

## Developing Optimization Strategy for Dead Stock Inventory: Study Case for PT ABC

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### KEYWORDS

Inventory Management; Slow  
Moving Inventory; Dead Stock  
Inventory

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### ABSTRACT

This study addresses the critical issue of inventory management at PT. ABC is a leading food and beverage company in Indonesia, focusing on reducing slow-moving and deadstock materials. The research employs a quantitative and qualitative approach, combining in-depth interviews with key personnel and analysis of secondary data from company records and industry guidelines. The study identifies the root causes of inventory inefficiencies. The findings lead to the development of targeted strategies to optimize inventory management and enhance operational efficiency. The study's recommendations include both short-term and long-term solutions, aiming to reduce deadstock levels and improve overall material management practices at PT ABC.

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### Introduction

Since its discovery, coffee has become a global commodity, with consumption steadily increasing worldwide, including in Indonesia. The Dutch introduced coffee to Indonesia in the late 1600s, starting with Arabica coffee cultivation in Java. By the 17th and 18th centuries, coffee production spread to other parts of the country, thanks to Indonesia's favorable climate. Today, Indonesia stands as one of the world's largest coffee producers and exporters. Indonesia's rich coffee history has fostered a strong coffee culture and a growing domestic market. The rise in coffee consumption has been fueled by the spread of coffee shops and retail outlets across the country. In 2022, cafés and bars in Indonesia generated approximately 1.9 billion U.S. dollars in sales, reflecting the popularity of coffee in everyday life (FAS, 2023; Statista, 2024).

PT ABC, a key player in Indonesia's coffee industry, has seen rapid growth since its establishment in 2017. With more than 800 stores nationwide, the company has expanded beyond coffee to include food and retail products. As PT ABC continues to grow, it faces increasing challenges in managing its supply chain, particularly in inventory management (Plinere & Borisov, 2015). Managing inventory effectively is essential to keeping operations running smoothly and ensuring that the company can meet customer demand without overstocking, which can lead to financial strain.

Inventory management is crucial for businesses across various industries, including PT ABC. The company spends about 1.5 billion rupiah monthly on storage costs for its eleven warehouses across Indonesia, with half of these costs coming from its main warehouse. A significant portion of

this expense is due to dead stock and slow-moving items that take up valuable warehouse space. Deadstock refers to items that have been unsold for a long time, while slow-moving inventory includes products that sell less frequently than others. These challenges often arise from overestimated demand, forecasting errors, or changes in market trends.

The urgency for PT ABC to address dead stock is compounded by the increased storage demands resulting from the company's operational growth since 2017. If left unaddressed, these issues will disrupt operations and reduce the company's ability to respond to market demands efficiently. Therefore, this research aims to understand the root causes of dead stock at PT ABC and develop an effective optimization strategy to address them.

The proposed strategy's novelty lies in its focus on integrating inventory management systems with real-time data analysis. Unlike more conventional approaches, this strategy emphasizes automation and predictive analytics to enhance the accuracy of inventory planning. Consequently, this approach is expected to reduce dead stock levels and improve operational efficiency.

If not addressed, these inventory issues can lead to higher costs and reduced profitability for PT ABC. By improving inventory management, the company could reduce excess stock and lower storage costs while remaining responsive to market demands. This research aims to identify the key drivers of slow-moving and dead stock inventory at PT ABC and explore procedures or policies that could help prevent these issues. Additionally, the study will seek to establish standard methods for inventory reviews and develop an action plan to manage the company's inventory better, ultimately contributing to more efficient and cost-effective operations.

Implementing the proposed optimization strategy is expected to bring significant benefits, including reduced storage costs, improved responsiveness to market demands, and enhanced operational efficiency. Furthermore, the broader implications of this research include establishing a new standard for inventory management that can enhance PT ABC's long-term competitiveness.

## **Materials and Methods**

The study adopts a qualitative and quantitative approach to explore and address issues related to inventory management, mainly focusing on the high levels of slow-moving and deadstock materials at JOB PT ABC. The research is designed to uncover the root causes of these inventory challenges and propose practical solutions tailored to the company's specific needs.

