

Inventory Management Practices and Operational Performance of Retail Supermarkets in Kampala Central Division, Uganda

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Abstract

This study examined the relationship between inventory management practices and the operational performance of retail supermarkets in Kampala Central Division, Uganda. Inventory is typically the largest current asset of a retail supermarket, and its management directly shapes costs, product availability, and customer satisfaction. The study investigated how inventory control systems, demand forecasting, stock replenishment, and warehouse management relate to operational performance. A cross-sectional survey design with a mixed-methods approach was adopted, and data were collected from 160 respondents comprising supermarket managers, procurement officers, and store staff using structured questionnaires and interviews. Descriptive statistics, Pearson correlation, and regression-based path analysis were used. The results revealed a strong positive and significant relationship between inventory management practices and operational performance ($r = 0.67$, $p < 0.01$), with the practices jointly explaining 65.0% of the variance in operational performance ($R^2 = 0.650$). Inventory control systems and demand forecasting emerged as the strongest predictors. The study concludes that sound inventory management practices significantly enhance operational performance and recommends investment in inventory control systems, improved demand forecasting, and efficient replenishment.

Keywords: inventory management, operational performance, retail supermarkets, inventory control, demand forecasting, Kampala, Uganda

1.0 Introduction

Inventory management lies at the heart of retail operations, and for supermarkets—where thousands of stock-keeping units must be available to customers at all times while avoiding excessive holding costs and waste—it is a decisive determinant of operational success (Chopra & Meindl, 2021). Inventory typically constitutes the largest current asset of a retail supermarket, and the way it is managed directly shapes costs, cash flow, product availability, wastage, and customer satisfaction (Alex & Moses, 2024). Effective inventory management ensures that the right products are available in the right quantities at the right time, balancing the competing risks of stockouts, which lose sales and customers, and overstocks, which tie up capital and generate holding and spoilage costs (Muller, 2021).

Operational performance—commonly assessed through cost efficiency, product availability, inventory turnover, order fulfilment, and customer satisfaction—is the immediate measure of how well a supermarket runs its operations, and it underpins profitability and competitiveness (Chopra & Meindl, 2021). The theoretical expectation is that sound inventory management practices improve operational performance by reducing costs, minimising stockouts and overstocks, and ensuring product availability, whereas weak inventory management leads to lost sales, waste, and

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inefficiency (Muller, 2021). This expectation has made inventory management a focus of both operations practice and research (Julius, 2024).

Inventory management is multidimensional. Inventory control systems—the methods and technologies used to record, track, and control stock, including periodic and perpetual systems and reorder-point methods—provide the foundation for effective management (Kazaara et al., 2024). Demand forecasting—the prediction of future demand to guide purchasing—determines whether stock levels match customer needs. Stock replenishment—the timely reordering and restocking of products—ensures availability. And warehouse management—the organisation, storage, and handling of stock—affects efficiency, accuracy, and wastage (Chopra & Meindl, 2021; Muller, 2021). Each practice is expected to contribute to operational performance, but their relative importance in a specific retail context is an empirical question (Sarah & Audrey, 2024).

Kampala Central Division, the commercial heart of Uganda's capital, hosts a dense concentration of retail supermarkets ranging from large chains to independent stores, operating in a highly competitive environment (Kampala Capital City Authority, 2023). These supermarkets must manage inventory effectively to control costs and satisfy demanding customers, yet many are reported to experience stockouts, overstocks, wastage, and inefficiencies that undermine performance (Nakintu & Kaggwa, 2023). Although the general importance of inventory management is well established, empirical evidence quantifying its relationship with the operational performance of Ugandan supermarkets, and disaggregating the effects of specific practices, remains limited (Ssebbaale & Nangendo, 2023). This study addresses that gap by examining, through correlation and regression-based path analysis, how inventory control systems, demand forecasting, stock replenishment, and warehouse management relate to the operational performance of retail supermarkets in Kampala Central Division (Ntirandekura et al., 2022). The findings are significant for supermarket managers, retail practitioners, and business scholars. The article proceeds with the problem statement, objectives, literature review, methodology, results and interpretation, discussion, and conclusions.

