

THE IMPORTANCE OF THE IMPLEMENTATION OF MANAGEMENT INFORMATION SYSTEMS IN THE BUSINESS SECTOR

Himah Naely Rahmah¹, Mansur Chadi Mursid²,
Dwi Novaria Misidawati³, Abdul Hamid⁴,
Ika Lestari⁵, Ade Gunawan⁶

Program Studi Ekonomi Syariah^{1,2,3},
Program Studi Hukum Keluarga Islam⁴, Program Studi Akuntansi⁵,
Program Studi Akuntansi Syariah⁶
Fakultas Ekonomi dan Bisnis Islam^{1,2,3,6}, Fakultas Syariah⁴
Universitas Islam Negeri K.H Abdurrahman Wahid
Pekalongan^{1,2,3,4,6}, SMK Negeri 1 Warureja Tegal⁵

himahnaelyr@gmail.com¹, mansurchadimursid@uingusdur.ac.id²,
dwi.novaria.misidawati@uingusdur.ac.id³,
abdul.hamid@uingusdur.ac.id⁴, ikaneswa84@gmail.com⁵,
ade.gunawan@uingusdur.ac.id⁶

Received: 2025-03-05. **Revised:** 2025-03-20. **Accepted:** 2025-03-30. **Issue Period:**
Vol.9 No.2 (2025), Pp. 702-710

Abstrak: In the rapidly growing digital era, the implementation of Management Information Systems (SIM) is a crucial factor in increasing business efficiency and competitiveness. This study aims to analyze the importance of SIM implementation in the business sector and its impact on operational effectiveness and strategic decision-making. The research method used is a quantitative approach with a survey of various companies that have adopted driver's licenses. The results show that the implementation of SIM contributes significantly to improving operational efficiency, accelerating the decision-making process, and increasing customer satisfaction through more systematic data management. In addition, the study identified key challenges in SIM implementation, such as the cost of initial investment and resistance to change within the organization. Thus, a deeper understanding of the benefits and challenges of SIM implementation can assist companies in designing more effective strategies to optimize their business performance.

Keywords: Management Information Systems, Business Efficiency, Decision Making, Digital Transformation

I. INTRODUCTION

The current development of digitalization will certainly have a significant influence in various sectors, both in the education, health, government, and business sectors. As happens in the business world, in the increasingly growing digital era, the business world cannot be avoided from the challenge of continuing to adapt to technology to increase operational efficiency and competitiveness. One of the steps that can be taken and implemented is with a management information system (SIM). SIM is a combination of



DOI: 10.52362/jisamar.v9i2.1825

Ciptaan disebarluaskan di bawah [Lisensi Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).

information technology and managerial processes that aim to collect, process, and present data systematically to support decision-making in an organization.[1]

The implementation of management information systems in the business world not only helps in data processing but also improves the efficiency of work processes, speeds up and assists in decision-making, and increases customer satisfaction. With an integrated system, a business can run optimally by managing resources, increasing transparency, and improving coordination between various parties.

However, in its implementation, management information systems also face challenges, such as high cost investments, integration with the old system of human resource and natural resource needs, and the skills or knowledge of human resources in managing the system that are not qualified. Therefore, an appropriate strategy is needed so that the implementation of SIM in business can run effectively and provide maximum benefits.[2]

This article will discuss how SIM is implemented in the business sector, its important role in company operations, the types of SIM that are commonly used, and the challenges faced in the implementation process. Because timely and data-driven business decisions are key to overcoming complex economic challenges. A driver's license provides the tools needed to collect data from a variety of sources, analyze it in detail, and produce relevant and accurate information for business leaders. This allows companies to make better and more strategic decisions, shorten decision-making cycles, and reduce the risk of mistakes

II. RESEARCH METODOLOGY

Research methodology refers to a scientific approach that collects information for a specific purpose. The method described in this article uses literature writing. Collect materials from various sources of literature to understand and explore theories related to the research topic. Literature writing is divided into four stages. Prepare the work equipment needed, prepare work references, plan time efficiently, read research materials and take notes.

A method of data collection that uses specific keywords to search for sources in one or more databases and gather information from various sources, such as books, magazines, and previous research. Library materials collected from various sources are critically and thoroughly analyzed to support arguments and ideas.

