

Implementation of an Integrated Accounting System to Reduce Inventory Write-Off Loss Costs: Case Study of PT Terminal Petikemas Surabaya

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ABSTRACT

Advances in information technology have prompted companies to adopt integrated systems to improve the efficiency and accuracy of inventory management, particularly in reducing inventory write-off costs. This study aims to analyze the implementation of an integrated accounting system based on System Application and Product in Data Processing (SAP) and to identify the challenges and opportunities associated with its implementation at PT Terminal Petikemas Surabaya. An interpretive approach based on a case study was employed, utilizing data collection techniques such as observation, in-depth interviews, documentation, and literature review. The research findings indicate that data integration, real-time processing, and automated controls improve recording accuracy, data consistency with physical conditions, and the efficiency of inventory management. These conditions lead to a reduction in inventory write-off costs through improvements in control processes and inventory planning. Thus, an integrated accounting system plays a strategic role in enhancing the effectiveness of inventory management and the company's operational efficiency.

INTRODUCTION

The increasingly disruptive development of information technology has transformed the operational landscape of companies, particularly in the management of financial and logistics information, which demands high integration, speed, and accuracy in strategic decision-making (Ren, 2022). In this context, inventory management is one of the areas most vulnerable to inefficiency, particularly indicated by the high cost of losses due to inventory write-offs, which reflect weak internal controls and the lack of synchronization between accounting records and the physical condition of goods (Bixler, 2021). This phenomenon is not only triggered by delays in recording and system fragmentation between business functions, but also by low real-time data visibility that hinders early detection of obsolete, damaged, or unproductive inventory (Ugbebor et al., 2024). In a complex and dynamic supply chain environment, a company's inability to manage inventory accurately not only results in

increased operational costs but also has implications for decreased company efficiency and competitiveness, thus emphasizing the urgency of implementing a technology-based integrated accounting system as a strategic solution (Puspitawati et al., 2024).

Conceptually, an integrated accounting information system (AIS) serves as the primary mechanism for producing quality information through the integration of technology, people, and organizational procedures (Lutfi et al., 2022). From an information quality perspective, the level of system integration determines an organization's ability to produce relevant, reliable, and timely information. Unintegrated AISs tend to result in *information lag* and *data redundancy*, which ultimately increases the risk of recording errors, particularly in inventory management (Paula et al., 2022). This condition shows that the quality of information produced by an accounting system is highly dependent on the extent to which system integration is able to eliminate data gaps between organizational functions (Sunarta & Astuti, 2023).

Furthermore, inventory management theory emphasizes the importance of optimal inventory control to balance holding costs, ordering costs, and the risk of obsolescence (Heizer, 2020). An imbalance in these three aspects often leads to the accumulation of unproductive inventory, ultimately leading to write-offs and loss recognition. In practice, the limitations of unintegrated information systems make it difficult for companies to effectively plan and control inventory, thus reinforcing the urgency of implementing systems capable of providing real-time, integrated information (Benoit et al., 2024).

In development, it has been empirically proven that the implementation of *Enterprise Resource Planning* (ERP), specifically *System Application and Product in Data Processing* (SAP), has become the dominant approach in improving information integration and operational efficiency in companies (Harianto et al., 2024). SAP enables cross-functional integration through a centralized database, thereby reducing *information silos* and improving coordination between departments. This capability shows that system integration functions not only as a recording tool but also as an organizational coordination mechanism that supports more effective inventory management (Omoegun et al., 2024).

Furthermore, according to Nour and Mohamed Abdalla (2023), ERP implementation significantly contributes to increased inventory data visibility, strengthened internal controls, and reduced operational inefficiencies through *real-time processing* and *automated control mechanisms*. Therefore, an SAP-based system enables organizations to *continuously monitor* inventory movements, thereby proactively minimizing potential losses due to write-offs (Abdalla, 2023). This demonstrates that the use of technology not only increases efficiency but also strengthens control functions within an organization.

However, existing studies still tend to place ERP and integrated accounting systems within a general analytical framework, focusing on improving aggregate organizational performance (Zhao, 2021). This approach fails to fully explain how system integration specifically impacts business processes directly related to *inventory write-offs* (Gleißner &

Berger, 2024). This limitation indicates the need for a deeper examination of the relationship between system implementation and inventory control at the operational level.

