

Implementation of Management Information Systems as a Pillar of Digital Transformation in the Society 5.0 Era

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ARTICLE INFO

Keywords:

Management information system. MIS implementation, digital transformation, challenges, strategies.

Article history:

Received 2026-07-10

Revised 2026-07-11

Accepted 2026-07-13

ABSTRACT

The development of digital technology has pushed organizations to implement management information systems (MIS) as an effort to improve effectiveness, efficiency, and the quality of decision-making. However, implementing MIS in the digital era still faces various challenges that can affect its success. This study aims to analyze the challenges in implementing management information systems in the digital era, identify factors that influence the success of MIS implementation, and analyze strategies that can be applied to overcome these challenges. This research uses a literature review method by examining various books and scientific articles relevant to management information systems and digital transformation. The study results show that the main challenges in implementing MIS include limitations in technology infrastructure, low human resource competence, resistance to change, information security, and funding constraints. Implementing MIS requires collaboration between technology, people, and organizational aspects to work effectively.

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1. INTRODUCTION

The digitalization era is a result of the Industry 4.0 revolution, marked by rapid technological developments like the Internet of Things (IoT), big data, cloud computing, robotics, automation, and Artificial Intelligence (AI), which have changed the way humans work, communicate, and interact. These developments have caused disruption in various areas of life, so organizations and individuals are required to be able to adapt to fast-changing conditions. Digital technology allows information to spread in real-time without limits of space and time, shifting communication patterns from conventional media to digital and social media, and driving the creation of work systems that are more effective, efficient, and flexible through the application of automation and technology-based

collaboration. (Justini, 2021) Management Information System is a set of combined procedures that collect and generate reliable, relevant, and well-organized data that supports an organization's decision-making process. (kiki joesyiana, 2024).

According to Robert G. Murdick and Joel E. Ross, a management information system is a communication process where input information is recorded, stored, and retrieved (processed) for decisions (output) regarding planning, operations, and supervision. According to Joseph F. Kelly, a management information system is a combination of human and computer-based resources that produces a set of storage, retrieval, communication, and use of data for efficient management operations and business planning. (Sunyoto, 2014). Here are some purposes of a Management Information System: providing information services for product calculations, service cost calculations, and other objectives that are management targets; offering services that can be used as tools for control, planning, evaluation, and continuous improvement; providing supporting information that can be used for analysis and decision-making. In general, a management information system aims to make work and management easier. (kiki joesyiana, 2024).

According to various experts, a management information system is a system that integrates people, procedures, data, and technology to collect, process, store, and present accurate, relevant, and structured information. This information is used to support planning, control, evaluation, and decision-making, so that management activities in an organization can run more effectively, efficiently, and in a focused manner. The benefits of a management information system are as follows: As a support for decision-making, management information systems function to process necessary transactions and provide support in supplying information and processing that aid managerial functions and decision-making. As a support for planning and control, achieving organizational goals heavily depends on how well the planned objectives align. Management information systems are very important for supporting planning and control. Planning supported by computer technology expands management's ability to carry out these two functions.

As the program's decision maker, setting priorities in the work program is done based on what needs to be prioritized first and what can be postponed. (Nuryana et al., 2024). Based on several previous studies, management information systems (MIS) have various benefits in improving the effectiveness of organizational management. MIS serves as a decision-making support by providing accurate and timely information, making it easier for management to set policies. In addition, MIS also supports the planning and control process by providing integrated data for creating work plans, monitoring implementation, and evaluating the achievement of organizational goals.

However, common challenges often include limitations in technology infrastructure, such as internet networks and inadequate devices, low human resource competence in operating the system, and resistance to moving from manual to digital systems. In addition, budget constraints, lack of management support, and suboptimal quality and integration of data also hinder the implementation of MIS. Most previous studies have only focused on the benefits of management information systems, while research that integrates challenges, success factors, and solutions through literature studies is still limited. This study aims to analyze the challenges in implementing management information systems in the digital era, identify the factors that influence successful MIS implementation, and analyze what can be applied to overcome these challenges. Through this research, it is hoped to provide a comprehensive understanding of the obstacles, success-supporting factors, and efforts that can be made so that MIS implementation runs effectively, efficiently, and is able to support organizational goals in the digital era.

