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Journal: Jurnal Bisnis dan Komunikasi Digital - Vol. 2 No. 2 (2025)

Publisher: Indonesian Journal Publisher

Persistent DOI: https://doi.org/10.47134/jbkd.v2i2.3470

Archived & Retrieved via ActaNova Gateway on: 21 October 2026, 19:59 UTC

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HOW TO CITE THIS RECORD:

Sefiyana Jihanuri Nisrina, Reihan Masviansyah, Andrew Wijaya Adiwana, Indah Respati Kusumasari, Rusdi Hidayat. "The Role of Information Systems in Improving the Efficiency of Business Decision Making". Jurnal Bisnis dan Komunikasi Digital, Vol. 2 No. 2 (2025). DOI: 10.47134/jbkd.v2i2.3470

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Jurnal Bisnis dan Komunikasi Digital: Volume 2, Number 2, 2025, Page: 1-10

The Role of Information Systems in Improving the Efficiency of Business Decision Making

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DOI:
https://doi.org/10.47134/jbkd.v2i2.3470
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Received: 01-12-2024
Accepted: 21-12-2024
Published: 01-02-2025

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Abstract: Information system is one of the important aspects in decision making by business people. This study aims to analyze how much impact information systems have on the decision-making process in the business environment. By combining information technology, companies can process their data effectively and efficiently and increase accuracy in data analysis. In addition, information systems can be an alternative strategy that is fast and thorough in the decision-making process. The results of this study show that implementing a good information system can speed up the decision-making process, improve the accuracy of data analysis, and enable companies to respond to market changes more quickly and precisely. Information systems also help in processing big data, which provides deep insights for managers in making strategic decisions.

Keywords: Information Systems, Decision-Making Process, Business Environment

Introduction

Good decision making is one aspect of the sustainability of an organization or company to remain competitive in an increasingly complex and dynamic business world. Due to these developments, many roles of managers have changed in making decisions. They are required to obtain the most accurate and up-to-date information to be precise in the decision-making process (Syahputra et al., 2022).

The decision-making process in business requires systematic steps in order to solve problems and achieve organizational goals. According to Gibson et al (1987) in (Muktamar et al., 2023) this process involves seven stages, namely setting goals and targets, recognizing problems, collecting and analyzing data, formulating alternatives, evaluating alternatives, choosing the best option, and implementing decisions.

Efficient decision-making is one of the factors of business success in the face of global competition and changing market dynamics. The decisions taken must also have data as a reference so that the decision making is correct (Sugiana & Musty, 2023). Accurate and

complete data can help in understanding business potential, changing market trends, and consumer behavior.

To obtain accurate and complete data, an information system is needed that supports the collection, processing, distribution and presentation of data effectively and efficiently, and can be accessed easily to support decision making and control in a company (Wahono & Ali, 2021). The complexity of the risks faced by companies today requires a more sophisticated approach to information processing. According to research by Widyaningsih et al. (2022), companies that successfully utilize information systems well are able to transform raw data into strategic insights that can drive competitive advantage. Information systems are no longer just supporting tools, but have become the backbone of the decision-making process in various industrial sectors.

The implementation of information systems in business decision-making is not only limited to collecting data, but also includes in-depth analysis and presentation of information that allows management to understand the broader context. Companies that adopt advanced information system technologies, such as artificial intelligence and predictive analytics, can increase decision-making efficiency by up to 40% compared to traditional methods. Therefore, this study aims to explore the role of information systems in improving business decision-making efficiency, as well as provide insights into how companies can optimize the use of these technologies to achieve competitive advantage.

The purpose of this study is to analyze the role of information systems in improving decision-making efficiency in companies. This research intends to explore how information systems technology can be a strategic instrument in supporting a faster, more accurate, and comprehensive business decision-making process.

Literature Review

A. Information System Concept

Information systems are an important component in modern organizations, which play a role in collecting, processing, storing, and disseminating information to support decision making. According to Jonny Seah (2020) in Agustina, D. S. (2022), information systems are a combination of various information technology components that work together to produce information and create communication channels in an organization. This is in line with the opinion of Wahyudi & Ridho (2020) in Agustina, D. S. (2022), which states that information systems consist of a set of interconnected components to achieve certain goals.

B. The Role of Information Systems in Business

Information systems play an important role in carrying out daily business operations by providing tools and processes that support work efficiency. Daily operations, such as inventory management, order processing, financial record keeping, and internal communication, rely heavily on reliable information systems.

- Data Management: Information systems help manage operational data such as customer data, stock items, and financial transactions in real-time.
- Process Automation: Routine tasks such as payroll, invoice processing, or warehouse management can be automated, reducing human error and increasing productivity.
- Monitoring and Reporting: Information systems allow managers to monitor daily performance through automatically generated reports, resulting in faster and more accurate decision-making.