III. RESULTS AND DISCUSSION

1. Basic Concepts of Information Management Systems in Business

a) Definition of Management Information System

The system comes from Latin (Systēma) and Greek (sustēma) is a unit consisting of components or elements that are linked together to facilitate the flow of information, material or energy to achieve a goal [5]. Whereas Information is a message (utterance or expression) or a collection of messages consisting of a sequence order of symbols, or the interpretable meanings of a message or collection of messages [6]. Next is management or the science of information management. Management is the process of planning, organizing, leadership, and supervision in order to achieve set goals.[7]

Information systems can be defined as a system within an organization that is a combination of people, facilities, technology, media, procedures and controls aimed at obtaining important communication channels, processing certain types of routine transactions, signaling management and others to important internal and external events and providing an information base for decision-making [8].

From all of the above definitions of systems, information, and management, it can be concluded that the purpose of establishing a management information system is for the organization to have a reliable system in processing data into useful information in making



DOI: 10.52362/jisamar.v9i2.1825

Ciptaan disebarluaskan di bawah [Lisensi Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).

management decisions, both related to routine decisions and strategic decisions. Thus, the Management Information System is a system that provides organizational managers with data and information related to the implementation of organizational tasks. [9]

b) Key components of management information systems

Management Information Systems (SIM) consist of various main components that interact with each other to collect, store, process, and disseminate information within an organization. These components include hardware, software, databases, networks and communication infrastructure, human resources, and procedures and policies that support system operations.

1) Hardware

The hardware in a SIM includes all the physical devices used to process and store information. Some of the key hardware components include:

- a. A server is a hardware or software that functions to serve requests from other devices called clients in a network, server functions as the heart of a network that is tasked with serving the various needs of client devices. Servers have many crucial functions that make them the backbone in information technology operations. Here are some of the most common server functions: 1. Serving Client Computer Requests, 2. Storing Data or Information, 3. Providing a Database to Run, 4. Managing Data or File Transfer Traffic, 5. Secure from Crime Attacks.
- b. A personal computer, or better known as a computer, is a device used to process data or perform calculations. PCs are generally used individually, whether at home, shopping centers, or offices, for personal or business purposes. The term "personal computer" first appeared in 1964 in an article titled "*The World in 1984*" published by *New Scientist* magazine. Functionally, the PC plays a role in processing input data and producing outputs according to user needs.
- c. Storage is a digital device used to store various types of data in digital form. Stored data may persist for varying periods of time, depending on the age and care of the device. Along with the development of technology, Storage devices continue to innovate, both in terms of type and size.
Broadly speaking, Storage devices are divided into two main categories, namely Primary Storage and Secondary Storage. Although both have the primary function of being a storage medium, there are fundamental differences between the two.
- d. The Input/Output device plays a role in enabling interaction between the user and the system. Input devices are used to input data into the system, such as keyboards, mice, and scanners. Meanwhile, output devices function to display or print information from the system, such as monitors and printers.

2) Software

Software is one of the main components in the Management Information System (SIM) which plays a role in processing information and supporting various business activities in the organization. In SIM, software can be classified based on its function, such as operating system, application software, database software, and networking software. Each type of software has a crucial role in ensuring that information systems can operate optimally and efficiently.

Software in Management Information System (SIM) Not only does it support day-to-day operations, but it also plays an important role in designing business strategies and driving innovation. By leveraging the latest software technologies, organizations can



improve their analytics capabilities, automate business processes, and accelerate digital transformation. Progress in artificial intelligence (AI), machine learning, and big data analytics has revolutionized the use of software in SIMs, allowing for smarter decision-making and adaptive to market dynamics.

3) Database

Database is a key component in Management Information System (SIM) which serves as a data storage center used by various business applications and processes. In addition to storing data, databases also provide an efficient mechanism for accessing, managing, and processing information needed by users and applications across the organization [10]

c) Types of Management Information Systems

1) Enterprise Resource Planning (ERP)

One type of information and management system that we often encounter is enterprise resource planning or known as ERP, enterprise resource planning is a software system designed to integrate and manage various business processes that are still in one organization or in one centralized platform [11]. ERP allows companies to automate, monitor, and analyze various aspects, ranging from finance, human resources, manufacturing and relationships with internal and external parties, so that business processes or activities can run effectively, because ERP can also reduce manual errors and accelerate decision-making supported by the accuracy and real-time data available. [12]

