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Inventory Management Practices and Organizational Performance of Paint Manufacturing Firms in Anambra State, Nigeria

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ABSTRACT: This study examined the relationship between inventory management practices and organizational performance of paint manufacturing firms in Anambra State, Nigeria. Specifically, the study examined the relationship between EOQ practices and cost reduction; ascertained the relationship between JIT inventory practices and operational efficiency; and determined the relationship between ABC inventory analysis and customer satisfaction of paint manufacturing firms in Anambra State, Nigeria. Three research questions and three null hypotheses were developed in line with the specific objectives. The study was anchored on the Economic Order Quantity Theory, the Theory of Constraints, and the Resource-Based View. A survey research design was adopted. The population comprised 512 employees drawn from four (4) paint manufacturing firms in Anambra State, selected on the basis of registration with the Manufacturers Association of Nigeria (MAN), a minimum of 15 years in operation, and a minimum staff strength of 50, with a sample size of 102 respondents determined using Borg and Gall's (1973) formula and drawn proportionately using a stratified random sampling technique. Data were collected using a structured five-point Likert-scale questionnaire, validated through expert review for content and construct validity, and tested for reliability using Cronbach's Alpha, which yielded a coefficient of 0.81. Out of 102 copies of questionnaire administered, 93 copies representing 91.2% were correctly completed and valid for analysis. Data were analyzed using the Pearson Product Moment Correlation Coefficient at a 0.01 level of significance with the aid of SPSS version 23. The findings revealed a strong positive and significant relationship between EOQ practices and cost reduction; a strong positive and significant relationship between JIT inventory practices and operational efficiency; and a strong positive and significant relationship between ABC inventory analysis and customer satisfaction. The study concluded that EOQ practices, JIT inventory practices, and ABC inventory analysis significantly enhance cost reduction, operational efficiency, and customer satisfaction among paint manufacturing firms in Anambra State, Nigeria. It was recommended that management of paint manufacturing firms should institutionalize EOQ-based ordering systems, strengthen JIT scheduling and supplier coordination, and adopt ABC classification for stock prioritization to sustain organizational performance.

Keywords: Inventory Management, Economic Order Quantity, Just-In-Time, Cost Reduction, Operational Efficiency, Organizational Performance, ABC Analysis

INTRODUCTION

Inventory management, understood as the systematic planning, ordering, storage, and control of raw materials, work-in-progress, and finished goods, has consistently been linked to cost control, service delivery, and overall performance in manufacturing organizations. Recent studies emphasize that firms that adopt structured inventory

practices reduce holding and ordering costs, minimise stock-outs, and improve responsiveness to customer demand, making inventory management a major focus for both researchers and practitioners interested in operational competitiveness (Chen & Osei, 2021; Fernandes & Bala, 2022).

Interest in inventory management as a determinant of organizational performance has intensified in recent years due to global supply chain disruptions, rising input costs, and increasing customer expectations for prompt product availability. Research shows that structured inventory practices such as Economic Order Quantity (EOQ) modelling, Just-In-Time (JIT) scheduling, and ABC classification significantly influence cost efficiency, production continuity, and customer responsiveness, particularly in contexts where working capital and storage resources are constrained (Ibrahim & Danladi, 2022; Wang, 2023). In Nigeria, inventory management has also been highlighted as central to improving outcomes in the manufacturing sector, with stock control, supplier coordination, and demand forecasting repeatedly identified as influential performance drivers (Okonkwo & Eze, 2021; Adeyemi & Bello, 2023). In a related industrial context, Williams and Okeke (2025) found that economic factors of corporate sustainability significantly influenced the performance of foam manufacturing firms, reinforcing that deliberate management of cost-related operational factors, of which inventory is central, strengthens firm performance across Nigerian manufacturing industries.

The Nigerian manufacturing sector provides a particularly useful context for this line of inquiry. It relies heavily on imported and locally sourced raw materials whose costs and availability fluctuate, making inventory decisions central to survival and competitiveness. Empirical evidence from manufacturing industries such as aluminium, cement, and food processing has shown strong relationships between inventory-related practices and outcomes like cost reduction, productivity, and customer satisfaction (Nnamdi & Uzor, 2021; Chukwuemeka & Obi, 2022). In a related manufacturing sub-sector, Okeke, Akpamgbo, Dike and Williams (2025) found that workplace management practices significantly enhanced organizational productivity among aluminium manufacturing firms in Anambra State, Nigeria, underscoring how structured internal systems and coordinated work processes support efficient resource use and firm output in the state's industrial firms.

