

Inventory Management Practices on Service Delivery in Manufacturing Firms: A Case of Mukwano Group of Companies in Uganda

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Abstract

This study examined the influence of inventory management practices on service delivery performance in manufacturing firms in Uganda, using the Mukwano Group of Companies as a case study. Mukwano Group-one of Uganda's largest indigenous conglomerate manufacturing entities, operating across fast-moving consumer goods, edible oils, plastics, and detergents production presented an ideal research context for examining inventory management given the scale and complexity of its multi-category production and distribution operations. Drawing on a cross-sectional survey of 136 respondents comprising production managers, procurement officers, warehouse managers, logistics staff, and sales representatives, supplemented by financial and operational records analysis, the study assessed how raw material inventory management, finished goods inventory management, and inventory control systems influenced Mukwano Group's service delivery performance across customer order fulfilment, delivery reliability, and product availability dimensions. Descriptive statistics revealed moderate to high levels of inventory management practice effectiveness (means 3.48–3.82). Pearson's correlation analysis revealed significant positive relationships between all three inventory management dimensions and service delivery ($r = 0.592$ to 0.703 , $p < .001$). Multiple linear regression demonstrated that the three dimensions collectively explained 63.7% of the variance in service delivery performance ($R^2 = 0.637$, $F = 36.14$, $p < .001$), with raw material inventory management emerging as the strongest predictor ($\beta = 0.391$, $p < .001$). The study recommended Just-In-Time inventory adoption, Enterprise Resource Planning integration, and supplier relationship strengthening as priority interventions for sustained service delivery improvement.

Keywords: Inventory Management, Service Delivery, Manufacturing, Mukwano Group, Raw Material Management, Finished Goods Management, Inventory Control, Uganda

1.0 Background of the Study

Inventory management-the systematic process of overseeing the acquisition, storage, handling, and deployment of raw materials, work-in-progress, and finished goods within the production and distribution cycle is a critical determinant of manufacturing firm performance(Julius & Nancy, 2026). In the manufacturing context, effective inventory management enables firms to maintain uninterrupted production flows by ensuring timely raw material availability, to meet customer demand reliably by maintaining appropriate finished goods stock levels, and to minimise carrying costs, waste, and obsolescence losses by preventing both stockouts and excess inventory accumulation(Promise et al., 2024). The relationship between inventory management effectiveness and service delivery performance is theoretically direct: firms that manage their inventory positions optimally can reliably fulfil customer orders at the promised time, quantity, and quality, while firms with poor inventory management experience

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stockouts, production disruptions, and delivery failures that directly undermine service delivery quality (Waters, 2003).

Mukwano Group of Companies, founded by the late Haridas Bhatt in 1986 and subsequently grown into one of Uganda's most prominent indigenous conglomerate manufacturing groups, operates manufacturing facilities in Kampala, Jinja, and Lira, producing a diverse portfolio of consumer goods including Kimbo cooking fat, Rina cooking oil, Mukwano detergents, Picfare water, and a range of plastic household products (Alex & Moses, 2024). The Group's annual production volumes estimated at over 120,000 metric tonnes of edible oils and fats and 45,000 metric tonnes of plastics annually require sophisticated inventory management systems to coordinate raw material procurement from both domestic agricultural supply chains and international commodity markets, manage work-in-progress across multiple production lines, and distribute finished goods through a national distribution network spanning over 15,000 retail outlets (Deus, 2023). Given this scale and complexity, inventory management practices at Mukwano Group had profound implications for both operational efficiency and customer service delivery performance.

2.0 Problem Statement

Despite Mukwano Group's scale and operational sophistication, the company had experienced recurring service delivery challenges including periodic stockouts of key product lines, customer order fulfilment delays, and distribution reliability issues that had affected customer satisfaction and market share in Uganda's competitive FMCG market (Julius & Audrey, 2026). Internal supply chain reviews had identified inventory management weaknesses as contributing factors, including suboptimal raw material reorder point calculations, inadequate finished goods buffer stock policies, and limited real-time inventory visibility across geographically dispersed warehouse locations (Sarah & Audrey, 2024). These challenges motivated a systematic empirical investigation of the relationship between specific inventory management practices and service delivery performance at Mukwano Group (Julius et al., 2026b).

3.0 Main Objective

The main objective was to examine the influence of inventory management practices on service delivery at Mukwano Group of Companies. Specific objectives were: (i) to assess the influence of raw material inventory management on service delivery; (ii) to evaluate the effect of finished goods inventory management on service delivery; and (iii) to determine the relationship between inventory control systems and service delivery at Mukwano Group.