2. METHODS

This study uses a qualitative approach with a literature review method. This method aims to identify, examine, and compare various previous research findings regarding the implementation of Management Information Systems (MIS) in the digital era. The data used are secondary data obtained from national scientific journal articles, as well as scientific books relevant to the research topic. The literature search process was conducted through several academic databases, namely Google Scholar

and eBooks, using keywords such as Management Information System, MIS Implementation, and digital era. The selected literature was prioritized to be published between 2020-2026. Data analysis was carried out using content analysis by grouping research results based on themes that align with the problem statement, namely the challenges of implementing Management Information Systems in the digital era. the factors that affect the success of implementation, as well as strategies to overcome various challenges.

3. FINDINGS AND DISCUSSION

Management information systems, originating from English and known as management information system (MIS), are systems designed to support internal activities within an organization or business. MIS is designed to manage, process, store, and present the information needed by organizations or companies in carrying out various operational activities. MIS integrates people, hardware, data, software, and work procedures so that it can produce accurate, relevant, and timely information. The definition of a management information system is a system designed to provide information for managers to support operations, management, and decision-making within an organization. (Armah & Firdaus, 2024). Management information systems are a combination of information technology and human activities that support operations, management, and decision-making in an organization. (Puspitasari, 2020). Management information systems have become an integral part of modern organizational operations. According to McLeod and Schell (2007), MIS is a computer-based system that provides information to users with similar needs, usually consisting of formal organizational entities of the company or its subsidiary units.

According to Aagaard, digitalization is a global trend that has already developed in various industry sectors. Examples of digitalization implementation mentioned by Hiekka Nen can be found in the media, banking, and telecommunications sectors, which are the main pioneers in the ongoing digital transformation. (Sari & Diana, 2024) The characteristics of MIS, as identified by Alter (1992), include operating on structured tasks, improving efficiency by reducing costs, and providing reports and data access for decision-making needs. (Surayya et al., 2024). Components in a piece of management information that are integrated into a system working harmoniously also produce information that users can rely on. In the concept of a management information system, all elements and sub-elements involved in forming a quality management information system must be well integrated. These elements can also be referred to as accounting information system components, which include software, hardware, brainware, procedures, databases, and communication networks. (Gede Endra Bratha, 2022).

The role of management information systems is really significant, as a management information system can improve the accessibility of data that's available in a timely and accurate way for users, without requiring intermediaries from existing information systems. MIS helps develop a more effective and efficient planning process, (Saifan Shodiq, 2021). Based on the literature review from several previous journals mentioned above, it can be concluded that a management information system is a system that integrates people, information technology, hardware, software, databases, procedures, and communication networks to provide accurate, relevant, and timely support for operational, managerial, and decision-making activities in an organization. The development of technology and digitalization has driven MIS to transform from a manual administrative system into an integrated digital system. With characteristics that can improve efficiency, reduce operational costs, and provide data-based information quickly and accurately, MIS now not only serves as a tool for managing information but also becomes a strategic instrument that supports organizational effectiveness in facing challenges and dynamics in the digital era.

Challenges of Implementing Management Information Systems in the Digital Era

Here are some challenges that are often faced in implementing management information systems in the digital era:

1. **Limitations of technology infrastructure** The availability of technology infrastructure is a key factor in the successful implementation of an MIS. When the infrastructure is inadequate, it hinders data processing and fast information exchange. First, an unstable internet connection makes accessing data slow and also disrupts the use of cloud-based systems. Second, server capacity – limited server capacity can cause system disruptions (downtime) and risks losing information if damage occurs. Third, computer devices – using hardware that is already damaged or does not meet specifications results in suboptimal system performance and lowers user productivity.
2. **Low Human Resource Competence** The success of implementing an information management system (IMS) doesn't just depend on the technology, but also on the users' ability to operate the system. For example, a lack of digital skills and limited training means that usually some employees or people don't have adequate digital literacy, so they often face difficulties.
3. **Resistance to Change** Moving from a manual system to a digital system often triggers pushback from some members of the organization. The manual work culture makes employees who aren't used to it feel comfortable with the old ways, so they are reluctant to switch to a digital system. As a result, the organization ends up being unprepared because an information management system requires management support, clear policies, and effective communication to make sure everyone is ready to face the change.
4. **Information Security** As the use of digital technology increases, the risks to information security also rise, making it a key concern for organizations. For example: Data leaks: Important organizational data can be accessed by unauthorized parties if security systems are insufficient. Cyber threats: attacks like malware, ransomware (a type of malicious software), phishing (techniques to steal personal data), and hacking can disrupt organizational operations and lead to reputational or financial losses. Privacy protection: organizations must ensure that users' personal data is managed according to confidentiality principles and applicable data protection regulations.
5. **The limited funding for SIM implementation** requires a pretty big investment, making it a challenge for many organizations, especially small to medium-sized ones. It usually includes implementation and system maintenance costs, such as hardware, software, licenses, system development, and consultancy fees.

