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Management Accounting Techniques and Supply Chain Efficiency: Evidence from Olam Nigeria Limited

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Abstract
Purpose: This study examined the influence of management accounting techniques on supply chain efficiency in Olam Nigeria Limited. Specifically, the study investigated the effects of budgetary control, activity-based costing (ABC), and just-in-time (JIT) inventory management on supply chain efficiency.
Methodology: A quantitative research approach was adopted using a survey research design. Primary data were collected through structured questionnaires administered to employees of Olam Nigeria Limited. The study population comprised 368 staff members, while the Taro Yamane formula was used to determine a sample size of 192 respondents. Data obtained were analyzed to evaluate the relationship between management accounting techniques and supply chain efficiency.
Results and Conclusion: The findings revealed that budgetary control significantly improves supply chain efficiency through effective monitoring and control of costs across procurement, production, and distribution activities. Activity-based costing (ABC) was also found to positively influence supply chain efficiency by enabling accurate cost allocation and identification of cost drivers for better decision-making. Furthermore, just-in-time (JIT) inventory management significantly enhanced supply chain efficiency by reducing inventory holding costs, minimizing waste, and improving material flow. The study concluded that management accounting techniques play a vital role in enhancing supply chain efficiency in organizations.
Implication of Findings: The study implies that organizations should strengthen budgetary control systems, expand the adoption of ABC, and fully integrate JIT inventory management practices to improve operational efficiency, reduce waste, and enhance overall supply chain performance.

Keywords: Activity-based costing, budgetary control, just-in-time inventory management, management accounting techniques, supply chain efficiency.

1. Introduction

Nigeria's agribusiness sector continues to experience major supply chain challenges that affect operational efficiency, profitability, and food security. Poor transportation infrastructure, inadequate storage facilities, inconsistent supply of raw materials, and high post-harvest losses contribute significantly to inefficiencies across procurement, production, inventory, and distribution activities (Medved et al., 2024; Muoneke & Dandago, 2024). These challenges are more evident in agro-processing firms that depend on effective coordination of sourcing, processing, and distribution networks to meet customer demand while controlling operational costs. In this context, supply chain efficiency has become critical for firms seeking competitiveness and long-term sustainability in Nigeria's volatile business environment (Al-Khasawneh et al., 2020).

Olam Nigeria Limited is one of the leading agribusiness firms in Nigeria, involved in the sourcing, processing, and distribution of grains, feed, and related agricultural products. Despite investments in local sourcing, processing facilities, and supply chain improvements, the company still operates within a challenging environment characterized by transportation bottlenecks, inventory volatility, and rising logistics costs (Olam Group Limited, 2025). These challenges often result in delayed deliveries, excessive inventory holding costs, waste, and reduced responsiveness to customer needs (Onwude et al., 2023).

Management accounting techniques such as Activity-Based Costing (ABC), Just-In-Time (JIT) inventory management, and budgetary control are increasingly recognized as important tools for improving supply chain efficiency. ABC provides more accurate cost allocation by identifying the actual drivers of procurement, production, and logistics costs, thereby supporting cost optimization and informed decision-making (Adebayo & Olusegun, 2023). JIT inventory management minimizes excess inventory, reduces storage and spoilage costs, and improves material flow by aligning inventory levels with production requirements (Eze et al., 2021). Budgetary control enhances financial discipline through planning, monitoring, and variance analysis, ensuring effective allocation and utilization of organizational resources (Mensah & Appiah, 2023).

However, despite the recognized benefits of these techniques, many firms in developing economies still face difficulties in their effective implementation due to inadequate infrastructure, poor technological adoption, and weak managerial systems (Okoye & Nwoye, 2024). At Olam Nigeria Limited, deficiencies in costing systems, inventory management, and budgetary monitoring may contribute to higher supply chain costs, operational inefficiencies, and reduced competitiveness. Although previous studies have examined management accounting practices and organizational performance, limited attention has been given to their direct influence on supply chain efficiency within Nigeria's agribusiness sector (Adebayo & Olusegun, 2023; Eze et al., 2021). This study therefore examines the influence of management accounting techniques on supply chain efficiency in Olam Nigeria Limited.

