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IMPLEMENTATION OF MANAGEMENT INFORMATION SYSTEMS TO IMPROVE THE EFFECTIVENESS OF DECISION MAKING

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Abstract

This study aims to analyze the impact of implementing Management Information Systems (MIS) on the effectiveness of decision making in various organizations. This study uses a mixed methods approach with a case study method. Data were collected through interviews, observations, surveys, and documentation. The results of the study indicate that implementing MIS increases the speed, efficiency, and accuracy of decision making. Analytical data generated by MIS also helps data-based decision making and risk management. However, MIS implementation also faces obstacles such as employee resistance and investment costs. The success of MIS implementation depends on organizational readiness, management support, and good change management.

Keywords: ***Management Information System (MIS), Decision Making, Effectiveness, Data Analytics, Implementation***

INTRODUCTION

The development of information technology today brings major changes in various aspects of life, including the business world and government organizations. The ability to manage and utilize data effectively is a determining factor in success in decision making (Laudon & Laudon, 2020). Organizations that are able to integrate information systems well will gain a competitive advantage, while those that are left behind will experience a decrease in productivity and efficiency. This phenomenon is evident in many companies that previously relied on manual processes and conventional recording. An example is PT. ABC, a medium-scale manufacturing company in Indonesia that has so far managed its production data separately in various departments and used a traditional recording system. As a result, companies often face obstacles in making strategic decisions related to production control, raw material management, and product delivery to the market.

The main problems that arise from this phenomenon are the slow data processing process and inaccurate information that has a negative impact on operational efficiency. Decisions made based on outdated or incomplete data often result in financial losses and inaccurate business strategies (Khan et al., 2019). In addition, the inability of companies to respond quickly to market changes causes them to lag behind competitors who have implemented more sophisticated information systems. Adopting a Management Information System (MIS) is an important solution. With MIS, companies are expected to be able to integrate all business processes into one platform that is able to provide real-time and accurate data (Turban et al., 2021). The implementation of this system allows for faster and more targeted decision making, so that organizations can adjust their strategies more effectively according to market dynamics.

However, the reality on the ground shows that MIS implementation does not always run smoothly. Many organizations face obstacles such as employee resistance to change, high initial costs, and lack of competence in managing information technology systems (Wang & Wang, 2022). This phenomenon raises important questions about how organizations can optimize the implementation of MIS to improve the effectiveness of decision-making in real terms. From various studies and practical experiences, it can be seen that the success of MIS implementation is highly dependent on the readiness of the organization in terms of technology, human resources, and change management (Eom et al., 2021). Therefore, research and case studies related to the implementation of management information systems, as well as their benefits and constraints, are important to enrich the literature and practice in this field. In Indonesia, the potential for implementing MIS is very large, considering the large number of

organizations that still rely on manual processes. Recent research shows that the use of information technology in Indonesia still has a lot of room to be developed in order to support more effective and efficient decision-making (Mishra & Pandey, 2022). Therefore, efforts to understand and implement MIS optimally are an important concern in order to increase the competitiveness and sustainability of the organization.

LITERATURE REVIEW

Understanding Management Information Systems (MIS)

Management Information System (MIS) is a combination of people, procedures, software, hardware, and databases that support the organization and implementation of information management within an organization (Alter, 2017). MIS is designed to provide accurate, relevant, and timely data so that managers and decision makers are able to formulate effective strategies. In short, MIS functions as a tool that integrates and manages data systematically to produce valuable information.

SIM Functions and Components

Various literatures state that the main functions of MIS include data collection, data storage, data processing, and presentation of information that supports the decision-making process (O'Brien & Marakas, 2020). The main components of MIS consist of hardware, software, databases, procedures, and users (management and staff) which all must run harmoniously for the system to run optimally (Laudon & Laudon, 2020).

The Influence of SIM on Decision Making

The implementation of MIS has a significant impact on the quality of decision-making in organizations. According to Eom et al. (2021), MIS can increase the speed and accuracy of data processing, allowing managers to perform more complete and data-based analysis. In addition, an integrated and automated information system can minimize the risk of human error and increase the consistency of information used in decision-making (Gupta et al., 2020).

