

**EFFECTS OF INVENTORY TRACKING ON ORGANIZATIONAL  
PERFORMANCE IN HOSPITALS IN KISII COUNTY, KENYA**

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**Abstract**

Inventory management plays a critical role in the operational efficiency and financial success of organizations across various industries. This study sought to evaluate the pivotal role of inventory tracking practice on organizational performance of Hospitals in Kisii County. The study was based on Strategic Choice Theory. Since this study targeted to collect data which is quantitative in nature, a survey design was adopted. The unit of observation was all the departmental staff involved in inventory management either directly or indirectly, Procurement, Stores, Auditors, Hospital committee and inspection committee, a total of 832 respondents. Yamen formula was used to determine the sample size and proportion sampling used to distribute the study sample proportionately among the population categories. Data was collected using the questionnaires. Pilot study was being conducted in the hospitals of Nyamira County, which shares similar characteristics with Kisii County. Quantitative data collected was coded and entered into the Statistical Package for the Social Sciences (SPSS), then analyzed descriptively using means, and standard deviations and through linear regression. The study established that inventory tracking practices had a direct positive effect on organizational performance in hospitals in Kisii County. The study recommends that the County Government of Kisii and the respective hospital management should invest in modern inventory management systems, establish standardized protocols and procedures for inventory management across all hospital departments and implement data analytics tools to analyze historical consumption patterns and forecast future demand for medical supplies.

**Keywords:** *Inventory Tracking, Organizational Performance, Hospitals*

**INTRODUCTION**

Inventory management stands as a crucial operational process, encompassing the systematic planning, control, and optimization of a company's goods and materials inventory (Of & Devis, 2024). Its significance lies in maintaining a delicate equilibrium between product supply and demand dynamics, ensuring timely availability of goods while minimizing excessive holding costs. Successful inventory management incorporates diverse strategies like Just-In-Time (JIT) and Economic Order Quantity (EOQ) with the goal of optimizing inventory levels and enhancing overall operational efficiency (Paul *et al.*, 2023). Through the implementation of robust inventory management practices, businesses can streamline production, cut down transportation costs, avert inventory issues, and ultimately elevate customer satisfaction and profitability (Shukaili, Jamaluddin & Zulkifli, 2023).

Proper managing of inventory, often known as stock, is a prerequisite for effective materials management in businesses (Vrat, 2014). When it comes to materials management, the idea of

inventory and how best to handle it comes up again and time again. A broad definition of inventory, according to Vrat (2014), is the collection of items that are physically kept in order to meet expected demand. From the standpoint of materials management, however, Vrat (2014) argues that inventory is a representation of economically valuable resources that are dormant despite having the potential to be used. Vrat's reasoning makes the prudent decision to set aside a specific amount of physical stock to proactively meet anticipated requests. This will help to avoid operational disruptions caused by a shortage of necessary materials, which is a typical requirement for inventory management in many firms.

Khalid and Lim (2018) suggest that effective inventory management plays a crucial role as an organizational function, contributing to the formulation of policies directed towards achieving optimal investment in inventory. This, in turn, can result in the maximization of liquidity and risk mitigation. Echoing this sentiment, Chambers and Lacey (2011) highlight that inventory management aims to find a harmonious equilibrium between the advantages of holding inventory and the associated costs. Therefore, according to Chambers and Lacey, the inventory management process is devised to optimize the overall benefits derived from inventory while simultaneously minimizing the associated expenses.

The academic and industrial communities have shown considerable interest in the field of inventory management (Fosu, 2016). Specifically, the turnover of inventory serves as a crucial contributor to a company's revenue generation and subsequent earnings (Prempeh, 2016). Given that more than half of the investments made by firms are allocated to current assets, with inventory being a significant component, ensuring the timely availability of the right quantity of inventory is of utmost importance. Effectively managing inventory levels becomes essential due to the economic value of inventory, contributing to enhanced capital productivity, as inventories are considered idle resources for companies (Mensah, 2016).

Inventory management practices encompass the supervision and regulation of the procurement, storage, and utilization of items associated with an organization's production processes, either directly or indirectly (Lakshmi & Ranganath, 2016). Additionally, it involves coordinating all activities aimed at ensuring the timely acquisition of inventory in the correct quantities (Ondari & Gekara, 2013). The choice of an inventory management system directly or indirectly impacts a company's profits (Bah *et. al.*, 2016).