Furthermore, the dominance of quantitative approaches in previous research has led to a lack of understanding of the dynamics of system implementation in complex organizational contexts, such as the logistics and port sectors. Contextual factors such as human resource competency, data integrity, and management commitment are often not analyzed in depth, even though these factors play a crucial role in determining the success of system implementation (Palupiningtyas et al., 2024). This situation reinforces the need for a more contextual and process-based research approach to generate a comprehensive understanding.

The urgency of this research lies in the importance of controlling inventory loss costs as the main determinant of operational efficiency and sustainability of company performance, especially at PT Terminal Petikemas Surabaya which has high complexity in managing the flow of goods. The novelty of this research lies in the process-based approach that examines in depth the implementation mechanism of an SAP-based integrated accounting system in reducing inventory write-off costs, while integrating an analysis of organizational contingency factors that influence the success of the implementation. This research aims to analyze the application of SAP technology-based inventory management in minimizing inventory write-off costs and identify obstacles and opportunities in its implementation at PT Terminal Petikemas Surabaya, so that it is expected to be able to provide theoretical and practical contributions in the development of a more effective and sustainable integrated accounting system.

RESEARCH METHODS

This section describes a non-positivistic research method with an interpretive case study approach used to deeply understand the implementation of an integrated accounting system based on *System Application and Product in Data Processing* (SAP) in reducing inventory write-off costs at PT Terminal Petikemas Surabaya. A qualitative approach was chosen to capture the dynamics of business processes, actor interactions, and the meanings in inventory management practices that cannot be explained quantitatively. Data were collected through observation, in-depth interviews with key informants (Planning and Inventory Division, Accounting Division, PBJ office, and vendors), documentation, and literature review, using a purposive sampling technique based on direct involvement in SAP implementation. Research variables include the implementation of the integrated accounting system (data integration, *real-time processing*, control automation), inventory management effectiveness (recording accuracy, data-physical conformity, turnover efficiency), and inventory write-off costs (frequency and value of write-offs). Analysis was conducted thematically through iterative reduction, presentation, and drawing conclusions, with data validity maintained through triangulation of sources and methods to produce comprehensive and accountable findings.

RESULTS AND DISCUSSION

The implementation of an SAP-based integrated accounting system at PT Terminal Petikemas Surabaya demonstrates a relatively high level of data integration, characterized by the integration of accounting, logistics, and procurement modules into a single, centralized database. Observations and interviews revealed that inventory transaction recording is taking place in *real time*, minimizing information delays and increasing data visibility across divisions. An interview with an informant in the Planning and Inventory Division stated that

"With SAP, the movement of goods can be directly monitored, so we no longer rely on manual reports that are often late."

Furthermore, the system is equipped with *automated control mechanisms* such as input validation and layered authorization, which help reduce recording errors. This finding aligns with research showing that ERP-based system integration can improve information accuracy and strengthen internal control through business process automation (Hardiyansah et al., 2021).

In terms of inventory management effectiveness, the study results showed a significant increase in recording accuracy and the correspondence between system data and physical conditions in the field. Documentation results showed that the discrepancy between physical inventory and system records decreased after SAP implementation, indicating improvements in inventory control. Interviews with informants from the Accounting Division revealed that

"Previously, there were often differences during stocktaking, but now the differences are much smaller because the system is integrated."

Furthermore, inventory turnover efficiency also increases because companies are able to identify slow-moving items *more* quickly. Research indicates that ERP systems improve inventory visibility and control, thus impacting operational efficiency (Asmawanti et al., 2022).

SAP implementation also resulted in a reduction in inventory write-off costs, both in terms of frequency and value. Documentation data shows that the number of inventory write-offs tended to decrease after the system was implemented, indicating improvements in inventory control and planning. An informant from the PBJ office stated that.

"With an integrated system, we can control procurement better so that overstocking that leads to write-offs does not occur."

Meanwhile, the vendor also added that better coordination with the company helped with supply management. This statement ultimately reinforces why information system integration can reduce operational inefficiencies, including losses due to poorly managed inventory (Djiantoro & Taringan, 2022). Thus, implementing an SAP-based integrated accounting system not only improves information quality and inventory management effectiveness but also directly contributes to reducing the company's operational losses.

The implementation of an SAP-based integrated accounting system in this study confirmed improved cross-functional data integration, accelerated *real-time information flow*,

and strengthened automated control mechanisms. An informant from the Planning and Inventory Division confirmed that "data between divisions is now directly connected without waiting for manual reconciliation," reflecting reduced information fragmentation. This implies that SAP functions not only as a recording system but has transformed into an organizational coordination system. From an accounting information systems theory perspective, this condition explains that information quality improves when the system is able to comprehensively integrate business processes, resulting in more relevant and timely information (Jiwa et al., 2021). This demonstrates that system integration is a key prerequisite for improving the quality of information used in decision-making.

