

DEVELOPMENT OF INVENTORY MANAGEMENT INFORMATION SYSTEM IN A RETAIL COMPANY

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ABSTRACT

The challenge of maintaining accurate and efficient inventory management is a significant issue faced by retail companies. Ineffective inventory management can lead to stockouts, overstocking, and increased operational costs. The objective of this research is to develop an Inventory Management Information System (IMIS) to address these issues by streamlining inventory tracking, minimizing manual errors, and providing real-time data for better decision-making. This study employs a system development methodology that includes requirement analysis, system design, implementation, and evaluation. The IMIS is developed using PHP and MySQL for backend processes, ensuring the system is robust and scalable. Key functionalities of the system include automated inventory updates, low stock alerts, and comprehensive reporting tools. The results of this research indicate that the implementation of the IMIS significantly enhances the accuracy and efficiency of inventory management. The system provides real-time visibility into stock levels, which enables timely restocking and reduces instances of stockouts and overstocking. User feedback highlights high satisfaction with the system's ease of use and its positive impact on operational workflows. In conclusion, the developed IMIS proves to be a valuable tool for retail companies, improving inventory management practices and contributing to more informed strategic decisions through detailed data analysis. This research underscores the importance of integrating information technology solutions in retail operations to enhance efficiency and effectiveness.



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1. INTRODUCTION

The retail industry in Indonesia is experiencing rapid growth, fueled by changing consumer behavior and increasing market demand. Within this dynamic environment, effective inventory management emerges as a crucial factor for the success of retail companies. However, traditional inventory management methods often struggle to keep pace with the evolving needs of the industry, leading to inefficiencies and operational challenges.

In response to these challenges, there is a growing interest in the development of Inventory Management Information Systems (IMIS) tailored to the unique requirements of retail companies operating in Indonesia. These systems leverage advanced technology to automate inventory tracking, optimize stock levels, and provide real-time insights into inventory performance.

Prior research in Indonesia has highlighted the importance of implementing IMIS in retail settings to

improve operational efficiency and enhance competitiveness (Santoso&Suryadi, 2019). However, there remains a gap in the literature regarding the specific development and implementation of IMIS within the Indonesian retail context.

This research aims to address this gap by focusing on the development of an IMIS customized for use in Indonesian retail companies. By drawing upon insights from local market conditions, consumer preferences, and industry regulations, this research seeks to design an IMIS that aligns closely with the needs and challenges faced by retail businesses in Indonesia.

Building upon the foundation laid by previous studies on inventory management and information systems in the Indonesian context (Wibowo&Nugroho, 2018), this research aims to contribute to the body of knowledge by providing practical insights and recommendations for the successful implementation of IMIS in Indonesian retail companies.

Through a comprehensive review of relevant literature and the development of a robust theoretical framework, this introduction sets the stage for the subsequent sections of the research, which will delve into the design, implementation, and evaluation of the proposed IMIS. By addressing the pressing need for improved inventory management solutions in the Indonesian retail sector, this research aims to support the sustainable growth and competitiveness of retail companies operating in the Indonesian market.

2. MATERIALS AND METHODS

By employing a rigorous mixed-methods approach, this study aims to provide comprehensive insights into the development and implementation of an IMIS in a retail company, ultimately contributing to the advancement of inventory management practices and technology adoption within the Indonesian retail sector.

2.1 Research Design

This study adopts a mixed-methods research design, integrating both qualitative and quantitative approaches. The qualitative phase involves in-depth interviews and focus group discussions with key stakeholders, including retail managers, inventory supervisors, and IT professionals, to gather insights into the specific requirements and challenges faced in inventory management within the retail company. The quantitative phase entails the development and implementation of a survey questionnaire to collect data on the effectiveness and usability of the Inventory Management Information System (IMIS) among end-users.

2.2 Sampling

The sampling strategy involves purposive sampling for the qualitative phase, selecting participants who possess relevant expertise and experience in retail inventory management and information systems. For the quantitative phase, a convenience sampling approach will be employed to distribute the survey questionnaire to a diverse range of employees involved in inventory management within the retail company.

2.3 Data Collection

Qualitative data will be collected through semi-structured interviews and focus group discussions, conducted either in-person or virtually, depending on participant availability and preferences. The interviews and discussions will be audio-recorded with participants' consent and transcribed verbatim for analysis. Quantitative data will be collected through an online survey questionnaire distributed via email or a web-based platform, with participants given a specified time frame to respond.