2. Literature review

2.1. Contingency theory

Contingency theory provides a useful foundation for this study. The theory was originally developed by Fred Fiedler in 1964 and later extended into organizational and management accounting research. It argues that there is no single best way to design management systems or make decisions. Instead, the effectiveness of any managerial practice depends on how well it fits the specific internal and external conditions of an organization (Otley, 2016; Islam & Hu, 2022). In management accounting, contingency theory suggests that techniques such as Activity-Based Costing (ABC), Just-In-Time (JIT) inventory management, and budgetary control systems should be adopted and applied in ways that align with factors such as organizational size, supply chain complexity, technology, and environmental uncertainty.

The central assumption of contingency theory is that organizational performance improves when there is alignment between management practices and contextual variables. These variables include environmental uncertainty, organizational structure, strategy, technology, and market dynamics. The theory assumes that organizations operate in dynamic environments where conditions are constantly changing, which requires flexible and adaptive management systems. It also assumes that management accounting systems are not universally applicable, and their design must reflect the specific operational realities of each organization (Abdel-Kader & Luther, 2021). Another key assumption is that decision-makers are rational but constrained by available information and environmental pressures, which makes the selection of appropriate accounting techniques context-dependent. Within this framework, Activity-Based Costing (ABC) becomes effective when an organization faces high overhead costs and complex production processes. ABC provides more accurate cost allocation by identifying cost drivers, which supports better decision-making in supply chain activities such as procurement, production, and distribution (Adebayo & Olagunju, 2023).

Just-In-Time (JIT) inventory management fits within contingency theory as a system that depends on environmental stability and strong supplier relationships. JIT aims to reduce inventory holding costs and

improve efficiency by receiving goods only when they are needed. Its success depends on reliable supply chains, accurate demand forecasting, and effective coordination with suppliers, and may be limited in uncertain environments (Eze & Nwankwo, 2021). Budgetary control also aligns with contingency theory through its role in planning, coordination, and performance evaluation. Its effectiveness depends on factors such as organizational culture, management style, and environmental uncertainty (Omondi & Muturi, 2020).

The relevance of contingency theory lies in explaining how the effectiveness of management accounting techniques depends on their alignment with organizational and environmental factors. It supports the argument that improved efficiency depends on how well these techniques fit the company's structure, strategy, and external environment, particularly in emerging economies such as Nigeria.

2.2 Management accounting techniques

Management accounting techniques refer to a set of tools and practices used by managers to generate, analyze, and interpret financial and non-financial information for decision-making, planning, and control within an organization (Keta, 2022, Olumoh & Mubaraq, 2025). These techniques focus on internal processes and are designed to improve operational efficiency, cost management, and strategic alignment. In the context of Olam Nigeria Limited in Calabar, Cross River State, management accounting techniques such as Activity-Based Costing (ABC), Just-In-Time (JIT) inventory management, and budgetary control play a critical role in enhancing supply chain efficiency.

Activity-Based Costing is a costing method that assigns overhead and indirect costs to products and services based on the activities that drive those costs. This approach provides more accurate cost information compared to traditional costing systems, allowing managers to identify inefficiencies and eliminate non-value-adding activities. When applied to supply chain operations, ABC helps organizations understand the true cost of procurement, production, warehousing, and distribution processes. This improved cost visibility supports better pricing decisions, supplier selection, and process optimization, leading to enhanced supply chain performance (Kaplan & Anderson, 2020; Drury, 2021).

Just-In-Time inventory management focuses on reducing inventory holding costs by receiving goods only when they are needed in the production process. This technique minimizes waste, lowers storage costs, and improves cash flow (Heizer et al., 2022). In a supply chain context, JIT requires strong coordination with suppliers and efficient logistics systems. Olam Nigeria Limited can benefit from JIT by reducing excess inventory and improving responsiveness to market demand. Efficient implementation of JIT contributes to shorter lead times, reduced stock obsolescence, and improved overall supply chain agility (Stevenson, 2021).

Budgetary control involves the preparation and use of budgets to monitor and control organizational activities. It enables managers to set performance targets, allocate resources effectively, and evaluate actual performance against planned outcomes (Horngren et al., 2021). Within supply chain management, budgetary control helps in forecasting demand, managing procurement costs, and controlling distribution expenses. It also provides a framework for identifying variances and taking corrective actions promptly, enhancing coordination across supply chain functions (Atrill & McLaney, 2022).