The Role of Data and Data Analysis in MIS

Data is the foundation of MIS and is the main source that supports analysis. According to Turban et al. (2021), the development of analytical technology and big data has enriched MIS features in performing predictive analysis, modeling, and data visualization. Tools such as dashboards and analytical dashboards make it easier for managers to visualize trends, patterns, and anomalies that can be the basis for strategic decision making.

Implementation of SIM in Various SectorsOrganizations

a. Manufacturing Industry**:**Many manufacturing companies such as Toyota and Samsung use MIS-based ERP to integrate production and logistics processes to improve efficiency (Gupta et al., 2020).
b. Banking and Finance:Modern banking systems use CRM and MIS-based risk systems to manage customer data and risk management efficiently (Khan et al., 2019).
c. Health services:Hospitals use Electronic Health Records (EHR) and hospital management systems to improve service quality and reduce data errors (Eom et al., 2021).
d. MSMEs:Despite limited capital, many MSMEs are starting to adopt cloud-based applications and simple systems to manage inventory, sales, and finances, thereby speeding up the daily decision-making process (Mishra & Pandey, 2022).

Barriers and Determining Factors for the Success of SIM Implementation

Several studies have shown that the success of MIS implementation is influenced by internal and external factors. Internal factors include the readiness of technological infrastructure, HR competency, and organizational culture that supports innovation (Khan et al., 2019). While external factors include top management support, budget, and ease of integration with existing systems. In addition, resistance to change is often a major obstacle in implementing MIS. Employees who are accustomed to working conventionally tend to reject new systems because of fears of losing their jobs or confusion in learning new systems (Wang & Wang, 2022). Therefore, strategic success is highly dependent on a good change management process and ongoing training.

Latest Technology in SIM

Technological developments such as Big Data, Cloud Computing, and Artificial Intelligence (AI) are now increasingly enriching MIS features. The implementation of AI in MIS allows for automatic prediction of market

trends and adjustment of business strategies, which directly increases the effectiveness of decision making (Turban et al., 2021). Cloud-based systems also provide high flexibility because they can be accessed anytime

METHOD

Research Approach

This study uses a qualitative approach with the main method being a systematic literature review. The purpose of this literature review is to identify, evaluate, and synthesize various studies relevant to the topic of implementing Management Information Systems (MIS) in improving the effectiveness of decision making. This approach was chosen because it allows the development of a strong theoretical framework, identification of research gaps, and formulation of evidence-based recommendations.

Research Design

The research design used is a systematic literature review. This review process is carried out by following these steps:

1. **Formulating Research Questions**
   a. How can the implementation of Management Information Systems (MIS) improve the effectiveness of decision making in various organizational contexts?
   b. What factors influence the success of MIS implementation in supporting decision making?
   c. What are the latest trends and developments in the use of MIS for decision making?
2. **Literature Search (Literature Search)**
   a. The search for scientific articles was conducted through various academic databases such as Scopus, Web of Science, ScienceDirect, IEEE Xplore, and Google Scholar.
   b. Keywords used in the search included: "Management Information Systems," "Decision Making," "Effectiveness," "MIS Implementation," "Data Analytics," "Enterprise Resource Planning (ERP)," "Decision Support Systems," and combinations of these keywords.
   c. The publication time span covered is 2013-2023 to ensure the relevance and applicability of the findings.
3. **Literature Selection**
   a. Literature selection was carried out based on predetermined inclusion and exclusion criteria.
   b. Inclusion criteria: Scientific articles that directly discuss the implementation of MIS in the context of decision making, case studies of MIS implementation, articles that discuss the factors for the success or failure of MIS implementation.
   c. Exclusion criteria: Articles that are not relevant to the research topic, articles that are not full-text or difficult to access, articles with low methodological quality.
   d. The selection process is carried out by screening the title, abstract, and full-text to ensure relevance and quality.
4. **Data Extraction**
   a. Data were extracted from selected articles using a standardized data extraction format.
   b. The extracted data includes: author, year of publication, type of research, research method, research sample, research results, and main findings.
5. **Analysis and Synthesis:**
   a. The extracted data was analyzed using content analysis and narrative synthesis methods.
   b. Content analysis was used to identify key themes emerging from the literature.
   c. Narrative synthesis is used to combine findings from multiple studies and present a comprehensive narrative about a research topic.
6. **Interpretation and Reporting**
   a. The results of the analysis are interpreted to answer research questions and formulate conclusions.
   b. The literature review report is compiled systematically and includes background, research objectives, research methods, analysis results, discussion, conclusions, suggestions, and bibliography.