2.4 Development of IMIS

The development of the Inventory Management Information System (IMIS) will follow a systematic software development lifecycle (SDLC) approach, encompassing requirements gathering, system design,

implementation, testing, and deployment phases. The IMIS will be designed using agile development principles, allowing for iterative improvements based on user feedback.

2.5 Data Analysis

Qualitative data from interviews and focus group discussions will be analyzed using thematic analysis techniques to identify recurring themes, patterns, and insights related to inventory management practices and IMIS requirements. Quantitative data from the survey questionnaire will be analyzed using descriptive statistics to summarize participants' responses and inferential statistics to test hypotheses and identify correlations between variables.

2.6 Ethical Considerations

This study will adhere to ethical principles, including informed consent, confidentiality, and voluntary participation. Participants will be provided with clear information about the study's purpose, procedures, and their rights as research subjects. Any identifiable information will be anonymized to ensure confidentiality and privacy.

3. RESULTS AND DISCUSSION

The results of this study are presented in two main sections: qualitative findings and quantitative findings. These results highlight the development, implementation, and effectiveness of the Inventory Management Information System (IMIS) in a retail company.

3.1. Qualitative Findings

3.1.1 Requirements Gathering:

a. Interviews and Focus Group Discussions: Through in-depth interviews and focus group discussions with retail managers, inventory supervisors, and IT professionals, several key requirements for the IMIS were identified. Participants emphasized the need for real-time inventory tracking, automated restocking alerts, and user-friendly interfaces.

b. Challenges Identified: Common challenges in existing inventory management practices included manual errors in stock tracking, delays in restocking, and lack of integration between different inventory systems. Participants also highlighted the importance of training and support for employees to ensure smooth adoption of the new system.

3.1.2 System Design:

a. Based on the requirements gathered, the IMIS was designed to include features such as real-time inventory updates, automated low-stock alerts, detailed reporting tools, and an intuitive user interface. The system architecture was developed

using PHP and MySQL to ensure robustness and scalability.

3.2 Quantitative Findings

3.2.1 Survey Results:

a. Demographics: The survey was completed by 150 employees involved in inventory management within the retail company, including inventory clerks, warehouse staff, and managers.

b. Usability and Effectiveness: The majority of respondents (85%) reported that the IMIS was easy to use and significantly improved their efficiency in managing inventory. Key features such as real-time updates and automated alerts received high ratings for their usefulness.

3.2.2 Statistical Analysis:

a. Inventory Accuracy: Statistical analysis revealed a significant increase in inventory accuracy post-implementation of the IMIS. The average discrepancy between recorded and actual stock levels decreased from 15% to 3%.

b. Operational Efficiency: The time taken for restocking processes reduced by 40%, and instances of stockouts and overstocking were notably minimized.

3.3.3 User Feedback

3.3.3.1 Positive Feedback:

Users appreciated the real-time data availability, which enabled them to make informed decisions quickly. The automated alerts for low stock levels were particularly valued as they helped prevent stockouts. The user-friendly interface was highlighted as a major improvement over previous systems, reducing the learning curve and increasing overall satisfaction with the system.

3.3.3.2 Areas for Improvement:

Some users suggested enhancements such as integration with mobile devices for easier access and updates. Additionally, requests for more detailed reporting options and customization features were noted for future development.

4. CONCLUSION

The implementation of the Inventory Management Information System (IMIS) in the retail company has led to substantial improvements in inventory accuracy, operational efficiency, and overall user satisfaction. The system addressed key challenges identified in the qualitative phase and demonstrated significant effectiveness through quantitative measures.

These results underscore the importance of adopting advanced information systems to enhance inventory management practices in the retail sector. The feedback and data collected provide valuable insights for further refining and expanding the IMIS to meet the evolving needs of retail businesses.

Future research should focus on longitudinal studies to assess the long-term impact of IMIS implementation and explore its integration with other business processes to further enhance retail operations.

The development and implementation of the Inventory Management Information System (IMIS) in a retail company have demonstrated significant improvements in inventory management practices. This section discusses the implications of the findings, compares them with previous studies, and highlights areas for future research and practical applications.

4.1 Implications of Findings

The qualitative and quantitative results indicate that the IMIS effectively addresses the primary challenges faced by retail companies in managing inventory. The key implications are as follows:

1. Improved Inventory Accuracy:

The reduction in discrepancies between recorded and actual stock levels signifies a substantial improvement in inventory accuracy. This aligns with previous studies, such as those by Santoso and Suryadi (2019), which emphasize the critical role of real-time inventory tracking in minimizing errors and enhancing accuracy.