A strong relationship exists between management accounting techniques and supply chain efficiency, as these tools provide the information and control mechanisms needed to optimize operations. Accurate costing through ABC supports strategic decision-making, JIT improves operational flow and reduces waste, while budgetary control ensures financial discipline and performance monitoring. These

techniques collectively enhance transparency, coordination, and responsiveness within the supply chain (Chenhall & Moers, 2020).

2.2.1 Supply chain efficiency

Supply chain efficiency refers to the extent to which the least amount of resources and inputs are used to meet customer needs during supply chain management (Almatarneh et al., 2022). This definition centers on optimizing procurement, production, storage, distribution, and information flows to generate maximum value output at the lowest possible cost and time while ensuring quality and responsiveness remain intact. Organizations achieve this state when processes flow smoothly, waste is minimized, and customer demands are satisfied without excess inventory or delays. In practice, supply chain efficiency manifests through reduced operational costs, shorter cycle times, and higher resource utilization rates (Almatarneh et al., 2022, Esiyeden & Uagbale-Ekatah, 2025).

Management accounting techniques establish a direct and supportive connection to supply chain efficiency by supplying essential data for planning, monitoring, and control across interconnected networks (Dang, 2024). Techniques such as cost management accounting, balanced scorecard applications, value chain costing, and goal costing generate precise information that identifies cost drivers, evaluates performance metrics, and guides resource allocation decisions. These methods transform operational data into actionable insights that enable managers to eliminate inefficiencies and coordinate activities among partners.

Empirical evidence confirms this relationship. Almatarneh et al. (2022) reported that management accounting practices including goal costing, value chain costing, and quality costing strongly relate to supply chain performance. Similarly, Dang (2024) demonstrated that cost management accounting techniques exert a significant positive impact on supply chain performance among Vietnamese logistics firms using the balanced scorecard framework.

Management accounting techniques function as strategic instruments that bridge financial oversight with operational execution. Integration of these practices fosters collaboration, supports demand forecasting accuracy, and promotes sustainable practices such as reduced energy consumption in transportation (Salihu et al., 2024). Firms that embed management accounting data into supply chain governance experience improved inventory turnover, streamlined procurement cycles, and enhanced risk mitigation.

2.3 Empirical review

Empirical studies on management accounting techniques and supply chain performance provide evidence that modern accounting practices contribute significantly to organizational efficiency and competitiveness. Almatarneh et al. (2022), examined the relationship between management accounting techniques and supply chain performance. The study adopted a quantitative research design using survey data collected from 181 respondents in logistics manufacturing companies. Data were analyzed using statistical techniques. The findings revealed a statistically significant positive relationship between management accounting techniques such as target costing and supply chain performance. The study concluded that management accounting techniques enhance operational coordination and improve supply chain outcomes. Waked et al. (2023) conducted a study on supply chain management strategies, management accounting practices and firm's growth. The study employed a survey research design using data collected from companies in Yemen. Ordinary Least Squares (OLS) regression analysis was used to analyze the data. The findings showed that management accounting practices positively affect firm growth and operational performance. The study concluded that effective accounting practices strengthen supply chain management and organizational sustainability.

Ait-Lhassan et al. (2024), investigated the role of balanced scorecard perspectives in supply chain performance improvement. The study adopted a quantitative methodology and analyzed data using Partial Least Squares Structural Equation Modeling (PLS-SEM). The findings indicated that balanced scorecard dimensions significantly improve supply chain performance. The study concluded that performance measurement systems are essential for effective supply chain management. Balaji et al. (2021) carried out a study balanced scorecard approach in deducing supply chain performance. The study applied the balanced scorecard framework to evaluate supply chain performance in manufacturing organizations. Using a descriptive research methodology, the study identified performance gaps across operational activities. The findings revealed that the balanced scorecard framework supports targeted performance improvement initiatives. The study concluded that balanced scorecard implementation enhances supply chain effectiveness.

Pramono et al. (2023), examined the influence of strategic management accounting on supply chain positioning. The study adopted a quantitative survey design and analyzed the data using structural equation modeling. Findings revealed that strategic management accounting significantly influences supply chain performance through internal and external orientation. The study concluded that strategic accounting practices strengthen organizational competitiveness and supply chain positioning. Adebayo and Olagunju (2023) conducted a study on activity-based costing and operational efficiency in manufacturing firms in Nigeria. The study employed a survey research design involving selected manufacturing firms in Nigeria, while regression analysis was used for data analysis. The findings showed that activity-based costing significantly improves operational efficiency through accurate cost allocation and waste reduction. The study concluded that ABC enhances managerial decision-making and cost optimization in manufacturing firms.