Effective inventory management extends across finance, procurement, and sales; thus, the synchronization of these three areas is crucial for its success (Balcik, Bozkir & Kundakciglu, 2016). Inventories constitute all the goods a company holds to facilitate its production processes (Pandey, 2017). Inadequate inventory management can hinder a company from achieving its targeted profits and lead to customer dissatisfaction (Muller, 2019). The primary objectives of inventory management include providing the necessary inventories to support various operations at minimal costs (Gallino, Moreno & Stamatopoulos, 2017).

To enhance firm performance through accelerated inventory management, strategic decisions are being made to guide competitiveness and productivity (Haji, Khair, Kalash, Sabsabi, 2018). Empirical studies globally have yielded diverse findings on inventory management. For instance, Prempeh (2016) revealed a significant positive correlation between inventory management and profitability. Consistent with previous research (Luwumba, 2013; Appiah, 2014; Mwangi, 2016), evidence supports a direct relationship between inventory management and profitability. On the flip side, Shanmugam *et al.*, (2016) conducted research indicating an inverse correlation. Nevertheless, a common oversight in these studies is the failure to recognize the impact of inventory management on the operational cash flows of businesses.

A prior investigation conducted by Eroglu and Hofer (2011) proposed a positive association between inventory management and performance. Their research focused on US manufacturing firms during the period of 2003-2008, revealing that a lean approach has a

favorable impact on profit margins. Eroglu and Hofer (2011) asserted that companies leaner than the industry average generally experiences positive returns associated with leanness. The empirical leanness indicator served as their measure for inventory management. In contrast to our current study, their research concentrated on evaluating the correlation between inventory performance and overall firm performance. Criticism directed at this theory suggests its applicability only in situations involving close, long-term collaboration and information sharing between a firm and its trading partners.

In the healthcare sector, Alshahrani *et al.* (2018) described the supply chain (SC) as the facilitation of the movement of diverse goods, involving various stakeholders to ensure the proper supply of goods in terms of quality and quantity, meeting supplier requirements (Mathur *et al.*, 2018). Additionally, an effective supply chain management (SCM) in healthcare enables institutions to enhance productivity, improve quality, reduce operational time, cut costs, and enhance overall performance (Elmuti *et al.*, 2013). However, healthcare organizations must attain operational efficiency through practical methods, minimizing expenses without compromising patient safety (Uthayakumar & Priyan, 2013).

Managing inventory in the healthcare system presents complexity due to its association with various elements (Saha & Ray, 2019). Essentially, the factors influencing inventory management in healthcare encompass the demand and supply dynamics of inventory items, characteristics of healthcare inventory items, classification of inventory items and storage facilities, attributes of the inventory distribution system, replenishment policies, growth in service levels, patient medical conditions, prescribing behavior of physicians, the criticality of inventory items, and interrelations among stakeholders (Saha & Ray, 2019).

### **Statement of the Problem**

Efficient management of inventory within healthcare supply chains constitutes a crucial element contributing to overall success, as highlighted by Santhi and Karthikeyan in their 2016 study. Inventory management stands as a key determinant of an organization's ability to meet customer demand while optimizing costs and minimizing wastage (De Vries & Huijsman, 2011). It represents a complex interplay between supply chain management, production planning, and sales forecasting, all of which are crucial elements in the smooth functioning of any business (Mathur *et al.*, 2018).

According to the Health Products and Technology Unit (HPTU) they undertake stock-taking and proper forecasting of health products and supplies. Nevertheless, the peripheral facilities lack proper system of inventory taking and monitoring available stock. This has resulted in stock-outs of essential pharmaceuticals and non-pharmaceuticals in majority of the facilities especially in level 4 and level 5 health facilities.

The lack of a comprehensive and integrated inventory management system within these healthcare institutions contribute to a range of issues, including stock-outs, overstocking, increased operational costs, compromised patient care, and a reduction in the overall operational efficiency and effectiveness of healthcare services. This consequently affects the performance of these healthcare institutions.

According to the Sub-County Medical Officers, lack of essential pharmaceuticals and non-pharmaceuticals affects service delivery and facility targets. Despite the pivotal role of efficient inventory management in ensuring the availability of essential medical supplies and equipment, the prevailing organizational practices within public hospitals, the management of inventory within public hospitals especially level 4, level 3 and level 2 facilities, have emerged as a critical challenge, potentially influencing the overall organizational performance and healthcare service delivery (Office of the Auditor General, 2012).

