

Lean Inventory Management and the Performance of Milk Processing firms in Kiambu County, Kenya

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Abstract

Purpose- The aim of this research was to investigate the effect of lean inventory management on the performance of milk processing companies. The study's objectives included examining the effect of the Kanban system, the Kaizen Principle, the lean techniques, and assessing how production rates optimized for efficiency with minimal resources affect the performance of the milk processing firms in Kiambu county, Kenya.

Design/methodology/approach- To ascertain the adoption of lean inventory management among milk processors in Kiambu County, a descriptive survey design was utilized. The study included 78 milk processing companies as its sample, employing the census sampling technique.

Findings- Descriptive statistics revealed that these organizations employ the Kaizen Principle to address inconsistencies in inventory management procedures, as evidenced by a mean of 3.967 (std. dv = 0.758). Additionally, respondents strongly concurred, with a mean of 3.907 (std. dv = 0.952), that they have significantly improved production rates with the minimal available resources. Furthermore, a mean score of 3.855 (std. dv = 0.684) showed that respondents strongly agreed that the business has invested in advancing lean principles. This is verified by a mean of 3.732 (standard deviation = 0.850). A significant proportion of respondents noted their utilization of the Kanban approach for monitoring inventory usage, supported by a mean of 3.732 (standard deviation = 0.850). The study's conclusions show that lean inventory management significantly and favorably affects the operation of milk processing firms in Kiambu County, Kenya.

Originality/value- The research reveals that organizations employ the Kaizen Principle to address inconsistencies in inventory management techniques. Additionally, respondents strongly concurred that they have considerably improved the output rate with minimal available resources. The study suggests that Kenyan milking firms' management should implement practices such as First In, First Out, (FIFO) the Kaizen Principle, and drop-shipping to mitigate disparities in lean inventory management and thereby enhance improving product quality and increasing production point with minimal available resources hence customer satisfaction.

Key words: Lean Inventory Management, Kanban system, Kaizen Principle, production rate, First In First Out

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I. Introduction

Businesses need to invest in improving their lean strategies. This includes practices such as forecasting, conducting waste disposal drills, standardizing product specifications, performing value stream analysis, collecting customer feedback, organizing the workplace, continuously enhancing waste prevention systems, and regularly reviewing waste reports (Shajema, I., 2018).

Lean manufacturing, pioneered by Henry Ford, emphasizes continuous improvement and resource optimization to enhance production efficiency (Balakannan & Sathhesh, 2015). It identifies various sources of waste in manufacturing processes, such as excess inventory, overproduction, and equipment breakdowns. By addressing these inefficiencies, lean practices increase output, reduce waste, and cut inventory costs. Key principles include Pull (Kanban), which adjusts inventory based on demand, responsiveness (Kaizen), involving continuous adaptation and pursuit of excellence, and Six Sigma, ensuring consistent quality (Kagiri & Kamau, 2015). Ultimately, lean inventory management aims to add value across business, inventory flow, and warehouse operations.

Adequate lean inventory not only reduces costs but also enhances quality in the production process, fostering competitive advantage and profitability. Value Analysis (VA) plays a pivotal role in this by decreasing expenses while retaining the value of goods and services, bolstering corporate image and maximizing profits. In sectors like milk processing, implementing lean management can significantly lower costs, leading to greater customer satisfaction. Balakannan and Sathhesh (2015) emphasize that the core objective of the lean enterprise is waste reduction while increasing customer value. Success in lean inventory management hinges on aligning principles with business needs and applying them effectively. This involves recognizing and applying key

qualities across operational boundaries, with a focus on demand management, cost reduction, and waste minimization.

Natasa, (2014) states that lean management has become the main managerial initiative for improving firms' performance leading to excellence within the sustainable competitive advantage. Organizations can attempt to enlarge their resources and stock efficiency by implementing them without a moment in sparing stock scheme and still purchase or produce products without a moment to spare for use by applying driven innovations. For instance, consistent tags and Radio Frequency Identification (RFID), which track deliveries from store appropriation. (Kumang, 2017).