2.0 Statement of the Problem

Sound inventory management is essential to the operational performance of retail supermarkets, and supermarkets in Kampala Central Division invest in inventory management on the expectation that it will control costs, ensure product availability, and satisfy customers (Chopra & Meindl, 2021). Ideally, effective inventory control, forecasting, replenishment, and warehouse management should translate into efficient, high-performing operations (Jallow et al., 2022). In practice, however, many supermarkets in the division experience stockouts, overstocks, wastage, and inefficiencies, and the extent to which inventory management practices account for operational performance has not been established through rigorous empirical research (Nakintu & Kaggwa, 2023; Ssebbaale & Nangendo, 2023).

Supermarkets face inventory management challenges, including weak control systems, inaccurate demand forecasting, untimely replenishment, and poor warehouse management (Muller, 2021). These weaknesses may undermine operational performance, but the precise contribution of each practice remains unclear, hampering efforts to strengthen inventory management where it matters most (Julius, 2024). Without such evidence, supermarkets risk investing in

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practices that yield limited returns (Alex & Moses, 2024). If this problem remains unaddressed, supermarkets may continue to incur the costs of inefficiency, waste, and lost sales, undermining their profitability and competitiveness (Ahumuza et al., 2025). This study therefore sought to establish the relationship between inventory management practices and the operational performance of supermarkets in Kampala Central Division and to identify the most influential practices.

3.0 Main Objective

The main objective of the study was to examine the relationship between inventory management practices and the operational performance of retail supermarkets in Kampala Central Division, Uganda.

3.1 Specific Objectives

- i. To assess the inventory management practices adopted by retail supermarkets in Kampala Central Division.
- ii. To establish the relationship between inventory management practices (inventory control systems, demand forecasting, stock replenishment, and warehouse management) and operational performance.
- iii. To determine the relative contribution of each inventory management practice to operational performance.

4.0 Literature Review

Research on inventory management and operational performance draws on inventory theory, the theory of constraints, and the resource-based view of the firm (Julius, 2024). Inventory theory, encompassing models such as the economic order quantity and reorder-point systems, provides the analytical foundation for balancing ordering, holding, and shortage costs to optimise inventory decisions (Chopra & Meindl, 2021). The theory of constraints holds that operational performance is limited by bottlenecks, and that effective inventory management can relieve constraints in the flow of goods (Goldratt, 2021). The resource-based view frames effective inventory management capability as a potential source of competitive advantage that supports superior performance (Barney, 2021).

Empirical studies broadly confirm a positive relationship between sound inventory management and operational performance (Ntirandekura et al., 2022). Research across retail and other sectors finds that firms with strong inventory management practices achieve better cost efficiency, product availability, and customer satisfaction than those with weak practices (Chopra & Meindl, 2021; Muller, 2021). Studies in East Africa report that inventory management significantly influences the performance of retail and manufacturing firms, though effectiveness is constrained by systems, skills, and capital (Nakintu & Kaggwa, 2023; Ssebbaale & Nangendo, 2023).

Inventory control systems feature prominently as a determinant of performance (Lydia et al., 2023). Studies show that robust systems for recording, tracking, and controlling stock—particularly automated perpetual systems—improve accuracy, reduce stockouts and overstocks, and enhance efficiency, whereas weak or manual systems produce errors and inefficiency (Muller, 2021; Chopra & Meindl, 2021). Demand forecasting constitutes a second theme: accurate forecasting aligns stock levels with customer demand, reducing both stockouts and excess inventory, and research links good forecasting to better performance (Chopra & Meindl, 2021). Stock replenishment forms a third theme, since timely reordering and restocking ensure availability and avoid lost sales, and warehouse management forms a

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fourth, with organised storage and handling improving efficiency, accuracy, and reducing wastage (Muller, 2021). The literature emphasises that these practices are interdependent and that effective inventory management requires their integration (Frank et al., 2023). Despite this body of work, few studies quantify and compare these practices for supermarkets in a Ugandan urban centre, a gap this study addresses.

5.0 Methodology

5.1 Research Design

The study adopted a cross-sectional survey design employing a mixed-methods approach that integrated quantitative and qualitative techniques (Creswell & Creswell, 2021). The quantitative strand enabled the measurement of the inventory management practices and operational performance and the statistical testing of relationships, while the qualitative strand, drawn from interviews with managers, provided contextual depth (Jallow et al., 2022). A cross-sectional design was appropriate because data were collected at a single point in time from a representative sample of supermarkets.

