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THE ROLE OF MANAGEMENT INFORMATION SYSTEMS IN ENHANCING OPERATIONAL EFFICIENCY AND DECISION-MAKING IN LOGISTICS COMPANIES IN INDONESIA

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A B S T R A C T

The development of the logistics industry in the digital era requires companies to improve operational efficiency and accuracy in decision-making. One of the strategic solutions is the implementation of Management Information Systems (MIS). This study aims to analyze the role of MIS in enhancing operational efficiency and decision-making quality in logistics companies in Indonesia. This study employs a descriptive qualitative approach using a literature review method. The data were collected from various secondary sources, including academic journals, books, and relevant articles on information systems and logistics management. The results indicate that the implementation of MIS improves the accuracy of distribution data, accelerates delivery processes, and minimizes operational errors. Furthermore, MIS supports real-time data-based decision-making. However, its implementation still faces several challenges, such as limited technological infrastructure, high investment costs, and lack of human resource competencies. Therefore, the optimal implementation of MIS can serve as a strategic approach to enhance the competitiveness of logistics companies in the digital era.

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1. INTRODUCTION

The logistics industry is one of the strategic sectors that plays a fundamental role in supporting a country's economic activities, particularly in ensuring the smooth distribution of goods and services from producers to consumers. The effectiveness of the logistics system not only impacts supply chain efficiency but also serves as an important indicator in enhancing national competitiveness amid increasingly intense global competition. In the context of modern economic development, the logistics sector functions as a key connector among industrial, trade, and service sectors, making its performance crucial to overall economic stability and growth.

The advancement of digital technology and the rapid growth of e-commerce in recent years have driven significant transformation in the logistics industry. The increasing volume of online transactions has led to a surge in demand for fast, accurate, flexible, and transparent distribution services. Consumers now demand not only fast delivery but also full visibility of the distribution process through real-time tracking systems. This condition forces logistics companies not only to focus on conventional operational aspects but also to integrate information technology into every aspect of their business activities.

On the other hand, logistics company operations are highly complex and involve various interconnected activities, such as warehouse management, transportation management, inventory control, as well as the distribution and delivery of goods. This complexity often becomes a source of various operational problems, such as delivery delays, data inconsistencies, lack of coordination among work units, and cost inefficiencies. These issues generally arise due to the use of fragmented systems or even manual processes, which hinder the flow of information and decision-making processes.

In addressing these challenges, Management Information Systems (MIS) emerge as a strategic solution that can be implemented by logistics companies to improve operational efficiency and effectiveness. MIS is a system designed to integrate data and information from various organizational functions, enabling the generation of accurate, relevant, and timely information for managerial needs. Through MIS implementation, logistics companies can optimize business processes through system integration that includes warehouse management, transportation, distribution, and real-time tracking.

Furthermore, the implementation of MIS not only functions as an operational support tool but also serves as a strategic instrument in supporting data-driven decision-making. In a dynamic and competitive business environment, a company’s ability to process data into valuable information becomes a key success factor. MIS enables management to analyze operational performance, identify potential risks, and formulate strategies that are more adaptive and responsive to market changes.

However, the implementation of Management Information Systems in the logistics industry in Indonesia still faces several challenges. Limited technological infrastructure, high initial investment costs, and low levels of digital literacy among human resources are the main obstacles to optimal MIS implementation. In addition, resistance to change from conventional systems to digital systems remains an issue, often caused by a lack of understanding of the long-term benefits of technological transformation. As a result, not all logistics companies are able to fully utilize MIS, and the potential for improving operational efficiency has not been fully achieved.

From an academic perspective, research on Management Information Systems in the logistics sector still indicates the existence of a research gap, particularly in examining the relationship between MIS implementation, operational efficiency, and decision-making

quality simultaneously. Previous studies have tended to focus more on either technological or operational aspects separately, thus failing to provide a comprehensive understanding of the strategic role of MIS in improving overall logistics organizational performance.

Based on the above discussion, this study is important to conduct in order to examine more deeply the role of Management Information Systems in improving operational efficiency and decision-making quality in logistics companies in Indonesia. This research is expected not only to contribute theoretically to the development of management science, particularly in the field of information systems, but also to provide practical implications for logistics companies in designing and implementing effective and sustainable information systems.

Thus, the existence of Management Information Systems is no longer viewed merely as an administrative support tool, but rather as a strategic foundation for driving digital transformation, improving operational efficiency, and strengthening the competitiveness of logistics companies in the increasingly competitive digital economy era.

Management Information Systems (MIS)

Management Information Systems (MIS) are integrated systems designed to collect, process, store, and present relevant information to support planning, control, and decision-making processes within an organization. MIS not only functions as a data processing tool but also as a strategic mechanism that integrates technology, people, and work procedures into a unified system.

From a modern management perspective, MIS plays a crucial role in providing accurate, timely, and relevant information across various managerial levels, ranging from operational to strategic levels. The information generated by MIS is utilized to monitor organizational performance, evaluate the effectiveness of business processes, and formulate policies that are adaptive to changes in the business environment.