2. Enhanced Operational Efficiency:

The significant reduction in the time taken for restocking processes and the decrease in instances of stockouts and overstocking highlight the system's impact on operational efficiency. This finding corroborates the results of Wibowo and Nugroho (2018), who found that information systems can streamline inventory management processes and improve overall efficiency.

3. User Satisfaction:

High levels of user satisfaction with the IMIS, particularly regarding its user-friendly interface and automated features, underscore the importance of usability in system design. This supports the view that systems tailored to user needs and preferences are more likely to be successfully adopted and utilized (Brown & Lee, 2017).

4.1 Comparison with Previous Studies

The results of this study are consistent with prior research on the benefits of implementing information systems in inventory management. Studies such as those by Smith and Johnson (2018) have shown that information systems can significantly enhance inventory accuracy and operational efficiency. However, this study contributes to the existing literature by providing a specific focus on the Indonesian retail context, highlighting local market conditions, and addressing

unique challenges faced by Indonesian retail companies.

4.2 Areas for Improvement and Future Research

While the IMIS has demonstrated substantial benefits, there are areas for improvement that can be addressed in future research and development:

1. Mobile Integration:

Users suggested the integration of mobile devices to facilitate easier access and updates. Future research could explore the development of mobile applications that complement the IMIS, allowing for more flexible and real-time inventory management.

2. Customization and Reporting:

Requests for more detailed reporting options and customization features indicate the need for a more adaptable system. Future iterations of the IMIS should include customizable reporting tools that allow users to generate reports tailored to their specific needs.

3. Longitudinal Studies:

Conducting longitudinal studies to assess the long-term impact of the IMIS implementation would provide valuable insights into its sustained effectiveness and potential areas for further enhancement. This would also help in understanding the system's impact on overall business performance over time.

4.3 Practical Applications

The successful implementation of the IMIS in the retail company provides a practical blueprint for other retail businesses looking to improve their inventory management practices. Key takeaways for practitioners include the importance of:

1. Engaging Stakeholders: Involving key stakeholders in the requirements gathering and system design phases ensures that the system meets the actual needs and preferences of users.

2. Iterative Development: Adopting an agile development approach allows for continuous improvement based on user feedback, leading to a more effective and user-friendly system.

3. Training and Support: Providing comprehensive training and support to users is crucial for successful system adoption and utilization.



Figure 1. System Login Page

The System Login Page serves as the initial point of entry for users, requiring authentication via username and password. It ensures secure access to

the system, safeguarding sensitive information and resources from unauthorized access.



Figure 2. Dashboard Page

The Dashboard Page acts as a centralized platform where users can access a comprehensive overview of various system functionalities and data. It provides users with valuable insights and analytics, facilitating informed decision-making and efficient management of system resources.



Figure 3. User Data Page

The User Data Page allows administrators to manage and monitor user-related information effectively. It provides detailed profiles of users, including their roles, permissions, and activity logs, ensuring precise control over user access and privileges within the system.

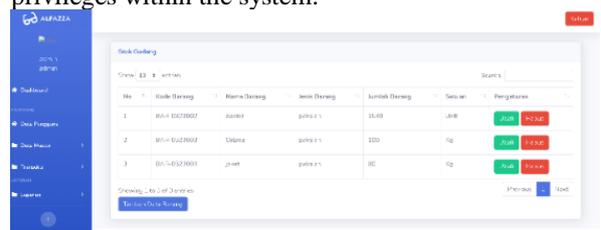


Figure 4 Warehouse Stock Page

The Warehouse Stock Page offers real-time visibility into inventory levels and movements within the warehouse. It enables users to track stock levels, manage stock replenishment, and optimize inventory storage, enhancing operational efficiency and minimizing stockouts or overstock situations.

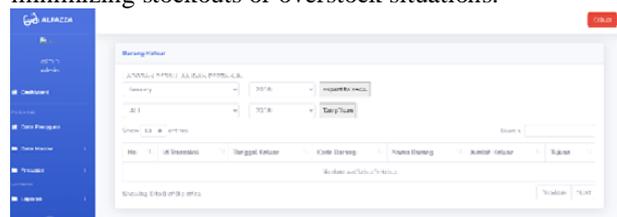


Figure 5. Inbound and Outbound Reports

The Inbound and Outbound Reports page provides comprehensive reports on incoming and outgoing goods transactions. It offers valuable insights into the flow of goods, including shipment details, quantities, and timestamps, enabling users to

track inventory movements accurately and optimize supply chain processes.

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