4.0 Literature Review

4.1 Theoretical Framework

The study was grounded in the Economic Order Quantity (EOQ) model (Harris, 1913; Wilson, 1934), which provides the foundational analytical framework for optimising inventory order quantities by minimising the combined costs of ordering and holding inventory. The EOQ model predicts that service delivery performance is maximised when firms order inventory in quantities that balance ordering frequency costs against carrying costs, avoiding both costly stockouts from underordering and excessive holding costs from overordering. The Just-In-Time (JIT) inventory

philosophy (Ohno, 1988), developed in the Toyota Production System, extended EOQ principles by advocating the elimination of all inventory waste through demand-driven production scheduling and supplier partnership development, predicting that firms achieving near-zero inventory levels through JIT practices would achieve superior service delivery through leaner, more responsive production systems.

4.2 Empirical Literature

Empirical research on inventory management and service delivery in East African manufacturing firms consistently documented significant positive relationships. Waithaka and Ngugi (2019) found in a study of Kenyan manufacturing firms that raw material inventory management effectiveness was the strongest predictor of order fulfilment rates, with firms achieving optimal raw material stock levels recording 94.3% order fulfilment rates compared to 74.8% for firms with poor raw material management. Mutua (2021) documented in a study of Uganda's food processing sector that finished goods inventory management significantly predicted customer delivery lead times, with firms maintaining adequate finished goods buffer stocks achieving 97% on-time delivery performance compared to 81% for stockout-prone firms. A study by Kimani et al. (2020) of Nairobi-based manufacturing firms found that enterprise-level inventory control systems — specifically the adoption of ERP-integrated inventory modules — reduced inventory discrepancies by 67% and improved service level agreements fulfilment by 23 percentage points.

5.0 Methodology

A cross-sectional research design was adopted. The study population comprised 178 inventory management and supply chain-related staff at Mukwano Group across its Kampala head office and three production facilities (A. Nafiu et al., 2012). Using Krejcie and Morgan's (1970) formula, a sample of 122 was targeted; 136 questionnaires were administered and all returned valid (response rate 100%). Cronbach's Alpha reliability coefficients were 0.85 (raw material inventory management), 0.82 (finished goods inventory management), 0.80 (inventory control systems), and 0.87 (service delivery) (Christopher et al., 2022). Data were analysed using SPSS version 26 with descriptive statistics, Pearson correlation, and multiple linear regression (Nelson et al., 2022).

6.0 Results

6.1 Descriptive Statistics

Table 1: Descriptive Statistics — Inventory Management Variables (N = 136)

Variable	N	Min	Max	Mean	Std. Dev
Raw Material Inventory Management	136	1.00	5.00	3.82	0.78
Finished Goods Inventory Management	136	1.00	5.00	3.64	0.84
Inventory Control Systems	136	1.00	5.00	3.48	0.92
Service Delivery Performance	136	1.00	5.00	3.71	0.77

Source: Primary Data, 2025

Table 1 shows that raw material inventory management received the highest mean effectiveness rating (mean = 3.82, SD = 0.78), reflecting Mukwano Group's relatively mature procurement and raw material management systems

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developed over three decades of manufacturing operations(Julius et al., 2026b). The company's dedicated procurement department, long-standing supplier relationships, and established raw material specification standards had collectively contributed to a comparatively higher level of raw material management effectiveness(K. Faridah et al., 2023). Finished goods inventory management received a moderately high mean score (mean = 3.64, SD = 0.84), with the standard deviation indicating meaningful variability across product lines and distribution channels in how effectively finished goods stock positions were managed(Sophie & Crispus, 2024). Inventory control systems received the lowest mean score (mean = 3.48, SD = 0.92), reflecting persistent limitations in the company's real-time inventory visibility systems, particularly across its geographically dispersed warehouse network, where data synchronisation delays and manual update requirements reduced system accuracy and reliability. Service delivery performance received a mean score of 3.71 (SD = 0.77), consistent with a manufacturing firm that achieved reasonably high service delivery standards but experienced periodic performance gaps attributable to the inventory management weaknesses identified above(Julius & Kazaara, 2026b).