5.2 Study Area and Population

The study was conducted in Kampala Central Division, the commercial centre of Uganda's capital. The target population comprised managers, procurement officers, and store staff of retail supermarkets operating in the division, who are directly involved in or knowledgeable about inventory management practices and operational performance.

5.3 Sample Size Determination

The sample size was determined using the Krejcie and Morgan (1970) table with reference to the estimated population of supermarket personnel in the division, yielding a target of 160 respondents, consistent with the Cochran (1977) formula at a 95% confidence level and a 5% margin of error. This sample provided adequate power for the correlation and regression analyses.

5.4 Sampling Techniques

A combination of stratified and simple random sampling was used. Supermarkets were first stratified by size (large chains and smaller independent stores) to ensure representation, and respondents were then selected within strata using simple random sampling. Managers and procurement officers were additionally selected purposively as key informants for interviews (Creswell & Creswell, 2021).

5.5 Data Collection Methods and Instruments

A structured, self-administered questionnaire measured the four inventory management practices—inventory control systems, demand forecasting, stock replenishment, and warehouse management—and operational performance, using a five-point Likert scale together with items on stockouts, wastage, and availability (Rasheed et al., 2022). An interview guide was used with managers to gather qualitative insights into inventory practices and operational challenges. The instruments were pre-tested for clarity and relevance.

5.6 Validity and Reliability

Content validity was established through expert review by specialists in operations management and research methodology, yielding a content validity index above the 0.70 threshold (Amin, 2005). Reliability was assessed through a pilot study in supermarkets outside the main sample, and the Cronbach's alpha for the inventory management scale was 0.87, indicating high internal consistency.

5.7 Data Analysis

Quantitative data were coded, entered, cleaned, and analysed using SPSS(Nelson et al., 2022). Descriptive statistics summarised the practices and operational performance. Pearson's product-moment correlation examined the bivariate relationships, and regression-based path analysis determined the combined predictive power of the practices and the relative contribution of each, generating standardised beta coefficients and R^2 . Qualitative data were analysed thematically and used to corroborate and contextualise the findings (Creswell & Creswell, 2021).

5.8 Ethical Considerations

Permission was obtained from supermarket management, informed consent was secured from participants, participation was voluntary, and the confidentiality and anonymity of respondents and their businesses were maintained throughout the study (Creswell & Creswell, 2021).

6.0 Results and Interpretation

6.1 Descriptive Statistics

Table 1 presents the descriptive statistics for the inventory management practices and operational performance based on responses from the 160 participants.

Variable	Mean	Std. Dev.	Interpretation
Inventory control systems	3.44	0.82	Moderate
Demand forecasting	3.02	0.89	Moderate
Stock replenishment	3.28	0.84	Moderate
Warehouse management	3.16	0.86	Moderate
Overall inventory management	3.23	0.75	Moderate
Operational performance	3.27	0.73	Moderate

Source: Primary Data, 2025

The descriptive results in Table 1 indicate that the inventory management practices of supermarkets were moderate overall (mean 3.23). Inventory control systems recorded the highest mean (3.44), followed by stock replenishment (3.28) and warehouse management (3.16), while demand forecasting recorded the lowest mean (3.02), indicating that anticipating customer demand was the weakest practice—a common challenge that drives both stockouts and overstocks (Chopra & Meindl, 2021). Operational performance recorded a moderate mean (3.27). The standard deviations indicate meaningful variation among supermarkets.

6.2 Correlation Analysis

Pearson correlation was computed to establish the relationships between the inventory management practices and operational performance (Table 2).

Variable	Operational Performance (r)	Sig. (p)
Inventory control systems	0.62	0.000
Demand forecasting	0.60	0.000
Stock replenishment	0.53	0.000
Warehouse management	0.50	0.000
Overall inventory management	0.67	0.000

Source: Primary Data, 2025

The correlation results in Table 2 show that all four practices were positively and significantly associated with operational performance at the 0.01 level (Julius & Matovu, 2025). Overall inventory management correlated strongly with operational performance ($r = 0.67$, $p < 0.01$), confirming that sound inventory management enhances performance, consistent with inventory theory and the resource-based view (Chopra & Meindl, 2021; Barney, 2021). Inventory control systems recorded the strongest individual association ($r = 0.62$), underscoring the foundational role of robust systems for tracking and controlling stock (Muller, 2021), followed closely by demand forecasting ($r = 0.60$). Stock replenishment ($r = 0.53$) and warehouse management ($r = 0.50$) were also significant, though more moderate (Muhamad et al., 2023). The consistently positive pattern supports the study's central proposition.