Based on the results of various previous studies, they show that the challenges of implementing MIS in the digital era are not only influenced by technological readiness but also by human, organizational, and data governance factors. Regarding MIS implementation, it shows that data quality and user acceptance are key factors for successful system implementation. Systems with high-quality data tend to be more easily accepted and used by users, whereas low-quality data leads to low satisfaction and system utilization. (Surayya et al., 2024). Implementing a management information system often faces various challenges. Heeks (2006) mentions that high costs, disagreements, and difficulties in integrating this system with existing systems are some of the main obstacles in the process of implementing a management information system. (Puspitasari, 2020).

Factors that affect the success of implementing a management information system

1. **Leadership support** Leadership support is one of the key factors that determines the success of MIS implementation. Leaders play a role in setting policies, allocating resources, providing budgets, and encouraging all members of the organization to make the most of the system. Leadership commitment can also reduce resistance to change and create a work culture that supports digital transformation. Top management support is one of the most consistent factors influencing the success of information system implementation in various organizations. (Sova et al., 2026). Leadership commitment is the foundation for providing resources and making decisions during the implementation of the information system (Akbar et al., 2024).
2. **Human resource (HR) competence** HR competence is a very important factor because users are the ones who directly interact with information systems. Mastery of technology, the ability to

operate applications, and readiness to accept changes will determine the effectiveness of using MIS. HR competence has a significant impact on the success of management information system implementation compared to implementation costs or technology accessibility.(Prasetyo Wibowo & Hapzi Ali, 2025). Organizations that regularly provide training and guidance to users have a higher success rate in implementing information management systems compared to organizations that don't develop their employees' skills. (Maharani, 2026).

3. **Technology Infrastructure** The success of MIS implementation is also influenced by the readiness of technology infrastructure, such as hardware, software, servers, internet networks, and data security systems. Adequate infrastructure allows the system to run quickly, stably, and support organizational activities. On the other hand, limited technological facilities can hinder the implementation process. The readiness of technology infrastructure is an important prerequisite in supporting MIS implementation activities.(Akbar et al., 2024).
4. **Organizational Culture** An organizational culture that is adaptive to change becomes an important factor in increasing user acceptance of MIS implementation. Organizations that encourage collaboration, innovation, and continuous learning tend to integrate technology into work activities more easily compared to organizations that still stick to conventional procedures. On the other hand, low organizational cultural readiness can trigger resistance from users, hindering the implementation process. An organizational culture that supports digital transformation can boost user participation and speed up the adaptation process to newly implemented information systems. (Akbar et al., 2024)
5. **Policies and Governance** The success of SIM implementation is also influenced by the availability of clear organizational policies and a structured governance system. Organizations need to set operational standards (SOPs), system usage regulations, monitoring mechanisms, regular evaluations, and information security policies to ensure that SIM implementation runs consistently. Organizations with good IT governance tend to be more successful in implementing SIM because every process already has work guidelines, clear division of responsibilities, and ongoing evaluation mechanisms. (Sova et al., 2026).

The success of implementing a management information system places human resources competence as a dominant factor because the system will only provide benefits if users can operate it optimally. Other research confirms that leadership support has a strategic impact because it relates to providing resources, organizational policies, and decision-making during the implementation process. On the other hand, technological infrastructure readiness is a supporting factor that ensures the system can run stably and securely. Therefore, the success of MIS implementation is the result of synergy between committed leadership, competent HR, adequate technological infrastructure, an adaptive organizational culture, and effective governance. Integrating all these factors will increase the success of MIS implementation in supporting organizational performance efficiency and effectiveness.