Various types of information systems have been developed to meet specific needs in business, including:

- Enterprise Resource Planning (ERP): ERP is an information system that integrates various business functions such as finance, human resources, production, and marketing on a single platform. Examples: SAP, Oracle ERP Cloud.
- Customer Relationship Management (CRM): This system is used to manage customer relationships, including customer data management, sales, and after-sales service. Examples: Salesforce, HubSpot.
- Decision Support System (DSS): DSS assists managers in making strategic decisions by providing analytical data and simulation models. Examples: Tableau, Power BI.
- Supply Chain Management (SCM): This system is used to manage the flow of goods, information, and finances in the supply chain. Examples: SAP SCM, JDA Software.

C. Digital Transformation and Decision Making

Decision-making in business is an important process that determines the direction and success of an organization. Decision-making is defined as the process of choosing the best alternative from several options to achieve a predetermined goal. This process involves several stages, starting from problem identification, data collection, alternative analysis, selection of the best alternative, decision implementation, to evaluation of decision results. In practice, there are several decision-making models used in business. The rational model, for example, emphasizes a systematic and logical approach in choosing the best alternative based on analysis of available data. This model prioritizes consistency in making value-maximizing decisions. In addition, intuitive models are also often used, especially in complex and unstructured situations. This model relies on the experience and intuition of the decision maker to determine the right steps. In today's digital age, data-driven models

are gaining popularity. These models utilize data analysis and information technology to support more accurate and fact-based decision-making.

The current digital era is driving a fundamental transformation in the way organizations manage and utilize information. Modern information systems enable faster, more accurate and data-driven decision-making. The integration of information technology and critical business operations is key to gaining a competitive advantage in the global marketplace.

D. Key Components of Information Systems

Information systems consist of several critical components that are interconnected. First, hardware, which includes the technology infrastructure. Second, software that performs specific functions. Third, the human resources that operate and develop the system. Fourth, the procedures and protocols that govern the information workflow.

E. Efficiency and Productivity in Decision Making

Decision-making efficiency is an organization's ability to make strategic decisions using minimal resources but with maximum impact. Efficiency in the context of management and decision-making can be defined as the ability to achieve the best results with minimal use of resources, including time, effort, and cost. In decision-making, efficiency reflects a process that is fast, precise, and resource-efficient without compromising the quality of results. Efficiency is essential in modern management, where companies must be able to respond quickly to market changes and operational challenges to remain competitive. In the decision-making process, efficiency is not just a matter of speed, but also how to ensure that the decisions taken can be optimally executed and provide added value to the company.

There are several key factors that influence decision-making efficiency. One of them is speed, which is the ability to make timely decisions as needed. In a dynamic business world, slow decisions can lead to missed opportunities or prolong problem solving. Another factor is accuracy, which is the level of precision of decisions based on relevant data and information. Accurate decisions require in-depth analysis and adequate data validation so that the results are in line with organizational goals. In addition, information availability is also a key element. Easily accessible, reliable and up-to-date information allows decision-makers to assess the situation comprehensively and make the right choices.

F. Technology Support in Data Analytics

Big data and artificial intelligence (AI) technologies have revolutionized the way organizations analyze information, shifting the decision-making paradigm from mere

intuition to a comprehensive and in-depth data-driven approach. Machine learning and predictive algorithms enable business leaders to identify hidden patterns, predict market trends, and make more sophisticated decisions with a high degree of accuracy.

The implementation of big data technologies allows organizations to process huge volumes of data from various sources, including transaction data, social media, IoT sensors, and customer records. Machine learning algorithms can identify complex correlations that traditional analysis methods cannot capture.

Deep learning techniques, one branch of advanced machine learning, allow systems to learn from previous experience and improve their accuracy continuously. For example, in the context of financial market prediction, these algorithms can analyze thousands of variables simultaneously, considering external factors such as social media sentiment, geopolitical conditions and global economic trends.

Modern artificial intelligence architectures go beyond collecting and analyzing data, but are capable of providing strategic recommendations that can be acted upon immediately. Generative AI systems can generate simulated business scenarios, estimate potential risks, and propose mitigation strategies with an astonishing level of precision. This allows business leaders to make proactive rather than reactive decisions.

The integration of the Internet of Things (IoT) further enriches the data analytics ecosystem. Connected smart devices can continuously collect data from various points, ranging from consumer activity to the performance of industrial machinery. Machine learning algorithms then transform this raw data into actionable strategic insights, enabling continuous business process optimization.