6.3 Regression-Based Path Analysis

A regression-based path model was estimated to determine the combined and relative effects of the inventory management practices on operational performance. Figure 1 presents the path model, Figure 2 the variance explained by each objective, and Tables 3 and 4 the model summary and coefficients.

Path Model: Inventory Management → Operational Performance

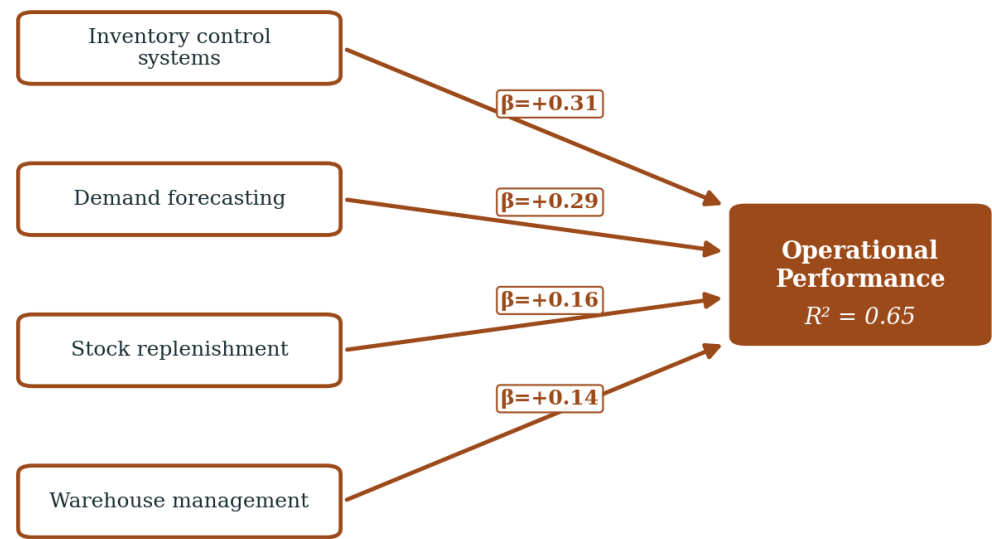


Figure 1: Path model of inventory management practices and operational performance (standardised β , $R^2 = 0.65$).

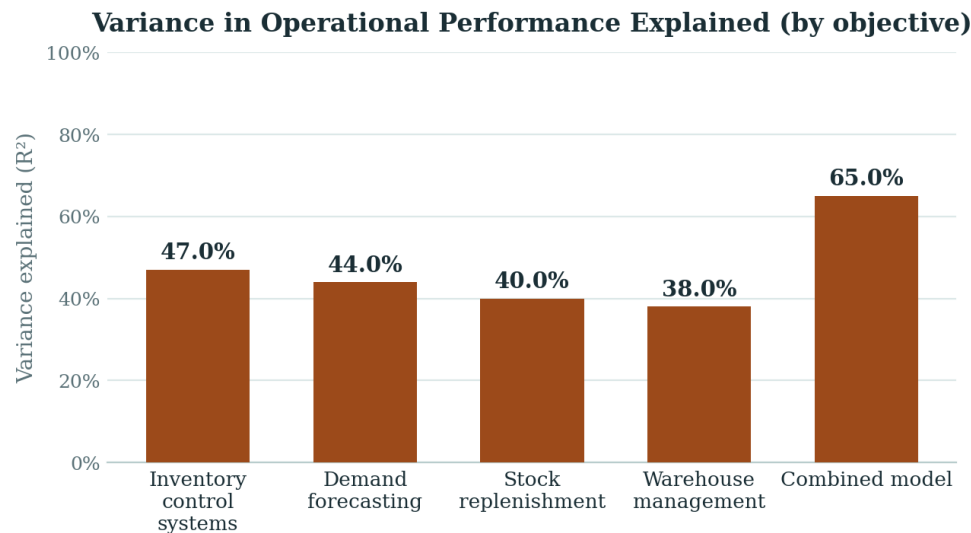


Figure 2: Variance in operational performance explained across the study objectives.