Equally, the absence of standardized inventory management protocols and the limited utilization of technology-driven solutions may be further exacerbating the challenges faced

by these hospitals, hindering their ability to achieve optimal performance and meet the healthcare needs of the local population. Consequently, there is a pressing need for a thorough investigation into the current state of inventory management practices within public hospitals in Kisii County to identify the root causes of inefficiencies and to propose viable solutions that can enhance organizational performance and ensure the delivery of quality healthcare services to the community. Taking this viewpoint into consideration, the research aimed to determine the effects of inventory management practices impact the overall performance of hospitals in Kisii County in Kenya.

## LITERATURE REVIEW

### Theoretical Review

#### Strategic Choice Theory (SCT)

Strategic Choice Theory (SCT) explores the correlation between the decisions made by top management and organizational performance, considering the dynamic interplay between internal and external factors within an organization. Emphasizing the pivotal role of managerial decisions in influencing organizational outcomes, as highlighted by Child (1972), Campling and Michelson (1998) introduced a strategic choice model illustrating the interconnectedness of environmental factors, organizational actions, and overall firm performance. The primary goal of this model is to attain elevated performance standards for enhanced efficiency, particularly in situations where resources are constrained. Child (1972) further posits that organizations empowering managers with authority and responsibilities for decisions related to factors like inventory investment and the quantity of inventory to maintain witness significant impacts on organizational outcomes and performance. According to SCT, optimal management choices hinge on environmental factors such as suppliers, procurement, and inventory management decisions.

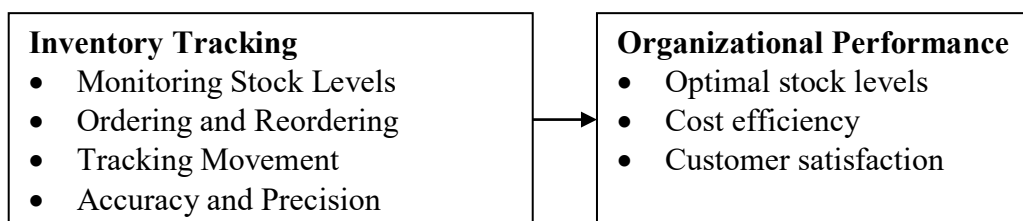
Building upon this perspective, Ketchen and Hult (2007) assert that SCT perceives managers as downstream decision-makers who guide and influence decision processes within an organization. They posit that changes or variations in decision-making processes can be instigated by contextual factors, including environmental conditions and technological advancements. The integration of new technologies in inventory management, such as RFID, barcodes, and ERP systems, exemplifies technological changes necessitating decision-making at the corporate level with support from both business and functional domains. Strategic Choice Theory is relevant to inventory management because it provides a framework for understanding how strategic decisions related to inventory impact organizational performance.

#### Conceptual Framework

A conceptual framework is a network, or “a plane,” of interlinked concepts that together provide a comprehensive understanding of a phenomenon or phenomena (Jabareen 2009). The conceptual framework is a set of broad ideas used to explain the relationship between the independent variable and the dependent variable (outcome).

#### Independent Variables

#### Dependent Variable



**Figure 1: Conceptual framework**

Source: Researcher, 2024

## **Empirical Literature Review**

Onchoke and Wanyoike (2016) conducted a study aimed at investigating the influence of inventory control practices on the procurement performance of Agrichemical distributors in Nakuru Central Sub-County. The research utilized self-administered questionnaires, which were distributed and collected manually. The results of the regression analysis revealed a positive and significant impact of inventory auditing, inventory security practices, and computerized inventory control on procurement performance. While their study focused on the agrichemical industry, there is a research gap in the government service sector, particularly in level six hospitals in Kisii. The proposed study aims to address this gap.

In a separate study, Kitheka and Ondiek (2014) explored the impact of automation in inventory management on the performance of supermarkets in Western Kenya. Employing a survey design, the research concentrated on supermarkets in Kisumu, Kakamega, and Bungoma towns. The findings from regression analysis demonstrated a clear and direct linear relationship between inventory management automation and supermarket performance. Although Kitheka and Ondiek's study investigated automation as a form of control in supermarkets, there is a scarcity of literature on the effects of stock control in the health service sector. The present study seeks to fill this gap.