G. Information Security and Integrity

In the context of information systems, data security is a critical aspect. Protection against leakage, manipulation, and system disruption is a key prerequisite for building stakeholder trust. A strong cybersecurity infrastructure guarantees the integrity and confidentiality of an organization's strategic information.

The complexity of today's cybersecurity threats has reached a higher level. Organizations are subjected to increasingly sophisticated cyberattacks, ranging from phishing and ransomware to artificial intelligence-powered attacks. Security infrastructure is no longer limited to firewalls and antivirus; rather it has evolved into a sophisticated and dynamic protection ecosystem that requires a multi-layered and adaptable strategy.

Modern information security architecture is built on several fundamental principles. First, the principle of zero trust which assumes that no entity can be fully trusted, even those within internal networks. Every access, transaction and data interaction must be verified on an ongoing basis. Second, end-to-end encryption that protects data during transit and at the

time of storage. Modern encryption not only uses standard algorithms, but also utilizes dynamic keys and sophisticated key rotation mechanisms to minimize the risk of hacking.

H. Challenges of Information System Implementation

Despite offering various benefits, the implementation of information systems is not always smooth. Organizations face challenges such as change resistance, resource limitations, technological complexity, and ongoing training needs. A systematic approach and transformation of organizational culture are required to overcome these obstacles.

I. Information System Development Strategy

Information system development requires comprehensive strategic planning. This includes analysis of organizational needs, selection of appropriate technology, integration between systems, and continuous evaluation. An iterative and adaptive approach is key to successful implementation.

Methodology

The research method used in this article uses qualitative methods and literature studies, these findings aim to provide an understanding of the important role of information systems to improve efficiency in business decision making. This research takes research material with a period of time from 2019 to 2024. This analysis dissects the factors that influence the effectiveness of information systems in business decision making and the challenges of integrating information systems in business decision making. This qualitative analysis examines scientific articles that have citation sources from Google Scholar and Mendeley.

This research selects, collects, and analyzes data systematically. The analysis in this study was carried out by comparing similar literature with the keywords that have been determined and in accordance with the title.

Result and Discussion

A. Efficiency in Data Collection

In a dynamic and increasingly complex business environment, fast and accurate decision-making is a success factor for companies. Efficiency in data collection is a crucial first step, but to achieve optimal decision-making, we need to consider the role of information systems as a whole. The use of information systems has advantages in supporting this process. Information systems allow quick and easy access to relevant information. According to Ngozi (2023) with an organized and automated system, data collection and processing can be done more efficiently, so that decision makers get a clear

and comprehensive picture of the company's condition in a short time. This approach prevents delays in decision making that can occur if information must be sought manually or through complex procedures (Mintawati et al., 2023).

In research conducted by Putri and Nasution (2024) revealed that Management Information Systems play an important role in managing data. Information systems use software to collect data such as databases, cloud computing, and big data analytics. The use of this technology allows organizations to manage data more efficiently, facilitate access to information, and support faster and more accurate decision making. In addition, with a management information system, integration between various departments or functions in the organization can be better established, which in turn improves overall work coordination and productivity (Agustiandra & Sabandi, 2019).

B. Improved Decision Quality

Information systems are able to provide complete data and analysis needed to support good decision making. This system can identify opportunities, plan strategies, and parse problems that arise, of course this information can be utilized by company management in the decision-making process.

Improving the quality of decisions based on information systems is highly dependent on the accuracy and relationship of the processed data. With an advanced information system, the collected data can be processed quickly and accurately, reduce bias, and produce relevant information for decision making. By relying on objective data, decision makers can avoid decisions based on assumptions or intuition alone. This allows decision makers to get a clearer picture of the current situation, so that the decisions made are objective and rational.

Conclusion

The conclusion of this article shows that information systems have a crucial role in improving the efficiency and quality of business decision making. Through the use of technologies such as databases, cloud computing, and big data analytics, information systems are able to collect, process, and analyze data quickly and accurately. This allows company management to get a comprehensive picture of business conditions, identify opportunities, plan strategies, and address problems more effectively. Information systems are not just a supporting tool, but have become the backbone of the decision-making process in various industrial sectors.

The advice that can be given is that companies need to make continuous investments in the development of integrated and sophisticated information systems. In addition to adopting the latest technologies such as Enterprise Resource Planning (ERP), Business

Intelligence (BI), and Customer Relationship Management (CRM), organizations must also pay attention to human and cultural factors. Continuous training to improve employees' digital skills, effective change management, and building an organizational culture that is open to technological innovation will be the key to successful information system implementation. In addition, companies also need to ensure data security and privacy aspects by implementing a comprehensive data protection mechanism.

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