2) Customer Relationship Management (CRM)

CRM is one of the strategies, processes, and technologies used by a company to manage relationships or interactions between companies, customers, and potential customers. The use of CRM can help businesses in maintaining, building, and improving relationships with various parties. In addition, CRM helps companies understand customers so that the marketing strategies that have been launched can run optimally, and operational activities can be more efficient.[13]

3) Supply Chain Management

In addition to maintaining relationships with costumers, management information systems are also able to optimize the supply and distribution chain, or what we can call supply chain management (SCM). SCM is a The process of planning, managing, and controlling the flow of goods, information, and other resources in the supply chain, from raw material suppliers to products to end consumers [14]. SCM is used by a company so that control over the production process and raw materials can be done easily so that it can be ensured that products are available on time with good quality and a company can reduce fertilization and increase profits because of control from the beginning to the end of the production process [15].

4) Business Intelligence (BI)

The strategy of a company that has been formulated is of course through various analyses and careful planning, using business intelligence (BI) The process of collecting, analyzing, and presenting data to help business decision-making can be done better [16]. BI leverages technologies, such as data analytics, big data processing (*Big Data*), visualization, as well as artificial intelligence to turn raw data into actionable insights. So that there are no manual errors in the formulation of strategies or decisions, besides that BI can help companies to identify opportunities and risks that will be faced by the business [17].



2. Benefits of Management Information Systems in Business

In the past, before the development of an information system, the operational process of a business was not as easy as it is now, companies still relied on manual processes in data processing which of course were prone to human error, duplication of information and delays in decision-making, so that business operational activities were often inefficient due to the lack of an integrated system. Changes of course continue to be made to maximize the running of a business, with the use of management information systems in a business allows companies to manage and automate various business processes easily, such as inventory management, accounting, and human resources. In addition to activities being more efficient, companies can also maximize the use of operational costs, increase productivity, and minimize human error in data processing.[18]

Accurate and real-time data of a company is very important because accurate data will affect the decision-making process and policies of the company. In addition, the validity of a data is also used by companies to design strategies that will be launched for the company's sustainability, with access to faster and data-based analysis reports, companies can make more informed decisions to increase the company's competitiveness.[19]

In addition, the management information system also allows various departments in a company to work simultaneously or integrated, so that the company's activities are more efficient and effective. The role of management information systems in the integration of each department so that activities can work synergistically:

1. Improving communication, management information systems provide a shared platform that allows different departments to share information in real-time.
2. Facilitating collaboration, integrated data helps teams from other departments to work together.
3. To prevent data duplication, with a centralized system, data only needs to be entered once and can be accessed by all departments.
4. Improving operational efficiency, business processes become smoother because all units in the company have access to the same information. [20]

The use of management information systems also helps in customer relationship management (CRM), with organized customer data will help companies in providing faster, responsive, and personalized services, so as to increase customer satisfaction and boost brand loyalty. [21]

3. Application of Information Management Systems in Various Aspects of Business

In the rapidly growing digital era, information technology has become a key factor in increasing business efficiency and competitiveness. Companies are not only required to manage data more effectively, but must also be able to make quick and accurate decisions based on available information. Information Management System (SMI) is here as a solution to help businesses manage, store, and analyze data to support various operational and strategic aspects. The application of SMI has undergone significant developments along with technological advances such as

a. E-commerce and Online Marketplaces

In the modern business world, the utilization of e-commerce has become an important aspect for companies to expand their market reach globally. E-commerce or electronic commerce refers to the activity of buying and selling products and services that are carried out online through digital platforms. Companies are leveraging e-commerce as a strategy to reach a wider and more diverse range of consumers, eliminate geographical barriers, and improve a more practical shopping experience for customers.

By implementing e-commerce, companies can run their business 24 hours a day, 7 days a week without being limited by physical store operating hours, so customers can shop anytime and anywhere at their convenience. In addition, e-commerce allows customers to access a wide



selection of products and services, both domestically and abroad, which contributes to increased brand visibility globally.

Through e-commerce, companies can utilize various digital platforms such as websites, mobile applications, and social media to interact with customers. This opens up opportunities for companies to present more complete product information, display customer reviews, and provide customer service directly through chat or messaging features.