Keta (2022) examined the effect of activity-based costing on supply chain performance. The study adopted a descriptive survey design and analyzed responses using quantitative statistical tools. Findings revealed that activity-based costing positively affects inventory management and supply chain performance. The study concluded that ABC contributes to efficient resource utilization and improved operational performance. Eze et al. (2021) conducted a study on budgetary control and organizational performance in Nigerian manufacturing firms. The study adopted a survey research design using structured questionnaires administered to employees in manufacturing firms. Data were analyzed using regression analysis. Findings indicated that budgetary control has a significant positive effect on organizational performance through improved cost monitoring and financial discipline. The study concluded that effective budgetary control systems are essential for operational efficiency and organizational sustainability. Omondi and Muturi (2020), examined the influence of budgetary control systems on firm performance. The study used a descriptive research design and analyzed data using correlation and regression techniques. Findings revealed that budgetary control systems positively influence financial performance by promoting accountability and efficient resource allocation. The study concluded that budgetary control improves operational and financial outcomes in manufacturing firms.

Ubolo et al. (2025) conducted a study on the impact of Just-In-Time (JIT) delivery on operational efficiency in selected manufacturing firms in South-West Nigeria. The study adopted a quantitative survey design and analyzed data using regression analysis. Findings revealed that Just-in-Time delivery significantly improves operational efficiency by reducing inventory costs, minimizing waste, and improving production flow. The study concluded that JIT practices enhance organizational responsiveness and supply chain efficiency. Yang et al. (2021), investigated how supply chain intelligence supports JIT systems. The study employed a quantitative methodology and analyzed data using structural equation modeling. Findings showed that supply chain intelligence significantly supports

Just-in-Time implementation and enhances supply chain responsiveness. The study concluded that information integration and intelligence systems are critical for successful JIT operations. The reviewed studies consistently show that management accounting techniques such as activity-based costing, budgetary control, balanced scorecard systems, and Just-in-Time inventory management influence organizational and supply chain performance. However, most existing studies focused on manufacturing firms and general organizational performance, with limited empirical attention given to the combined effects of these techniques on supply chain efficiency in Nigeria's agribusiness sector. This study therefore seeks to fill this gap by examining the influence of management accounting techniques on supply chain efficiency in Olam Nigeria Limited.

Ho1: Budgetary control does not have significant effect on supply chain efficiency.

Ho2: Activity-based costing does not have significant effect on supply chain efficiency.

Ho3: Just-in-time inventory management does not have significant effect on supply chain efficiency.

3. Methodology

This study adopted a survey research design using questionnaires as the primary source of data collection. The study was conducted at Olam Nigeria Limited in Cross River State. Data were obtained from a representative sample of employees of the organization. The population of the study comprised 368 staff members of Olam Nigeria Limited. A simple random sampling technique was employed to ensure fair and equal representation of employees across the various departments of the company. Taro Yamane formula was applied on the population of Olam limited to determine appropriate sample size for the study. Taro Yamane formula was given as:

The sample size was determined using Yamane's (1967) formula:

$$n = \frac{N}{1 + N(e)^2}$$

Where: n = sample size; N = population size; e = margin of error (0.05); 1 = constant

Substituting the values:

$$n = \frac{368}{1 + 368(0.05)^2}$$

$$n = \frac{368}{1 + 368(0.0025)}$$

$$n = \frac{368}{1 + 0.92}$$

$$n = \frac{368}{1.92}$$

$$n = 191.67 \approx 192$$

Therefore, the sample size for the study was 192 respondents.