II. Research Methodology and design

To establish lean inventory management and the performance in milk processing firms in Kiambu County, Kenya a descriptive survey design was used. Depicting actions as they currently take place is the main goal of a descriptive study design, according to Kothari (2014). This method was judged appropriate since it successfully addressed relevant issues regarding inventory control procedures and the day-to-day operations of milking companies, requiring the gathering and examination of both quantitative and qualitative data (Mugenda & Mugenda, 2012).

Wilson (2003) concluded that a small group of people obtained from accessible population is known as sample. The researcher employed a sample size consisting of 70 milking firms located in Kiambu County using Yamane taro formula. The study opted for a census sampling technique, focusing on inventory managers actively engaged in inventory management within milk processing firms. The reliability of the data was ensured as respondents were well-informed about the inventory management practices adopted by milk processing firms in Kiambu County

III. Findings

The purpose of the study was to assess how lean inventory management affected the performance of Kiambu County's milk processing firms. Respondents were asked to rate their agreement with claims made about the performance of these county-wide businesses and lean inventory management. The study utilized a 5-point Likert scale, wherein 5 signifies a highly significant extent, 4 a large amount, 3 a moderate extent, 2 a modest extent, and 1 not at all. The results that were obtained are described in Table 1.

The findings reveal that a notable proportion of respondents acknowledged employing the Kaizen Principle to rectify discrepancies in their inventory management systems, evidenced by a mean of 3.967 (standard deviation = 0.758). Furthermore, respondents expressed strong agreement, with a mean of 3.907 (standard deviation = 0.952), regarding the substantial enhancement of output rates achieved with minimal available resources.

Moreover, registering a mean of 3.855 (standard deviation = 0.684), respondents expressed a strong perception that the company has made substantial investments in enhancing lean processes. Additionally, a significant proportion of respondents noted their utilization of the Kanban approach for monitoring inventory usage, supported by a mean of 3.732 (standard deviation = 0.850).

Table 1 : Lean Inventory Management and the Performance of Milk Processing Firms

	Mean	Std. Deviation
We use the Kanban system to keep track the use of inventories	3.732	0.850
We employ Kaizen Principle to improve discrepancies in inventory management techniques	3.967	0.758
Our organization has invested in improving lean practices.	3.855	0.684
We have improved the production rate with minimum available resources	3.907	0.952
Aggregate	3.886	0.819

IV. Summary

In light of the inferential data, it is evident that lean inventory management exerts a positive and substantial influence on the performance of milk processing enterprises in Kiambu County. Descriptive statistics reveal that these enterprises employ the Kaizen Principle to address discrepancies in their inventory management systems, as reflected by a mean of 3.967 (standard deviation = 0.758). Additionally, respondents expressed a high level of agreement, with a mean of 3.907 (standard deviation = 0.952), indicating significant improvements in output rates achieved with minimal available resources. Furthermore, with a mean of 3.855 (standard deviation = 0.684), respondents strongly concurred that the organization has made significant investments in enhancing lean practices. Additionally, respondents also indicated a high level of agreement in utilizing the Kanban system for inventory tracking, supported by the mean of 3.732 (standard deviation = 0.850).

V. Conclusions

The findings underscore the pivotal role of lean inventory management in bolstering the performance of milk processing companies in Kiambu County. Given the demonstrated efficacy of the Kaizen Principle in mitigating inventory control discrepancies, it is imperative for the government to institute tailored initiatives supporting the adoption and implementation of lean practices across the sector. This could involve establishing specialized training programs in collaboration with industry experts and academic institutions, offering financial incentives such as tax breaks or grants to incentivize lean implementation, and fostering collaborative platforms for knowledge exchange and dissemination of best practices. By prioritizing lean management strategies at a national level, the government can empower milk processing companies to sustainably enhance their productivity and resource efficiency, thereby contributing to the economic growth and competitiveness of the sector as a whole.

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