In addition, online payment systems in e-commerce make transactions faster and safer. In Indonesia, some examples of popular e-commerce platforms include Tokopedia, Shopee, Lazada, and Zalora, as well as various other marketplaces.

b. Data Analysis for Decision Making

The use of data analytics in the business decision-making process has become an essential element in a data-driven corporate strategy. Data analysis is the process of collecting, processing, interpreting, and exploring insights from various data sources owned by companies. This data comes from big data that is managed using information technology to produce useful information. The main goal of data analysis is to assist companies in making more precise, fact-based, and strategic decisions.

The company leverages data analytics in various aspects of the business, such as marketing, operations, finance, and product development. By applying data analysis, companies can identify trends, patterns, and relationships between the data that has been collected. For example, in marketing, data analytics allows companies to understand customer behavior, product preferences, and the effectiveness of marketing strategies. Thus, companies can design more targeted and efficient marketing campaigns.

In addition, data analysis also plays a role in detecting business opportunities and risks. The information obtained can help companies recognize new market potentials, evolving industry trends, and strategies to improve the quality of products or services. On the other hand, data analysis is also useful for identifying business risks, allowing companies to take anticipatory steps to avoid potential losses.

The utilization of data analysis also allows companies to evaluate their performance more accurately and objectively. The analyzed data provides insights into the achievement of business targets, operational efficiency, and customer satisfaction levels. With this information, companies can determine the aspects that need improvement and optimize their operations to achieve better results.

c. Digital Marketing and Social Media

The use of digital marketing and social media has become an important part of a company's business strategy in the modern era. By adopting technology and various social media platforms, companies can build a direct relationship with their audience. To capture the attention of the target market, companies create engaging and relevant content, optimize the use of keywords and hashtags to increase reach, and utilize analytics tools to measure the effectiveness of campaigns.

In addition, the company also leverages paid advertising features on various digital platforms to target audiences more specifically and efficiently. Marketing through social media provides an opportunity for companies to interact directly with customers, such as answering questions, handling complaints, and collecting feedback in real-time. This not only helps build customer loyalty, but it also allows companies to measure the success of their marketing strategies more accurately.

By integrating technology into digital marketing and social media, companies can increase brand awareness, expand market share, and gain a competitive advantage amid increasingly fierce business competition.

d. Digital Collaboration and Communication

In an era where digital connectivity is the main foundation in the business world, companies are increasingly aware of the importance of digital collaboration and communication to improve operational efficiency. By leveraging a variety of digital tools and platforms, teams across multiple locations can work together effectively in developing products, managing projects, or crafting business strategies.



Various platforms such as Slack, Microsoft Teams, and Zoom are used to facilitate communication and improve coordination between team members. In addition, digital communication plays an important role in keeping the flow of information smooth and real-time throughout the organization. Companies can rely on instant messaging, video conferencing, as well as online collaborative platforms to eliminate geographical barriers in communication. Another advantage of digital communication is the existence of digital recordings and documentation, which makes it easier to re-access important information.

In addition to improving internal communication, digital collaboration also opens up opportunities for companies to expand their business networks. By leveraging technology, companies can interact more efficiently with partners, customers, and suppliers, thereby accelerating the process of negotiation and business cooperation.

With the application of technology in the Collaboration and communication, companies can improve productivity, accelerate decision-making, and strengthen synergy between teams and between companies. All these factors contribute to the continued growth of the business and stronger competitiveness in the market [22].

4. Challenges in the Implementation of Information Management Systems in Business

The implementation of Information Management Systems (SIM) in businesses faces various challenges that can affect the effectiveness and success of the system. Here are some of the key challenges that organizations often face:

a. Technological Uncertainty

Rapid technological developments create uncertainty in choosing the right platform or system. Organizations often struggle to determine the solution that best suits their needs, which can have a long-term impact on operations and productivity.

b. Implementation and Operational Costs

SIM implementation requires a large investment in hardware, software, as well as employee training. These costs should be carefully managed to ensure that the budget does not sacrifice other important aspects of business operations.

c. Leadership Challenges and Employee Engagement

The success of a SIM relies heavily on the support of management and employee engagement. Resistance to change can arise if not all stakeholders are fully committed, potentially leading to implementation failure¹.

