infrastructure and provide adequate devices for all staff and students, so that no one is left behind in utilizing technology.

The second challenge relates to the quality of internet access. The management information system applications used in one of the Islamic educational institutions, such as the agency-level financial application system, online manuscript, state asset management information system, electronic signature, and education management information system, require a stable internet connection. Without adequate internet access, the application-based administration process will be disrupted. To ensure smooth operations, madrasahs need to pay attention to the quality of the internet network in all areas of the madrasah. One of the steps that can be taken is to increase cooperation with internet service providers to improve network quality and provide equitable access.

The third challenge is the need for continuous training for human resources. Although human resources' mastery of technology has improved, continuous training is needed for staff to master the optimal use of management information system applications. Without continuous training, staff may not be able to fully utilize the potential of management information

system applications. This training should also include an understanding of how these applications can improve the efficiency and quality of education management. For this reason, madrasahs need to provide scheduled mentoring and training so that staff can overcome technical obstacles and maximize the use of the applications.

Efficient budget management is also a challenge. Although the strengthening of technology infrastructure has reached 60%, the cost required for procurement of devices and technology maintenance is considerable. Therefore, proper budget management is essential so that the available funds can be used efficiently. Madrasahs need to plan their budgets carefully and, if necessary, seek additional sources of funding so that technology development can run smoothly. Proper budget allocation also ensures that all elements of education have access to the necessary devices.

The last challenge is the integration of management information system applications. Madrasahs use various applications to manage their finances, correspondence administration, state assets, electronic signatures and education data. For these applications to run efficiently, they must be integrated with each other. Without proper integration, data management may be disrupted and data-driven decision-making will become more difficult. Therefore, it is important for madrasahs to ensure that these applications are interconnected, so that data can be exchanged smoothly and accurately.

Overall, these challenges need to be overcome for the implementation of management information systems to run optimally. By paying attention to equal access to technology, improving internet quality, providing continuous training for human resources, managing budgets efficiently and ensuring optimal application integration, madrasahs can utilize technology to improve the quality of education and operational management.

CONCLUSION

Based on the results of the author's analysis related to the implementation of management information systems in educational institutions has shown a significant impact in improving operational efficiency and transparency in education management. The use of various management information system applications facilitates more effective financial management, correspondence administration, state assets, electronic signatures and educational data. The readiness of institutions to implement management information systems was recorded in strengthening technological infrastructure at 60%, mastery of human resources at 30%, and challenges at a minimum of 10%. Nevertheless, this study identified several challenges, such as limited access to technology, quality of internet access, the need for continuous training, efficient budget management and integration between applications. Therefore, there is a need to improve technology infrastructure, continuous training for human resources, and more efficient budget management. Integration of management information system applications is also something that needs to be considered so that data management can be done efficiently and accurately. This study also provides recommendations for future researchers to further explore the implementation of management information systems in various educational institutions and analyze their long-term impact on the quality of education and human resource management.

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