Data collection involves both primary and secondary sources. Primary data are gathered through in-depth interviews with key personnel in JOB PT ABC's management division. These interviews provide insights into the roles and responsibilities of the participants, their perspectives on the importance of material management, and the challenges they face in managing inventory. The questions are designed to delve into the factors contributing to the accumulation of slow-moving and deadstock materials and to understand the effectiveness of the current inventory management methods.

In addition to the interviews, secondary data are collected from company records, industry reports, and academic literature. This information helps contextualize the primary data, offering a broader understanding of the inventory management issues at JOB PT ABC. It also allows for benchmarking against industry standards and the identification of best practices that could be applied to improve the company's processes (Martin, 2018).

The analysis of the data is conducted using The Current Reality Tree (CRT). CRT is used to identify the root causes of the inventory problems, enabling a clear understanding of the underlying issues that need to be addressed.

Overall, this research approach combines detailed interviews with thorough document analysis to explore the inventory management issues at JOB PT ABC. By identifying root causes and potential solutions, the study aims to offer practical recommendations for improving the company's inventory practices and reducing the levels of slow-moving and deadstock materials.

## Results and Discussions

### Result

#### Validity Test

Validity testing is a process used to determine the extent to which a measuring instrument actually measures what it is supposed to measure.

**Table 1. Validity Test Results**

		Correlations	
		X	Y
X	Pearson Correlation	1	.536**
	Sig. (2-tailed)		<.001
	N	100	100
Y	Pearson Correlation	.536**	1
	Sig. (2-tailed)	<.001	
	N	100	100

\*\* . Correlation is significant at the 0.01 level (2-tailed).

The research results obtained from statistical tests were below 0.05, which indicates that the data results are valid and the research can be continued.

#### Normality Test

The following are the results of the normality test carried out.

**Table 2. Normality Test Results**

	Tests of Normality					
	Kolmogorov-Smirnova			Shapiro Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
X	.137	100	<.001	.953	100	.001
Y	.115	100	.002	.964	100	.008

a. Lilliefors Significance Correction

The research results are obtained if the data obtained is normally distributed, because the sig. value is below 0.05, so the research can be continued.

#### Reliability Test

Reliability testing aims to assess the extent to which a measuring instrument produces consistent and stable results when used in the same situation or repeated at different times.

**Table 3. Reliability Test Results**

**Reliability Statistics**

Cronbach's Alpha	N of Items
.695	2

The test results obtained if the Cronbach's alpha value is 0.695, which indicates that the instrument used has good reliability, so it can be continued for further analysis.

**Regression Test**

The following are the results of the regression test obtained.

**Table 4. Regression Test Results**

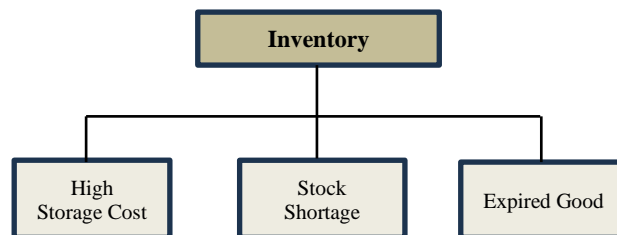
**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11,172	1,529		7.309	<.001
	X	.478	.076	.536	6.281	<.001

a. Dependent Variable: Y

The table above states that the inventory management variable has an influence on dead stock inventory with a significance value (sig) below 0.05, explaining that there is a good relationship between each variable.