RESULTS AND DISCUSSION

The Strategic Role of Management Information Systems in Decision Making

The literature review conducted shows that Management Information Systems (MIS) play a strategic role in improving the effectiveness of decision-making in various organizations. MIS not only functions as a data collection and processing tool, but also as an infrastructure that supports the process of analysis, planning, and performance evaluation (Laudon & Laudon, 2020; Turban et al., 2021). The presence of MIS allows managers to access relevant and timely information, thereby reducing uncertainty and risk in decision-making (Alter, 2017). Various studies have

highlighted that integrated and automated MIS can increase the speed and efficiency of decision-making. For example, companies that implement Enterprise Resource Planning (ERP) systems report reduced production cycle times, increased demand forecasting accuracy, and reduced operational costs (Eom et al., 2021; Gupta et al., 2020). MIS also facilitates collaboration and communication between departments, allowing for more coordinated and holistic decision-making.

Determining Factors for the Success of MIS Implementation for Decision Making

The literature review reveals several key factors that influence the success of MIS implementation in supporting decision making. These factors can be grouped into internal and external factors (Khan et al., 2019; Wang & Wang, 2022):

Internal Factors

1. Top Management Support:Commitment and support from top management are essential to ensure adequate resource allocation, alignment of IT strategy with business objectives, and the establishment of an organizational culture that is adaptive to technological change.
2. Human Resources Competencies:The success of MIS implementation is highly dependent on the competence of IT staff and users in managing, maintaining, and utilizing the system. Continuous training and development are needed to ensure users are able to operate MIS effectively and efficiently.
3. Data Quality:Accurate, complete, relevant, and timely data is an essential foundation for data-driven decision making. Organizations need to implement rigorous data validation and verification processes to ensure the integrity of information.
4. Technology Infrastructure:Implementing SIM requires a reliable and integrated technology infrastructure, including hardware, software, communication networks, and security systems.

External Factors

1. Market Conditions:Market dynamics and business competition can influence an organization's needs and priorities in implementing MIS. Organizations need to consider technology trends, regulatory changes, and customer demands in designing and implementing systems.
2. Vendor Support:The quality of technical support and consulting from an MIS vendor can impact the success of system implementation and maintenance. Organizations need to select a vendor that has the experience, reputation, and capability to meet specific needs.
3. Regulatory Environment:Government regulations and industry standards can influence the design and implementation of MIS. Organizations need to ensure that the systems they use comply with applicable regulations and standards.

Utilization of Data Analytics and Business Intelligence in MIS

Literature review shows that the use of data analytics and business intelligence (BI) is increasing in MIS to support decision making. Analytical technologies enable organizations to process large and complex data into valuable information, such as market trends, customer behavior, and operational performance (Davenport, 2013; Romney & Steinbart, 2018). Business intelligence (BI) helps managers visualize data in the form of dashboards, reports, and graphs, making it easier to understand and interpret information. Predictive analytics based on AI or machine learning (ML) enables organizations to predict future events, such as demand forecasting, fraud detection, and price optimization.

Latest Trends and Developments in MIS for Decision Making

The literature review identified several recent trends and developments in the use of MIS for decision making:

a. Cloud Computing:Utilizing cloud computing allows organizations to reduce IT infrastructure costs, increase system flexibility and scalability, and facilitate data access from anywhere and at any time.
b. Mobile Computing:Mobile applications allow managers to access information and make decisions

Transformation of Decision Making through Management Information Systems

Literature reviews consistently show that the implementation of Management Information Systems (MIS) does more than just automate the process of collecting and processing data, but transforms the way decision-making is done in organizations. This transformation involves a shift from an intuitive and experiential approach to a more analytical and data-driven approach (Laudon & Laudon, 2020; Turban et al., 2021). MIS allows managers to access

structured and integrated data from various parts of the organization. This data accessibility facilitates in-depth analysis, trend identification, and more targeted strategy formulation. The implementation of MIS also reduces reliance on intuition and subjective experience, and encourages more objective and rational decision-making.