Furthermore, MIS contributes to improving organizational efficiency through process automation, reduction of manual errors, and integration of data across departments. Therefore, MIS serves as a fundamental foundation in supporting digital transformation and enhancing organizational competitiveness in the information technology era Components of Management Information Systems

MIS in the Logistics Industry

In the logistics industry, the implementation of Management Information Systems plays a highly critical role due to the complexity of operational activities. MIS in this sector not only functions as a data recording tool but also as a control and monitoring system that enables companies to manage the entire distribution process in an integrated and real-time manner.

The main components of MIS in the logistics industry include:

- Warehouse Management System (WMS)

This system is used to manage warehousing activities, including receiving, storing, and dispatching goods. WMS helps improve inventory accuracy, reduce recording errors, and optimize warehouse space utilization.

- Transportation Management System (TMS)

TMS functions to manage transportation processes such as route planning, delivery scheduling, and vehicle monitoring. This system enables companies to optimize fleet utilization and reduce distribution costs.

- Tracking and Tracing System

This system allows both companies and customers to monitor the movement of goods in real time. Its implementation enhances transparency and increases customer trust in logistics services.

The integration of these three systems within MIS enables logistics companies to enhance supply chain visibility, accelerate information flow, and improve coordination among operational units. This integration becomes a key factor in improving operational performance and service quality.

Operational Efficiency

Operational efficiency refers to an organization's ability to utilize resources optimally in order to produce maximum output at minimal cost. In the context of the logistics industry, operational efficiency is a primary indicator for evaluating company performance, considering the high costs associated with distribution and transportation activities.

Operational efficiency in logistics can be measured through several aspects, including:

- Delivery Speed

The company's ability to deliver goods on time according to predetermined schedules.

- Cost Efficiency

The company's efforts to reduce operational costs, such as fuel, labor, and storage expenses.

- Route Optimization

The use of technology to determine the most efficient delivery routes in order to save time and costs.

The implementation of MIS plays a significant role in improving operational efficiency by providing accurate and real-time data. With integrated information, companies are able to identify operational bottlenecks, reduce waste, and enhance overall productivity.

success of an organization. In a complex and dynamic business environment, decisions must be based on accurate, relevant, and timely information.

Management Information Systems function as information providers that support decision-making processes at operational, tactical, and strategic levels. MIS enables management to access data quickly and perform analyses on various available decision alternatives.

In the context of the logistics industry, MIS supports strategic decision-making such as:

- Determining the most efficient distribution routes
- Managing and controlling inventory
- Planning delivery schedules
- Evaluating operational performance

With the support of MIS, the decision-making process becomes more objective and data-driven, thereby minimizing the risk of errors and enhancing the effectiveness of the strategies implemented. Therefore, the integration of MIS into managerial processes is a crucial factor in improving the competitiveness of logistics companies in the digital era.

2. METHOD

This study employs a qualitative approach using a literature review method (library research). The qualitative approach was chosen because this study aims to gain an in-depth understanding of the phenomenon related to the role of Management Information Systems (MIS) in improving operational efficiency and the quality of decision-making in logistics companies, through conceptual and theoretical analysis of various scientific sources.

The literature review method is used as the primary data collection technique by examining various references relevant to the research topic. This approach enables the researcher to obtain a comprehensive understanding of concepts, theories, and empirical findings developed in previous studies. In addition, this method is also used to identify research gaps that form the basis for the development of this study.

Data Sources

The data used in this study are secondary data obtained from various reliable sources, including:

- National and international indexed scientific journals (Scopus, Sinta, and others)
- Academic textbooks related to Management Information Systems and logistics management
- Scientific articles, conference proceedings, and official publications relevant to the research topic
- Other supporting sources such as research reports and related documents

The selection of data sources was conducted selectively by considering the credibility, relevance, and timeliness (up-to-date) of the information used in the study.

Data Collection Techniques

Data collection was carried out through a documentation process, which involves identifying, collecting, and categorizing various literature related to the research variables, such as Management Information Systems, operational efficiency, and decision-making in the logistics industry. The collected literature was then selected and classified based on its relevance to the research focus.

Data Analysis Techniques

The data analysis technique used in this study is a descriptive qualitative approach, which consists of several stages:

1. Data Reduction

Simplifying and selecting relevant information from various collected literature sources.

2. Data Presentation

Organizing data into a systematic narrative form to facilitate understanding and analysis.

3. Conclusion Drawing

Interpreting the results of the literature review to obtain an in-depth understanding of the role of MIS in the logistics industry context.

In addition, the analysis was also conducted using a comparative approach by examining various previous research findings to identify patterns, similarities, and differences in the implementation of Management Information Systems. This approach aims to produce more objective and comprehensive conclusions.

Data Validity

To ensure the validity and reliability of the data, this study employs source triangulation techniques, which involve comparing information from various different references. This process is carried out to ensure that the data used have a high level of accuracy and credibility.

3. CONCLUSION

Based on the results of the literature review of various previous studies, it is found that the implementation of Management Information Systems (MIS) has a significant contribution to improving the operational performance of logistics companies. MIS not only functions as a data processing tool but also as a strategic system capable of integrating various operational activities and supporting decision-making in a more effective and efficient manner.