The correlation between these findings and the underlying concept demonstrates that data integration and control automation act as independent variables that influence information quality, acting as an intermediary variable. Interview results revealed that SAP's automatic validation feature reduces input errors, while *real-time processing* accelerates the presentation of information needed by management. Logically, this improvement in information quality impacts operational control effectiveness because decisions can be made based on more accurate and up-to-date data. This relationship suggests that the system's influence is not direct, but rather through mechanisms that improve information quality (Ganipaeni, 2024). These findings expand on previous understandings that ERP improves information quality and internal control by emphasizing that this role occurs through process integration, not simply through system digitization (Ganipaeni, 2024).

Furthermore, regarding inventory management effectiveness, research findings based on interviews and observations indicate an increase in recording accuracy and a match between system data and the physical condition of inventory. An informant from the Accounting Division stated that "stock discrepancies are now significantly reduced compared to before the system was integrated," indicating an improvement in data reliability. Furthermore, the system's ability to identify *slow-moving items* allows the company to take corrective action more quickly (Pramudito et al., 2024). These findings indicate that inventory management effectiveness is influenced not only by operational procedures but also by the quality of the information systems that support them (Larutama et al., 2023).

Conceptually, the findings suggest that system integration, as an independent variable, improves data visibility and accuracy, as mediating variables, which in turn impacts inventory management effectiveness, as the dependent variable. Based on the research context, increased visibility enables more responsive decision-making in inventory control, thereby reducing potential discrepancies between data and physical conditions (Abdul-Azeez et al., 2024). This relationship demonstrates that information systems function as an enabler in creating operational efficiency. These findings complement previous research suggesting that ERP improves efficiency through data visibility, by demonstrating that such efficiency arises through a more structured and integrated data-driven control process (Asmawanti et al., 2022).

On the other hand, research findings based on documentation and interview data indicate a decrease in the frequency and value of inventory write-offs after SAP implementation. An informant from the PBJ office stated that "procurement is now more controlled because stock data is now clearly visible," indicating improvements in inventory planning and control processes. This finding implies that the integrated system impacts not only the recording process but also strategic decisions related to procurement and stock management (Ugbebor et al., 2024).

Analytical, the relationship between variables indicates that SAP implementation as an independent variable does not directly reduce inventory write-off costs, but rather through increased inventory management effectiveness as a mediating variable (Tikwayo & Mathaba, 2023). Interview results indicate that improved data accuracy and inventory turnover efficiency reduce the risk of *overstock* and *obsolete inventory*, ultimately reducing loss costs. This demonstrates a layered causal relationship, demonstrating that technology serves as a catalyst for business process improvement. These findings provide a more in-depth perspective than previous research (Immadisetty, 2025), by emphasizing that the reduction in operational losses is the result of integrated business processes internalized within the system and supported by more adaptive operational practices.

CONCLUSION AND SUGGESTIONS

The implementation of an SAP-based integrated accounting system at PT Terminal Petikemas Surabaya has been conceptually proven to play a role in improving the quality of data integration, accelerating information flow, and strengthening internal control mechanisms, which simultaneously encourages the effectiveness of inventory management through increased recording accuracy, data conformity with physical conditions, and inventory turnover efficiency. Within the framework of a causal relationship, the integrated system functions as a triggering factor that works through improving information quality and data visibility as mediating variables, thus having implications for the organization's ability to minimize inventory write-off costs in a more structured and sustainable manner. Thus, the research objective in analyzing SAP implementation and identifying its role in reducing inventory losses can be explained logically through the interrelationships between integrated business processes.

This research is limited by its single-case study approach, which focuses on a single entity. Therefore, generalization of the findings requires caution and contextualization. Furthermore, limitations lie in its reliance on interview-based qualitative data, which can potentially contain informant subjectivity. Therefore, future research is recommended to expand the scope of research objects to various industrial sectors and combine qualitative and quantitative approaches to strengthen the validity of the findings. Furthermore, further exploration of contingency factors such as organizational culture, technological readiness, and initial data quality is also needed to gain a more comprehensive understanding of the success of integrated accounting system implementation in reducing operational losses.

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