Data for this study was collected from primary source using the questionnaire instrument. The researcher gathers primary data using a questionnaire. Due consent of the management of Olam limited was sought

to allay fear about the researcher's motives. The questionnaire was administered on the sampled staff in Olam limited by the researcher and two research assistants. However, information and literature on management accounting and supply chain efficiency were sourced from Journals, textbooks, and internet. Responses the questionnaire instrument were measured using a five-point Likert scale. The multiple regression model was use to establish the relationship between the variables in the study. The multiple regression model was presented thus:

$Y = \alpha + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \varepsilon$ ……. ….…..…..…… (i)

$SCE = \alpha + \beta_1 MAT_1 + \beta_2 BC_2 + \beta_3 ABC_3 + \beta_4 JTIM_4 + \varepsilon$…….……... (ii)

Where = (α, β1, β_2 - - - - $\beta_3 \neq 0$…….) are regression coefficients.

SCE = Supply Chain Efficiency

MAT = Management Accounting Techniques:

BC = Budgetary Control

ABC = Activity Based Costing

JTIM = Just in Time Inventory Management

X = Predictor

β = Coefficient

α = Intercept, Constant

ε = Stochastic error term

4. Results and discussion

Table 1 presents the descriptive statistics for the major constructs examined in the study. The data are based on responses from 173 participants. Across all constructs, the mean values are consistently high, ranging from 4.33 to 4.42 on a five-point scale, indicating that respondents generally perceived budgetary control, activity-based costing, just-in-time, and supply chain efficiency, very positively.

TABLE 1: Descriptive statistics of variables

Constructs	N	Min	Max	Mean	Std. Dev.	Variance Statistic	Skewness Statistic	Kurtosis Statistic
Budgetary control	173	1	5	4.34	.624	.105	-.559	-.597
Activity-based costing	173	1	5	4.37	.520	.176	-.146	-.392
Just-in-time Inventory	173	1	5	4.37	.663	.069	-.140	-.040
Supply chain efficiency	173	1	5	4.42	.512	.098	-.589	-.728
Valid N (listwise)	173							

Source: SPSS version 26.

4.2 Confirmatory factor analysis

A confirmatory factor analysis (CFA) was conducted to assess the validity and reliability of the measurement model for the four constructs in this study: Budgetary Control (BC), Activity-Based Costing (ABC), Just-in-Time Inventory Management (JIT), and Supply Chain Efficiency (SCE). The analysis examined whether the observed items adequately operationalize their respective latent constructs. The results of the measurement model are presented in Table 2. All standardized factor

loadings (SFL) were statistically significant and strong, ranging from 0.717 to 0.955. Every item exceeded the recommended threshold of 0.70, indicating good indicator reliability. The highest loading was 0.955 (one of the JIT items), while the lowest loading of 0.717 (BC5) still met the acceptability criterion. No items were deleted due to weak loadings. Convergent validity was established through the Average Variance Extracted (AVE) values. The AVE for each construct exceeded the minimum threshold of 0.50: Budgetary Control (0.522), Activity-Based Costing (0.621), Just-in-Time (0.562), and Supply Chain Efficiency (0.532). These results confirm that the constructs explain more variance in their indicators than is due to measurement error. Composite reliability (CR), which assesses internal consistency, was also satisfactory. All CR values surpassed the recommended threshold of 0.70: Budgetary Control (0.854), Activity-Based Costing (0.817), Just-in-Time (0.734), and Supply Chain Efficiency (0.892). This indicates that the items reliably measure their respective latent constructs.

The overall fit of the measurement model was evaluated using several indices. The chi-square to degrees of freedom ratio (CMIN/DF) was 2.875, which falls within the acceptable range of less than 3.0. The Root Mean Square Error of Approximation (RMSEA) was 0.059, suggesting a good fit (values ≤ 0.08 are generally acceptable, with values close to 0.06 indicating close fit). The Comparative Fit Index (CFI) was 0.984, and the additional incremental fit index was 0.955. Both values exceed the recommended threshold of 0.95, indicating excellent incremental fit. Collectively, these indices demonstrate that the hypothesized four-factor measurement model provides a good representation of the data.

TABLE 2: Results for the factor structures of the measurement instrument

Constructs	Items Codes	SFL	AVE	CR	
Budgetary Control (BC)	BC1	0.843			
	BC2	0.842			
	BC3	0.735	0.522	0.854	0.726
	BC4	0.781			
	BC5	0.717			
Activity-Based costing	ABC1	0.791			
	ABC2	0.782			
	ABC3	0.882	0.621	0.817	0.766
	ABC4	0.822			
	ABC5	0.835			
Just-in-time	JIT	0.872			
	JIT	0.955			
	JIT	0.831	0.562	0.734	0.799
	JIT	0.854			
	JIT	0.829			
Supply Chain Efficiency	SCE1	0.871			
	SCE2	0.833			
	SCE3	0.733	0.532	0.892	0.822
	SCE4	0.893			
	SCE5	0.792			
	Summary of model fit indexes				
CMIN/DF	RMSEA		CFI		
2.875	0.059		0.984		0.955

Source: SPSS version 26.