d. Integration of Old and New Systems

Many organizations have systems that are already running well. Integrating a new system with an old system can be a complex technical challenge, requiring special attention to ensure compatibility and smooth operation

e. Data Security

With cyber threats on the rise, data protection is becoming a significant challenge. Organizations must ensure that their systems have robust security protocols in place to protect sensitive information from potential attacks.

f. User Skills and Knowledge



Lack of skills in data processing and the use of information technology can hinder the effectiveness of driver's licenses. Adequate training is required to ensure that employees are able to use the system optimally [23]

5. Tren dan Masa Depan Sistem Manajemen Informasi dalam Bisnis

Information Management Systems (SIMs) continue to evolve rapidly, driven by technological innovations and the need for businesses to stay competitive. Here are the main trends and predictions of the future of SIM in business:

a. Artificial Intelligence (AI)

AI integration is at the core of information management, enabling faster data analysis, routine task automation, and data-driven decision-making. AI also helps personalize the customer experience and improve operational efficiency through machine learning algorithms.

b. Business Process Automation

Automation is increasingly important to create a more efficient work environment. With digital solutions, organizations can reduce reliance on manual processes, increase productivity, and prepare for market changes.

c. Cloud Computing and Hybrid Infrastructure

Cloud-based infrastructure is becoming standard, enabling flexibility, scalability, and real-time access to data. Hybrid systems also provide a solution to integrate multiple data sources without a silos.

d. Federated Search

This technology enables the search of information from multiple systems in one unified location, improving work efficiency and reducing data search time.

e. More Advanced Data Security

With cyber threats on the rise, organizations will focus on security innovations to protect sensitive data. Technologies such as policy-as-code and full observability will become the new standard³⁸.

f. The expansion of the Internet and Ubiquitous Computing

The expansion of the global internet makes it easier for businesses around the world to collaborate, while connected smart devices provide better interaction through various methods such as voice or touch

IV. CONCLUSION

Information Management Systems (SMIs) have become a vital component in the modern business world. With its ability to automate processes, improve operational efficiency, and provide accurate data for decision-making, SMI provides a competitive advantage for companies. Its application covers various aspects of business, such as financial management, human resources, supply chain, customer relations, and digital marketing.

However, the implementation of SMI also faces challenges, such as high investment costs, data security, and resistance to technological change. Therefore, companies need a mature strategy in adopting and integrating this system in order to provide maximum benefits.

In the future, technological developments such as artificial intelligence (AI), cloud computing, big data analytics, and blockchain will further strengthen SMI's role in business. By capitalizing on these trends, companies can increase efficiency, accelerate innovation, and achieve more sustainable growth in the digital age.

REFERENCE

- [1] Arling, J. H. (2024). Development of the system tests for the ATLAS Inner Tracker strip detector. *Nuclear Instruments and Methods in Physics Research, Section A: Accelerators, Spectrometers, Detectors and Associated Equipment*, 1064(February), 0–4. <https://doi.org/10.1016/j.nima.2024.169427>
- [2] Asemi, A., Safari, A., & Asemi Zavareh, A. (2011). The Role of Management Information System (MIS) and Decision Support System (DSS) for Manager's Decision Making Process. *International Journal of Biometrics*,



DOI: 10.52362/jisamar.v9i2.1825

Ciptaan disebarluaskan di bawah [Lisensi Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).