Recognizing the diverse types of inventories within a business, it is imperative to find an effective inventory tracking system for identifying and monitoring inventory items (Onchoke, & Wanyoike, 2016). In Africa, there have been noteworthy developments in inventory control software designed to assist with managing inventory levels (Tundura and Wanyoike, 2016). Barcoding and radio frequency identification (RFID) have emerged as widely utilized systems for accessing efficient and accurate inventory information (Kiswii & Wandera, 2019).

## **METHODOLOGY**

Since this study targeted to collect data which is quantitative in nature, it adopted a survey design. Surveys can be applied across various disciplines and topics. They are flexible and can be used to study a wide range of issues, from social behaviors and attitudes to consumer preferences and market trends. Further, the design facilitated the collection of quantitative data, which can be statistically analyzed. This allowed researchers to identify patterns, trends, and relationships between variables, providing a more structured and rigorous analysis (Creswell, 1998).

The unit of observation was the all the 163 health facilities in the county to evaluate if they are involved in inventory management either directly or indirectly. The study further sampled crucial departments within the hospitals they included; Procurement, Stores, Auditors, Social Workers, Donors, Hospital committee, Patients, Inspection committee and inspection committee, a total of 832 respondents from the 163 hospitals in Kisii County.

This study utilized the Yamene (1967) formula in establishing the sample from the study population. The sample for the study was 270 respondents. To determine the sample size per strata, proportionate stratified random sampling was used. Data was collected using the questionnaires.

The quantitative data gathered underwent coding and entry into the Statistical Package for the Social Sciences (SPSS), followed by analysis using descriptive measures such as frequencies, percentages, means, and standard deviations, as well as regression analysis.

## **RESEARCH FINDINGS AND DISCUSSION**

### **Response Rate**

The study targeted a study sample of 270 to represent the larger target population in the data collection. A 91.85% of the tools sent to field were filled and returned successfully. This high response rate was important as it minimized the risk of sampling bias (Fincham, 2008). This

response rate was justified for data analysis as it met the minimum threshold of at least 70% if it has to minimize the sampling bias (Saldivar, 2012).

### **Inventory Tracking Practice on Organizational Performance**

The study aimed to assess the impact of inventory tracking practices on organizational performance in Hospitals within Kisii County, Kenya. Participants were asked to express their views on this matter using a Likert scale ranging from 1 to 5, where 1 indicated Strongly Disagree and 5 indicated Strongly Agree. The responses obtained were recorded and summarized in Table 1.

**Table 1: Inventory tracking and organizational performance**

<b>Statement</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Dev</b>
The current inventory tracking system provides accurate information about the quantity of items in stock.	248	1	5	4.38	1.167
The inventory tracking system updates in real-time, providing timely information on stock levels.	248	1	5	3.78	1.429
The inventory tracking system is user-friendly and easy to navigate.	248	1	5	2.21	1.171
The inventory tracking system seamlessly integrates with other organizational systems (e.g., sales, procurement).	248	1	5	2.17	1.096
The use of the inventory tracking system has led to a noticeable reduction in errors related to stock levels and order fulfillment.	248	1	5	2.08	1.088

**Source:** Field data (2024)

Table 1 above observed that majority of the respondents with a mean of 4.38(SD=1.167) were in agreement that the current inventory tracking system provided accurate information about the quantity of items in stock. The study also observed that majority of the respondents with a mean of 3.78(SD=1.429) were in agreement that the inventory tracking system updates in real-time, providing timely information on stock levels. The study additionally observed that majority of the respondents with a mean of 2.21(SD=1.171) were in disagreement that inventory tracking system is user-friendly and easy to navigate implying that the system required some special skills to manipulate hence laxity to use. The study further observed that majority of the respondents with a mean of 2.17(SD=1.096) were in disagreement with inventory tracking system seamlessly integrates with other organizational systems (e.g., sales, procurement). The study finally observed that majority of the respondents with a mean of 2.08(SD=1.088) were in disagreement that the use of the inventory tracking system has led to a noticeable reduction in errors related to stock levels and order fulfillment. On aggregate the findings revealed that the majority of the respondents were in disagreement that inventory tracking accuracy was at its optimal level hence not much influencing hospital performance.

### **Organizational Performance of Hospitals in Kisii County**

The study aimed to evaluate the organizational performance in Hospitals within Kisii County, Kenya. Participants were asked to express their views on this matter using a Likert scale ranging from 1 to 5, where 1 indicated Strongly Disagree and 5 indicated Strongly Agree. The responses obtained were recorded and summarized in Table 2.