4.3 Test of hypotheses

The multiple regression analysis was employed to test the hypotheses formulated for the study. The model summary in Table 3 shows that the three management accounting techniques — Budgetary Control (BC), Activity-Based Costing (ABC), and Just-in-Time (JIT) inventory management, collectively explain 62.9% of the variation in supply chain efficiency, as indicated by the R Square value of .629. The Adjusted R Square of .601 confirms the model's robustness after adjusting for the number of predictors. The multiple correlation coefficient (R = .752) indicates a strong positive relationship between the management accounting techniques and supply chain efficiency. Furthermore, the Durbin-Watson statistic of 1.643 suggests that the residuals are independent, with no significant autocorrelation, thereby enhancing the reliability of the regression results.

TABLE 3: Model summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.752[a]	.629	.601	.1542	1.643

a. Predictors: (Constant), BC, ABC, JIT

b. Dependent Variable: Supply Chain efficiency

TABLE4: ANOVA[a] results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	218.611	3	72.870	95.505	.000
	Residual	128.901	169	.763		
	Total	347.512	172			

a. Dependent Variable: Supply Chain efficiency

b. Predictors: (Constant), BC, ABC, JIT

TABLE 5: Coefficients[a] results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.052	.821		7.371	.000
	BC	.612	.128	.454	4.781	.000
	ABC	.642	.110	.431	5.836	.000
	JIT	.589	.109	.387	5.404	.001

a. Dependent Variable: Supply Chain efficiency

The ANOVA results presented in Table 4 further validate the overall significance of the model. The regression sum of squares is 218.611 (df = 3), while the residual sum of squares is 128.901 (df = 169). The calculated F-value of 95.505 with a significance level of .000 ($p < 0.05$) indicates that the model is statistically significant. This implies that Budgetary Control, Activity-Based Costing, and Just-in-Time inventory management jointly have a significant influence on supply chain efficiency. Table 5 presents the individual contributions of each independent variable.

Budgetary Control (BC) has a positive and statistically significant effect on supply chain efficiency (unstandardized coefficient B = .612, standardized Beta = .454, t = 4.781, p = .000). Since the p-value is

less than 0.05, the null hypothesis (H_{01}: Budgetary control has no significant effect on supply chain efficiency) is rejected. This establishes that budgetary control significantly enhances supply chain efficiency.

Activity-Based Costing (ABC) also exerts a positive and significant influence on supply chain efficiency (B = .642, Beta = .431, t = 5.836, p = .000). The null hypothesis (H_{02}: Activity-based costing has no significant effect on supply chain efficiency) is therefore rejected, indicating that activity-based costing significantly improves supply chain efficiency. Just-in-Time (JIT) inventory management shows a positive and statistically significant effect on supply chain efficiency (B = .589, Beta = .387, t = 5.404, p = .001). With the p-value less than 0.05, the null hypothesis (H_{03}: Just-in-time inventory management has no significant effect on supply chain efficiency) is rejected. This confirms that JIT inventory management significantly contributes to supply chain efficiency. Therefore, the results reveal that all three management accounting techniques (Budgetary Control, Activity-Based Costing, and Just-in-Time inventory management) have positive and statistically significant effects on supply chain efficiency.

4.4 Discussion of findings

The findings indicate that budgetary control have significant positive effect on supply chain efficiency in Olam limited, as it provides structured mechanisms for monitoring and regulating costs across procurement, production, and distribution processes. Effective budgetary control aligns resource allocation with operational goals, enabling organizations to minimize variances, reduce wasteful expenditures, and improve overall coordination in the supply chain. Almatarneh et al. (2022) demonstrate that management accounting practices, including budgetary mechanisms, play a key role in developing supply chain performance within logistics and manufacturing contexts by fostering cost discipline and timely decision-making. Similarly, Waked et al. (2023) highlight how management accounting practices support supply chain strategies that drive firm growth through better resource management and operational control. The implication is that firms adopting robust budgetary control systems can achieve greater predictability and responsiveness in supply chain operations, leading to sustained efficiency gains.