- 6(7). <https://doi.org/10.5539/IJBM.V6N7P164>
- [3] Azhar Mohamad, M., Farik Mat Yatin, S., Izzat Adha Zahir, M., & Hisham Shah Syed Hilmi, S. (2022). Information Management Strategy Implementation in Organizations. *Journal of Information and Knowledge Management (JIKM)*, 1, 362–370.
- [4] Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly: Management Information Systems*, 36(4), 1165–1188. <https://doi.org/10.2307/41703503>
- [5] Dantes, G., & Hasibuan, Z. (2010). The Impact of Enterprise Resource Planning (ERP) System Implementation on Organization: Case Study ERP Implementation in Indonesia. *IBIMA Business Review Journal*, 2011, 1–10. <https://doi.org/10.5171/2011.210664>
- [6] Darmastuti, I., & Radita, S. S. (2024). The Role of Knowledge Management on Employee Performance. *IRJEMS International Research Journal of Economics and Management Studies* , Volume 3(Issue 5), 323–328.
- [7] Esmeray, A. (2016). The impact of accounting information systems on firm performance: Empirical evidence in Turkish small and medium sized enterprises. *International Review of Management and Marketing*, 6(2), 233–236.
- [8] Febrianto, T., Soediantono, D., Staff, S., Tni, K., & Laut, A. (2022). Enterprise Resource Planning (ERP) and Implementation Suggestion to the Defense Industry: A Literature Review. *Journal of Industrial Engineering & Management Research*, 3(3), 2722–8878. <http://www.jiemar.org>
- [9] Gil-Gomez, H., Guerola-Navarro, V., Oltra-Badenes, R., & Lozano-Quilis, J. A. (2020). Customer relationship management: digital transformation and sustainable business model innovation. *Economic Research-Ekonomska Istrazivanja* , 33(1), 2733–2750. <https://doi.org/10.1080/1331677X.2019.1676283>
- [10] M.O. Gbededo, T.O. Salaam, & R.O. Olorunnimbe. (2024). The Impact of Third Party Logistics Activities on Supply Chain Performance in Flour Mills of Nigeria PLC, Lagos. *American Journal of Supply Chain Management*, 9(3), 1–15. <https://doi.org/10.47672/ajscm.2312>
- [11] Marsudi, A. S., & Pambudi, R. (2021). The Effect of Enterprise Resource Planning (ERP) on Performance with Information Technology Capability as Moderating Variable. *Journal of Economics, Business, & Accountancy Ventura*, 24(1), 1–11. <https://doi.org/10.14414/jebav.v24i1.2066>
- [12] Naerul, E., & Kiky, A. (2021). The Role of Information and Communication Technology in business. *International Journal Administration Business & Organization*, 8–15.
- [13] Neto, V. V. G., Lebttag, B. G. A., Teixeira, P. G., Batista, P., Lopes, V. C., El-Hachem, J., Buisson, J., Oquendo, F., Fernandes, J., Ferreira, F., Santos, R. P. dos, Viana, D., Cavalcante, E., Kassab, M., Mohsin, A., Oliveira, R., Neves, V., Cagnin, M. I., & Nakagawa, E. Y. (2021). *Expanding Frontiers: Settling an Understanding of Systems-of-Information Systems*. <http://arxiv.org/abs/2103.14100>
- [14] Nowduri, S. (2011). Management information systems and business decision making: review, analysis, and recommendations. *Journal of Management and Marketing Research*, 1–8.
- [15] Reepu. (2020). Employee satisfaction and HR practice. *International Journal of Management*, 11(5), 950–963. <https://doi.org/10.34218/IJM.11.5.2020.087>
- [16] Suwanda, S. (2023). Implementation of Supply Chain Management To Reduce Production Costs. *Journal of Economics*, 12(04), 2585–2590. <https://ejournal.seaninstitute.or.id/index.php/Ekonomi/article/view/3874%0Ahttps://ejournal.seaninstitute.or.id/index.php/Ekonomi/article/download/3874/3050>
- [17] Tan, L. (2019). The Roles of Information Technology in Customer Relationship Performance, Employee User Satisfaction, Service Quality and Customer Satisfaction. *Iowa State University*. <https://dr.lib.iastate.edu/handle/20.500.12876/16802>
- [18] Taufiq Hidayah, Supiah Ningsih, & Durahman Marpaung. (2022). Implementation of Decision-Making Theory in Increasing Employee Professionalism. *International Journal of Economics (IJECE)*, 1(2), 348–356. <https://doi.org/10.55299/ijec.v1i2.380>
- [19] Weblar, F., & Andersen, M. (2022). Measurement in the Age of Information. *Information (Switzerland)*, 13(3). <https://doi.org/10.3390/info13030111>
- [20] Zur Muehlen, M., & Su, J. (2011). Lecture Notes in Business Information Processing: Preface. *Lecture Notes in Business Information Processing*, 66 LNBIP (September 2010). <https://doi.org/10.1007/978-3-642-20511-8>



DOI: 10.52362/jisamar.v9i2.1825

Ciptaan disebarluaskan di bawah [Lisensi Creative Commons Atribusi 4.0 Internasional](https://creativecommons.org/licenses/by/4.0/).