**Analyze the root cause of inventory problems with the Current Reality Tree (CRT)**



**Figure 1. CRT inventory problems**

Stock shortages at PT ABC occur due to poorly predicted demand, caused by sales data that is not real-time and lack of integration between sales and inventory systems that are still managed manually. In addition, high storage costs arose because the company made large purchases to obtain discounts without adequate cost-benefit analysis, exacerbated by an inaccurate forecasting system in inventory planning. Expired goods were also a problem due to poor stock rotation, where PT ABC used a manual system to monitor expiry dates, thus slowing down the identification of products that should be used or sold immediately. The focus on high critical areas includes the need for information system integration to address stock shortages and inaccurate demand data, as well as automation in forecasting and inventory management systems to prevent unplanned purchases and overstocking, and ensure effective stock rotation to avoid expired goods.

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## Discussion

Based on the research results, it is found that inventory management has a significant influence on dead stock inventory at PT ABC, because decisions taken in stock management, such as ordering methods, replenishment frequency, and demand prediction, can determine how effectively the company avoids the accumulation of unsold goods. Inefficient inventory management, such as purchasing goods in bulk without taking into account market turnover or trends, risks creating dead stock, which will then burden storage costs and working capital. Conversely, by implementing the right systems, such as data-driven demand analysis and strict stock control, PT ABC can reduce the amount of dead stock and improve operational efficiency.

Inventory is a list or record containing information about items or assets owned by an organisation, company, or individual (Wijaya et al., 2022). So that inventory management is the process of planning, controlling, and supervising goods or products owned by an organisation or company (Hijrah & Maulidar, 2021).

Effective inventory management plays an important role in reducing dead stock inventory, which is goods that remain unsold for long periods of time and are at risk of becoming obsolete or expired Li et al. (2022). When inventory management is not done well, companies often experience a buildup of goods that are no longer needed or relevant to market demand (Fang & Chen, 2022). One of the main factors that lead to dead stock is the lack of proper planning in purchasing goods and determining the optimal stock. Without strict monitoring, such items tend to remain in the warehouse, creating additional storage costs and costing the company money (Kumar. & Shivabharathi., 2022).

Weak inventory management systems often result in inaccurate demand forecasts, where the quantity of goods purchased exceeds actual demand. This happens because there is no integration between sales, procurement, and stock management (Atmaja & Anandita, 2021; Khobragade et al., 2018). In the absence of real-time data on sales trends and consumer demand, companies risk purchasing goods in quantities that do not match market needs (Mor et al., 2021). As a result, the accumulated stock becomes dead stock, and the company has to bear storage costs and financial losses due to unsaleable goods (Gayam et al., 2021).

Good inventory management can mitigate the risk of dead stock by optimising stock rotation and using methods such as First In, First Out (FIFO) (Atcha et al., 2024). Automated management systems that are integrated with sales data and demand forecasts help ensure that goods move through their lifecycle, so that older products go out first before they become obsolete (Tang et al., 2022). In addition, the use of technologies such as warehouse management systems (WMS) or Enterprise Resource Planning (ERP) allows for automated stock monitoring, providing accurate information on when items should be reordered or discontinued (Tanthatemee & Phruksaphanrat, 2012; Tong et al., 2023).

Thus, good inventory management not only helps reduce dead stock but also improves the operational efficiency and profitability of the company. By paying attention to real-time data, sales analysis, and stock rotation cycles, companies can avoid over-purchasing and reduce potential losses from unsold goods. Therefore, investment in advanced inventory management technology and training personnel to understand demand patterns are key in maintaining a healthy stock balance and minimising dead stock.

## Conclusion

Based on the research results, inventory management has a significant effect on dead goods inventory at PT ABC, because decisions in stock management, such as ordering methods, replenishment frequency, and demand prediction, determine the company's effectiveness in avoiding the accumulation of unsold goods. Inefficient inventory management, such as purchasing goods in bulk without considering market turnover or trends, risks creating dead goods, which will burden storage costs and working capital. By implementing the right systems, such as data-driven demand analysis and strict stock control, PT ABC can reduce the number of dead goods and improve operational efficiency. Therefore, investment in advanced inventory management technology and personnel training to understand demand patterns are key to maintaining a healthy stock balance and minimising dead goods, which is in line with efforts to develop a dead goods inventory optimisation strategy at PT ABC.

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