Activity-based costing (ABC) also have significant positive effect on supply chain efficiency in Olam limited by offering precise cost allocation that reveals the true drivers of expenses in complex supply chain activities. This technique facilitates better identification of non-value-adding processes, cost optimization in logistics and inventory handling, and enhanced decision-making for supplier selection and process improvements. Ait Lhassan et al. (2024) illustrate through a PLS-SEM approach that balanced scorecard perspectives, integrated with management accounting tools like ABC, improve supply chain performance by linking cost insights to strategic outcomes. Pramono et al. (2023) further show that strategic management accounting, encompassing ABC, positively affects supply chain performance via internal and external orientations that promote accurate cost visibility and efficiency. These results suggest that organizations implementing ABC can uncover hidden inefficiencies, allocate resources more effectively, and strengthen competitive positioning in supply chain networks.

Just-in-time (JIT) inventory management has significant positive effect on supply chain efficiency through reduced holding costs, minimized waste, and improved flow of materials. By synchronizing inventory receipt with actual demand, JIT promotes lean operations, faster cycle times, and greater agility in responding to market changes. Almatarneh et al. (2022) emphasize the supportive role of management accounting in advancing supply chain performance in manufacturing settings, where JIT practices integrate with accounting information to optimize inventory levels and operational throughput. Waked et al. (2023) connect management accounting practices to supply chain strategies that include lean

approaches like JIT, resulting in enhanced firm growth and efficiency. The implication is that firms employing JIT, supported by appropriate accounting oversight, can achieve lower inventory-related costs and higher supply chain responsiveness while maintaining quality and delivery reliability. Therefore, these findings reveal that budgetary control, activity-based costing, and just-in-time inventory management each contribute substantially to elevating supply chain efficiency when applied as part of strategic management accounting frameworks.

5. Conclusion

This study concludes that management accounting techniques play a significant role in enhancing supply chain efficiency in Olam Nigeria Limited. The findings revealed that budgetary control improves planning, strengthens cost management, and promotes effective coordination across procurement, production, and distribution activities. Through proper monitoring and control of financial resources, budgetary systems provide a framework that supports operational efficiency and the achievement of organizational objectives.

The study further established that activity-based costing (ABC) contributes positively to supply chain efficiency by ensuring accurate cost allocation and proper identification of cost drivers. This enables management to make more informed decisions regarding resource utilization, pricing, and process improvement. The improved cost transparency associated with ABC enhances operational effectiveness and supports organizational competitiveness.

In addition, the findings showed that just-in-time (JIT) inventory management enhances supply chain efficiency through the reduction of inventory holding costs, minimization of waste, and improvement in material flow. Effective supplier coordination and responsiveness to demand fluctuations contribute to shorter lead times and better service delivery. The integration of JIT practices therefore strengthens operational performance and ensures that inventory levels are aligned with actual production and market demands.

Overall, the study affirms that the effective application of management accounting techniques provides organizations with valuable tools for improving supply chain efficiency. Firms that successfully integrate budgetary control, activity-based costing, and just-in-time inventory management into their operational and strategic activities are more likely to achieve cost efficiency, improved coordination, and enhanced supply chain performance.

4.6 Recommendations

Based on the major findings of this study, the following recommendations were made:

Management of Olam Nigeria Limited should strengthen the implementation and continuous monitoring of budgetary control systems across all supply chain activities. This will enhance cost planning, improve financial discipline, reduce unnecessary expenditures, and promote effective coordination among procurement, production, and distribution units, thereby improving overall supply chain efficiency.

Management should increase the adoption and utilization of activity-based costing (ABC) techniques to ensure more accurate allocation of costs and better identification of cost drivers within supply chain operations. Effective application of ABC will help eliminate non-value-adding activities, improve resource utilization, support informed managerial decisions, and enhance operational efficiency.

Management should fully integrate and sustain just-in-time (JIT) inventory management practices to reduce inventory holding costs, minimize waste, and improve responsiveness to customer demand. To achieve this, the company should strengthen supplier relationships, improve demand forecasting systems, and enhance logistics coordination in order to ensure smooth material flow and timely delivery across the supply chain.

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