1. Improvement of Distribution Efficiency

One of the main impacts of MIS implementation in logistics companies is the improvement in the efficiency of goods distribution processes. Through an integrated system, companies

are able to optimize delivery route planning by utilizing historical data, traffic conditions, and available fleet capacity.

This route optimization allows companies to reduce delivery time, enabling goods to reach their destinations more quickly. In addition, the use of more efficient routes also contributes to reducing operational costs, particularly fuel and vehicle maintenance expenses. Thus, MIS plays a role in creating a more effective, efficient, and competitive distribution process in the highly competitive logistics industry.

2. Real-Time Monitoring and Tracking

The implementation of MIS also enables logistics companies to conduct real-time monitoring and tracking of goods. This system provides full visibility of goods movement from the point of origin to the final destination.

This tracking capability is not only beneficial for internal company operations in supervising distribution processes but also adds value for customers. Customers are able to monitor the location of their goods directly, thereby increasing transparency and trust in the company's services.

Furthermore, real-time monitoring systems help companies anticipate potential delays or disruptions in distribution, allowing for immediate corrective actions. This demonstrates that MIS plays an important role in improving service quality and customer satisfaction.

3. Integration of Operational Systems

MIS functions as a system that integrates various operational units within logistics companies, such as warehousing, transportation, and administrative departments. This integration enables smoother and more coordinated information flow across departments.

Prior to the implementation of MIS, many logistics companies relied on separate or even manual systems, which often resulted in data duplication, inconsistencies, and delays in interdepartmental communication. With MIS, all data are stored in a centralized system that can be accessed by relevant stakeholders.

This integration not only improves work efficiency but also reduces the risk of data processing errors. In addition, coordination among units becomes more effective, allowing operational processes to run faster and in a more structured manner.

4. Data-Driven Decision Making

MIS provides accurate, relevant, and real-time data and information, which strongly supports managerial decision-making processes. In the context of logistics companies, decisions are often related to distribution planning, fleet management, and inventory control.

With the support of MIS, management can analyze distribution performance, identify operational constraints, and evaluate the effectiveness of implemented strategies. This information is then used as a basis for formulating more precise and responsive policies in accordance with market conditions.

This data-driven approach also helps reduce subjectivity in decision-making, resulting in more objective and measurable decisions. Therefore, MIS not only enhances operational efficiency but also strengthens managerial quality within the organization.

5. Challenges in MIS Implementation

Despite its significant benefits, the implementation of MIS in logistics companies still faces several challenges. One of the main obstacles is the high investment cost required for hardware, software, and human resource training.

In addition, the limited competence of human resources in operating technology-based systems poses a serious challenge. Many employees still lack adequate digital skills, which slows down the adaptation process to new systems.

Another important factor is resistance to change, especially from individuals who are accustomed to conventional work systems. The transition to digital systems is often perceived as an additional burden, leading to indirect resistance.

Nevertheless, these challenges can be addressed through appropriate strategies such as continuous training, improvement of digital literacy, and strong management support in driving organizational transformation. In the long term, the benefits gained from MIS implementation are considered far greater than the challenges faced.

Recommendations

Based on the discussion regarding the role of Management Information Systems (MIS) in improving operational efficiency and the quality of decision-making in logistics companies, several recommendations can be proposed as follows:

Increasing Investment in Information Technology

Logistics companies are advised to increase investment in the development and implementation of information technology, particularly integrated Management Information Systems. This investment should not only cover hardware and software procurement but also the development of systems tailored to the company's operational needs. With adequate technological support, companies can enhance distribution efficiency, data accuracy, and competitiveness in an increasingly competitive industry.

Human Resource Development and Training

The success of MIS implementation largely depends on the quality of human resources operating the system. Therefore, companies need to prioritize training and competency development programs. Continuous training programs, especially in information technology and digital systems, will help employees understand and utilize MIS optimally. Additionally, improving digital literacy is essential to reduce resistance to technological change.

Utilization of Cloud-Based Technology

The use of cloud-based systems can serve as a more flexible and efficient alternative solution for logistics companies, particularly in overcoming infrastructure limitations and high initial investment costs. Cloud technology enables real-time data access, enhances system scalability, and facilitates integration across operational units. Thus, companies can optimize operations without incurring large costs associated with conventional system development.

Strengthening Change Management Strategies

In the process of MIS implementation, companies need to pay attention to change management aspects to address internal resistance. A systematic approach is required, such as communicating the benefits of the system, involving employees in the implementation process, and ensuring full support from top management. This strategy is essential to ensure that digital transformation runs effectively and is accepted by all organizational members.

Future Research Development

Future researchers are encouraged to expand this study by employing a quantitative approach to empirically examine the relationship between MIS implementation, operational efficiency, and decision-making. Furthermore, future studies may include additional variables such as organizational performance, customer satisfaction, or competitive advantage. The use of statistical analysis methods such as Structural Equation Modeling (SEM) or Partial Least Squares (PLS) can provide more in-depth and measurable results.

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