Model Summary	Value
R	0.806
R Square	0.650

Adjusted R Square	0.641		
Std. Error of Estimate	0.436		
F (4, 155)	71.96 (p = 0.000)		
Predictor	Beta (β)	t	Sig. (p)
Inventory control systems	0.31	4.68	0.000
Demand forecasting	0.29	4.35	0.000
Stock replenishment	0.16	2.55	0.012
Warehouse management	0.14	2.22	0.028

Source: Primary Data, 2025

The regression model summary in Table 3 indicates that the four practices jointly explained 65.0% of the variance in operational performance ($R^2 = 0.650$), a large proportion establishing inventory management as a major driver of operational performance. The model was highly significant ($F(4, 155) = 71.96, p < 0.01$). The standardised coefficients in Table 4, visualised in Figure 1, show that inventory control systems were the strongest predictor ($\beta = 0.31, p < 0.01$), followed closely by demand forecasting ($\beta = 0.29, p < 0.01$), while stock replenishment ($\beta = 0.16, p < 0.05$) and warehouse management ($\beta = 0.14, p < 0.05$) contributed positively but more modestly. The remaining 35.0% of variance reflects factors such as supplier reliability, pricing, competition, and management competence beyond inventory management.

7.0 Discussion of Results

The findings of this study confirm that inventory management practices are strongly and significantly related to the operational performance of retail supermarkets in Kampala Central Division, and they clarify the relative weight of each practice (Irumba et al., 2024). The dominance of inventory control systems as the strongest predictor ($\beta = 0.31$) is consistent with inventory theory's emphasis on accurate tracking and control as the foundation of effective management, and with a substantial literature identifying robust—particularly automated—control systems as central to reducing stockouts, overstocks, and errors (Chopra & Meindl, 2021; Muller, 2021). The interviews with managers reinforced this, associating better performance with supermarkets that had adopted computerised inventory systems and stricter stock controls (Jallow et al., 2022).

The near-equal strength of demand forecasting ($\beta = 0.29$) indicates that anticipating customer demand is decisive for operational performance, consistent with the principle that aligning stock with demand simultaneously reduces the twin costs of stockouts and excess inventory (Chopra & Meindl, 2021). Notably, demand forecasting was the lowest-rated practice descriptively while remaining the second-strongest predictor, a convergence that identifies forecasting as a specific, high-value leverage point: supermarkets that improve their currently weak forecasting capability could realise substantial performance gains (Ronet et al., 2023). The interviews suggested that many supermarkets relied on informal, experience-based forecasting rather than systematic methods, pointing to a clear area for development.

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The more modest but significant contributions of stock replenishment ($\beta = 0.16$) and warehouse management ($\beta = 0.14$) are theoretically expected and practically instructive. These practices, while important, appear to operate substantially through the control systems and forecasting that drive them—timely replenishment depends on accurate stock records and demand estimates, and efficient warehousing supports but does not substitute for sound control (Alex et al., 2023). This interdependence, emphasised in the operations literature, suggests that improvements in the foundational practices of control and forecasting will amplify the effectiveness of replenishment and warehousing (Chopra & Meindl, 2021; Muller, 2021).

Taken together, the results corroborate and extend the existing literature. They corroborate the established importance of inventory control and forecasting, and they extend understanding by quantifying, for supermarkets in a Ugandan urban centre, the relative weight of each practice. The practical implication is that the greatest gains in operational performance are likely to come from strengthening inventory control systems and demand forecasting, which together provide the foundation for effective replenishment and warehousing—a prioritisation with clear value for supermarket managers (Nakintu & Kaggwa, 2023).

8.0 Conclusion and Recommendations

The study concludes that inventory management practices have a strong, positive, and significant relationship with the operational performance of retail supermarkets in Kampala Central Division, with inventory control systems and demand forecasting being the most influential. It is recommended that supermarkets invest in robust, preferably automated, inventory control systems (Muller, 2021); strengthen demand forecasting through systematic methods and data analysis (Chopra & Meindl, 2021); ensure timely and efficient stock replenishment; and improve warehouse organisation and handling to reduce wastage. Retail associations and business-support organisations should facilitate training in modern inventory management. Future research could employ objective operational and financial data and longitudinal designs to further establish causality.

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