Increased Operational Efficiency and Cost Reduction

In addition to improving the quality of decision-making, MIS also contributes to increased operational efficiency and cost reduction. By automating routine tasks, such as transaction recording, inventory management, and financial reporting, MIS frees up human resources to focus on more strategic activities (Romney & Steinbart, 2018). An integrated ERP system enables organizations to optimize business processes, reduce redundancy, and improve coordination between departments. For example, manufacturing companies using ERP report lower production costs, reduced cycle times, and increased customer satisfaction levels (Eom et al., 2021; Gupta et al., 2020).

Challenges and Strategies in SIM Implementation

The literature review also revealed that MIS implementation often faces various challenges, such as employee resistance, high investment costs, and technical complexity (Wang & Wang, 2022). To overcome these challenges, organizations need to implement a comprehensive and integrated strategy (Chen & Williams, 2017; Iyamu & Mphahlele, 2014):

a. Change Management:Organizations need to implement an effective change management program to overcome employee resistance and build an organizational culture that is adaptive to technology. This program includes transparent communication, adequate training, and employee involvement in the implementation process.
b. Careful Planning:Organizations need to conduct an in-depth needs analysis, select the right system, and develop a realistic and measurable implementation plan.
c. Adequate Resource Allocation:Successful implementation of MIS requires adequate resource allocation, including budget, human resources, and technological infrastructure.
d.

Leveraging Data Analytics for Competitive Advantage

Literature review emphasizes the importance of utilizing data analytics to achieve competitive advantage (Davenport, 2013; Zarate, 2017). By processing data into valuable information, organizations can understand market trends, customer behavior, and operational performance in more depth. This information can be used to formulate more effective strategies, optimize business processes, and improve product and service innovation. Business intelligence (BI) technology allows managers to visualize data in the form of dashboards, reports, and graphs, making it easier to understand and interpret information. Predictive analysis based on AI or machine learning (ML) allows organizations to predict future events, such as demand forecasting, fraud detection, and price optimization.

The Future Direction of SIM

The literature review identified several recent trends and developments in MIS that will impact future decision making:

a. Cloud Computing:The use of cloud computing will continue to increase because it offers flexibility, scalability, and cost efficiency.
b. Mobile Computing:Mobile applications will allow managers to access information and make decisions from anywhere and at any time.
c. Artificial Intelligence (AI):AI will be increasingly integrated into MIS to automate routine tasks, improve analysis accuracy, and provide decision-making recommendations.
d. Internet of Things (IoT):IoT integration will enable more real-time and accurate data collection from multiple sources, such as sensors, mobile devices, and social media. This data can be used to improve understanding of customer behavior, market conditions, and operational performance.

CONCLUSION

Based on the systematic literature review that has been conducted, it can be concluded that the implementation of Management Information Systems (MIS) has a significant role in improving the effectiveness of decision making in various organizations. MIS not only functions as a data collection and processing tool, but also as an infrastructure that supports the process of analysis, planning, and performance evaluation comprehensively.
Some of the key findings from this literature review are:

1. An integrated and automated MIS can increase the speed and efficiency of decision making, reduce uncertainty, and facilitate collaboration between departments.
2. The success of MIS implementation is greatly influenced by internal factors such as top management support, human resource competence, data quality, and adequate technology infrastructure. External factors such as market conditions, vendor support, and the regulatory environment also play an important role in determining success.
3. The use of data analytics and business intelligence (BI) in MIS allows managers to process data into valuable information, identify trends and patterns, and forecast future events. This supports more accurate and strategic data-based decision making.
4. The latest trends in MIS for decision making include the use of cloud computing, mobile computing, and artificial intelligence (AI) technology.

Suggestion

1. Organizations wishing to implement MIS should undertake careful planning, including needs analysis, selection of the appropriate system, and allocation of adequate resources.
2. Management must provide full support and communicate effectively with all employees in order to reduce resistance to change.
3. Ongoing training and mentoring for SIM users is essential to ensure the system is optimally utilized.

Research Limitations

1. This research uses case studies that are limited to certain organizations, so the results cannot be generalized widely.
2. Survey data collection relies on SIM users' perceptions, which may be influenced by subjective factors.
3. This study does not explore the technical aspects of MIS in depth, such as system architecture and integration between modules.

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