Strategies for Overcoming Challenges in Implementing a Management Information System

The success of implementing a management information system (MIS) requires a strategy that not only focuses on technology but also on the readiness of human resources, organizational governance, and the organization's ability to adapt to digital developments. Based on various recent studies, the MIS implementation strategy needs to be carried out comprehensively to overcome various challenges, such as limited users, inadequate infrastructure, information security threats, and resistance to change.

1. **Improving human resource competence** Increasing HR competence is an initial step in overcoming obstacles to SIM implementation. Organizations need to provide training, workshops, technical assistance, and periodic competency evaluations so that users can understand the functions and usage of the system. Developing digital skills not only boosts users' operational abilities but also reduces errors in data management and speeds up adaptation to new technology. Training and competency development strategies are the most

effective approach to tackle digital transformation challenges because they can minimize skill gaps within the organization. (Hutagalung, 2024).

2. The next strategy for technology infrastructure development is to improve the quality of technology infrastructure through hardware updates, using software that fits the organization's needs, increasing internet network capacity, and utilizing cloud computing services. Adequate infrastructure will speed up information access, make data investment easier, and ensure the continuity of system operations. Using cloud-based technology can improve operational efficiency, data storage flexibility, and organizational productivity, especially in institutions undergoing digital transformation. (Irwan & Nasution, 2024).
3. Strengthening Information System Security Protecting organizational data has become a strategy that cannot be separated from the implementation of an information management system (IMS). Organizations need to implement data encryption, firewalls, user authentication, access control, as well as regular backup mechanisms to minimize the risk of data loss or misuse. In addition, increasing user awareness about information security is also necessary so that cyber threats can be prevented early on. Data security is one of the most crucial aspects for the success of IMS implementation due to the rising risk of information leaks and cyberattacks in the digital era. (Puspitasari, 2020)
4. Strengthening Management Support Management commitment needs to be realized through budget allocation, the establishment of policies that support digitalization, the creation of implementation teams, and the conduct of regular monitoring and evaluation. Management support will speed up decision-making, reduce resistance to change, and ensure that the MIS implementation runs according to the organization's goals. The MIS implementation strategy will be more effective if supported by management commitment, careful planning, effective communication, and guided change management.
5. Building a Digital Culture A digital culture needs to be developed through promoting system usage, improving digital literacy, providing support to users, and encouraging innovation in the workplace. Organizations that have a learning culture and are open to change will find it easier to adopt technology compared to organizations that still stick to conventional work patterns. Building a digital culture through socialization, training, and involving all members of the organization can increase user acceptance of information systems and speed up successful implementation in educational settings.

In a strategy to tackle the challenges of implementing a management information system, it must be applied in an integrated way because every factor is interconnected. Improving HR competence through training won't give optimal results if the organization still has technological infrastructure limitations. Conversely, investing in modern technology also won't provide maximum benefits if users don't yet have adequate skills to operate the system. Moreover, successful MIS implementation requires leadership support in the form of policies, funding, and ongoing evaluation so that the entire digital transformation process can run according to the organization's goals. Therefore, a strategy that integrates HR development, infrastructure strengthening, system security enhancement, management support, and building a digital culture is the most effective approach to realizing sustainable MIS implementation that can improve performance.

4. CONCLUSION

Based on literature studies, the implementation of management information systems (MIS) in the digital era plays a very important role in improving effectiveness, efficiency, and the quality of organizational decision-making. However, its implementation still faces various challenges, such as limited technology infrastructure, low human resource competence, resistance to change, information security threats, and funding constraints. These challenges show that the success of MIS implementation depends not only on technology but also on organizational and user readiness. The success of MIS implementation is influenced by several key factors, namely leadership support, human

resource competence, technology infrastructure readiness, an adaptive organizational culture, as well as sound policies and governance. These five factors are interconnected and need to work together so that the information system can be used optimally to support both operational processes and decision-making.

To tackle these various challenges, organizations need to implement an integrated strategy by improving HR competencies, developing technology infrastructure, strengthening information system security, ensuring ongoing management support, and building a digital culture. By consistently applying this strategy, the implementation of MIS is expected to support the organization's digital transformation, improve service quality and work productivity, and create sustainable advantages in facing technological developments and the demands of the digital era.

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