**Table 2: Organizational performance of hospitals in Kisii County**

<b>Statement</b>	<b>N</b>	<b>Min</b>	<b>Max</b>	<b>Mean</b>	<b>Std. Dev</b>
The hospital has effective optimal stock levels that fosters a positive organizational performance.	248	1	23	2.94	1.946
The hospital efficiently manages its financial resources to support optimal performance.	248	1	45	2.90	4.214

Communication within the hospital is clear and facilitates efficient information flow.	247	1	5	2.81	1.487
The hospital demonstrates a commitment to continuous improvement in its operations.	248	1	5	2.30	1.362
The hospital has a strong commitment to patient satisfaction and quality care.	248	1	5	2.09	1.245

**Source:** Field data (2024)

Table 2 observed that majority of the respondents with a mean of 2.94(SD=1.946) were in disagreement that the hospital has effective optimal stock levels that fosters a positive organizational performance implying that the level of the maintained stocks does not guarantee the hospital to leverage on organizational performance. The study also observed that majority of the respondents with a mean of 2.90(SD=4.214) were in disagreement that the hospital efficiently manages its financial resources to support optimal performance implying that there is financial pilferage as a result of inventory management. The study additionally revealed that majority of the respondents with a mean of 2.81(SD=1.487) were further in disagreement that communication within the hospital is clear and facilitates efficient information flow hence a predictor of poor performance. Further, the study observed that majority of the respondents with a mean of 2.30(SD=1.362) were in disagreement that the hospital demonstrates a commitment to continuous improvement in its operations and majority of the respondents with a mean of 2.09(SD=1.245) were indifferent that the hospital has a strong commitment to patient satisfaction and quality care a sign of poor hospital performance that need address.

### Regression Analysis

Before analyzing the results of our regression analysis aimed at predicting inventory tracking practice and organizational performance in hospitals in Kisii County

**Table 3: ANOVA for inventory shrinkage**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	408.616	1	408.616	417.603	.000 <sup>b</sup>
	Residual	240.706	246	.978		
	Total	649.322	247			

**Source:** Field data (2024)

Table 3 indicates that the ANOVA (the F-Statistics) measures the overall significance of the model. It provides information levels of variability within the regression model and hence forms a basis for tests of significance. The results confirm that the regression model is significant for the data as captured by the ANOVA (F-statistic) value of 417.603 and is associated probability value of 0.000(F= 417.603, p<0.05) that was found to be significant at 5% significant level.

**Table 4: Model summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.693a	.480	.428	.28918

**Source:** Field data (2024)

Table 4 shows that the  $R^2$  value of 0.48, which implies that 48% of changes in organizational performance are explained by the independent variable; inventory tracking.

**Table 5: Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	1.110	.193			5.767	.000
Inventory tracking	.397	.158	.393		2.512	.000

**Source:** Field data (2024)

The study established that the inventory tracking practice coefficient value was found to be 0.397 which shows that a unit increase inventory tracking practices on average, increases organizational performance in hospitals in Kisii County by 0.397 units hence a direct positive effect between inventory tracking practices and organizational performance in hospitals in Kisii County. Since the p-value <0.05 at 5% level of significance, the study concludes that inventory tracking practice has a significant effect on organizational performance in hospitals in Kisii County.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Conclusions**

The study concludes that inventory tracking practice is direct positive predictor of organizational performance in hospitals in Kisii County. The current inventory tracking system provided accurate information about the quantity of items in stock. The inventory tracking system updates in real-time, providing timely information on stock levels. However, the inventory tracking system is not user-friendly and does not seamlessly integrate with other organizational systems.

### **Recommendations**

The study recommends that the County Government of Kisii and the respective hospital management should invest in modern inventory management systems that utilize barcode scanning, RFID technology, or other automated tracking methods. These systems can streamline inventory processes, reduce manual errors, and provide real-time visibility into stock levels, leading to improved efficiency and cost savings. Establish standardized protocols and procedures for inventory management across all hospital departments to ensure consistency in tracking methods, inventory levels, and reorder points, thereby optimizing inventory utilization and minimizing wastage. Implement data analytics tools to analyze historical consumption patterns and forecast future demand for medical supplies. By leveraging predictive analytics, hospitals can optimize inventory levels, prevent stock outs or overstocking, and ensure timely availability of critical supplies.

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