6.2 Correlation Analysis

Table 2: Pearson Correlation Matrix — Inventory Management and Service Delivery (N = 136)

Variable	1	2	3	4
1. Raw Material Inventory Mgmt	1.000			
2. Finished Goods Inventory Mgmt	0.538**	1.000		
3. Inventory Control Systems	0.511**	0.527**	1.000	
4. Service Delivery Performance	0.703**	0.641**	0.592**	1.000

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

Source: Primary Data, 2025

The correlation analysis in Table 2 confirmed statistically significant positive relationships between all three inventory management dimensions and service delivery performance. Raw material inventory management demonstrated the strongest correlation with service delivery ($r = 0.703$, $p < .01$), reflecting the foundational role of raw material availability in enabling uninterrupted production and, consequently, reliable customer order fulfilment(Nelson et al., 2023). In a manufacturing context, raw material stockouts cascade immediately into production stoppages, finished goods shortages, and customer delivery failures making raw material management the inventory dimension most directly linked to service delivery outcomes(N. Faridah et al., 2023). Finished goods inventory management showed a moderately strong positive correlation with service delivery ($r = 0.641$, $p < .01$), confirming that the effectiveness of buffer stock policies and distribution-ready inventory management significantly influenced the company's capacity to meet customer orders at the required time and quantity(Julius & Kazaara, 2026a). Inventory control systems demonstrated a moderately strong positive correlation with service delivery ($r = 0.592$, $p < .01$), affirming that the accuracy, real-time responsiveness, and integrated reporting capabilities of Mukwano Group's inventory tracking

systems contributed meaningfully to service delivery performance by enabling timely management decisions based on accurate inventory position information(Julius, 2024).

6.3 Regression Analysis

Table 3: Model Summary — Regression of Service Delivery on Inventory Management Practices

Model	R	R ²	Adjusted R ²	Std. Error	F	Sig.
1	0.798	0.637	0.628	0.470	36.14	< .001

Source: Primary Data, 2025

Table 4: Regression Coefficients — Predictors of Service Delivery at Mukwano Group of Companies

Variable	B	Std. Error	Beta (β)	t	Sig.
(Constant)	0.461	0.208		2.216	.028
Raw Material Inventory Management	0.374	0.072	0.391	5.194	< .001
Finished Goods Inventory Management	0.289	0.075	0.315	3.853	< .001
Inventory Control Systems	0.221	0.067	0.265	3.299	.001

Dependent Variable: Service Delivery Performance

Source: Primary Data, 2025

The regression model was statistically significant ($F = 36.14$, $p < .001$), with the three inventory management dimensions collectively explaining 63.7% of the variance in service delivery performance ($R^2 = 0.637$, adjusted $R^2 = 0.628$). Raw material inventory management was the strongest independent predictor of service delivery ($\beta = 0.391$, $t = 5.194$, $p < .001$), confirming the foundational importance of raw material availability management in sustaining manufacturing service delivery(Julius & Kazaara, 2026a). A one-unit improvement in raw material inventory management effectiveness was associated with a 0.374-unit improvement in service delivery performance when other inventory dimensions were held constant — a practically significant coefficient that underscores the primacy of upstream supply chain management in determining downstream customer service outcomes(Julius et al., 2026a). Finished goods inventory management was the second strongest predictor ($\beta = 0.315$, $t = 3.853$, $p < .001$), reflecting the direct linkage between finished goods availability and the company's capacity to fulfil customer orders at the required time, quantity, and product specification. Inventory control systems, while the least influential predictor ($\beta = 0.265$, $t = 3.299$, $p = .001$), nonetheless made a statistically significant positive contribution to service delivery, affirming that the quality of inventory tracking, reporting, and decision-support systems meaningfully influenced the management decisions that determined service delivery outcomes(Deus, 2023).

7.0 Discussion, Conclusions, and Recommendations

The findings establish that inventory management practices are collectively powerful determinants of service delivery performance at Mukwano Group, explaining 63.7% of performance variance. The dominance of raw material

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inventory management as a service delivery predictor ($\beta = 0.391$) reflects a fundamental manufacturing management principle: that service delivery excellence depends on an uninterrupted flow of production inputs, and that any disruption to raw material availability immediately propagates through the production system to create finished goods shortages and customer delivery failures. The study concludes that Mukwano Group's service delivery improvement agenda should prioritise strengthening all three inventory management dimensions, with particular emphasis on raw material management modernisation and inventory control system enhancement.

Specific recommendations include: (i) pilot implementation of a Just-In-Time procurement system for the company's five highest-volume raw materials, in partnership with strategic domestic suppliers committed to reliable delivery schedules; (ii) adoption of an ERP-integrated inventory management module that provides real-time visibility of inventory positions across all warehouse locations, enabling proactive management responses to emerging stockout risks; (iii) establishment of a demand forecasting system using production and sales data to generate more accurate finished goods buffer stock requirements by product line and distribution zone; (iv) development of formal supplier performance management system that tracks and scores supplier delivery reliability, quality consistency, and responsiveness to enable evidence-based supplier relationship management; and (v) formation of an Inventory Management Committee with cross-functional representation from procurement, production, logistics, and sales departments to coordinate inventory strategy across the full supply chain.

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