Paint manufacturing firms represent an important but understudied sub-sector within Nigerian manufacturing. These firms depend on a mix of imported resins, pigments, solvents, and locally sourced additives, making raw material planning and finished goods control particularly sensitive to inventory practices. Recent studies in related sectors have demonstrated that structured stock control, ordering systems, and classification techniques influence cost and productivity outcomes, suggesting that inventory management practices are likely to play a significant role in shaping organizational performance in paint manufacturing firms (Eze & Nwafor, 2021; Olisa & Chukwu, 2023). Similarly, in a related industrial context, Nwokedi, Williams and Ibekwe (2025) found that strategic planning significantly enhanced organizational productivity in brewing industries in South-East Nigeria, emphasizing that structured internal planning systems, of which inventory planning is a core component, strengthen operational outcomes in production-based firms. In a closely related study, Nwokedi, Mbah and Williams (2025) found that strategic planning significantly enhanced organizational efficiency in brewing industries in South-East Nigeria, further reinforcing the role of structured internal resource planning in driving efficiency within Nigerian manufacturing industries.

Historically, much of the Nigerian literature on inventory management has focused on retail, pharmaceuticals, and large-scale food and beverage industries in Lagos and the South-West, with far less attention on regional industrial clusters in the South-East. Where studies have been carried out in this region, such as in textiles and plastics manufacturing, findings consistently highlight the influence of ordering systems, storage practices, and classification techniques on cost and service outcomes, indicating a need to extend such investigations to paint manufacturing firms in Anambra State (Uzoma & Ofor, 2022; Nwosu, 2024).

In this study, inventory management practices, as they relate to organizational performance, are examined through three dimensions: Economic Order Quantity (EOQ) practices, which refer to the extent to which firms determine optimal order quantities that minimise total inventory costs; Just-In-Time (JIT) inventory practices, which capture the degree to which firms synchronise material supply with production and sales schedules to minimise idle stock; and ABC inventory analysis, which measures the extent to which firms classify and prioritise inventory items based on value and usage significance. These dimensions are examined in relation to cost reduction, operational efficiency, and customer satisfaction respectively, providing a focused framework for investigating how inventory management practices influence organizational performance in paint manufacturing firms in Anambra State, Nigeria (Fernandes & Bala, 2022; Adeyemi & Bello, 2023).

Statement of the Problem

Organizational performance remains one of the most critical concerns for manufacturing firms globally, and paint manufacturing firms in Nigeria are no exception. In Anambra State, these firms face unique challenges arising from fluctuating raw material prices, foreign exchange volatility, and inconsistent demand patterns, such that performance is increasingly undermined by weak inventory management practices, leading to higher operating costs, production delays, and dissatisfied customers.

One specific problem relates to poor Economic Order Quantity practices. Many paint firms order raw materials in quantities that are either too large, leading to excessive holding costs and capital being tied down in stock, or too small, resulting in frequent reordering and higher ordering costs. This inconsistency has made cost control difficult and has eroded profit margins in several firms. A second problem concerns weak Just-In-Time inventory practices. Many paint manufacturing firms in the state experience poor coordination between suppliers and production schedules, resulting in either idle raw materials awaiting use or production stoppages due to material unavailability. This deficiency not only raises operational costs but also disrupts production continuity, ultimately weakening operational efficiency. Third, ABC inventory analysis is often poorly applied or entirely absent in many paint firms in Anambra State. Without a clear classification of inventory items by value and usage significance, firms frequently misallocate attention and resources, giving equal priority to high-value and low-value items alike. Such an undifferentiated approach to stock control has created situations where fast-moving, high-demand products run out while low-priority items accumulate, undermining product availability and customer satisfaction.

The gap this study seeks to address is the lack of empirical evidence on how EOQ practices, JIT inventory practices, and ABC inventory analysis affect cost reduction, operational efficiency, and customer satisfaction in paint manufacturing firms in Anambra State, Nigeria. While inventory management and organizational performance have been examined in other sectors such as retail, pharmaceuticals, and

food processing, little attention has been given to the paint industry, particularly within this state. This study therefore provides sector-specific insights and practical recommendations to enhance organizational performance in the region.

Objectives of the Study

The broad objective of the study was to examine the relationship between inventory management practices and organizational performance of paint manufacturing firms in Anambra State, Nigeria. Specifically, the study sought to:

i. examine the relationship between Economic Order Quantity (EOQ) practices and cost reduction of paint manufacturing firms in Anambra State, Nigeria.
ii. ascertain the relationship between Just-In-Time (JIT) inventory practices and operational efficiency of paint manufacturing firms in Anambra State, Nigeria.
iii. determine the relationship between ABC inventory analysis and customer satisfaction of paint manufacturing firms in Anambra State, Nigeria.

Hypotheses

The following hypotheses were developed in null form:

H01: There is no significant relationship between EOQ practices and cost reduction of paint manufacturing firms in Anambra State, Nigeria.

H02: There is no significant relationship between JIT inventory practices and operational efficiency of paint manufacturing firms in Anambra State, Nigeria.

H03: There is no significant relationship between ABC inventory analysis and customer satisfaction of paint manufacturing firms in Anambra State, Nigeria.

LITERATURE REVIEW

Inventory Management Practices

Inventory management practices refer to the set of deliberate techniques and systems that organizations adopt to plan, order, store, and control raw materials, work-in-progress, and finished goods in order to meet production and customer demand at minimum cost (Fernandes & Bala, 2022). It encompasses decisions on when to order, how much to order, how to classify stock by importance, and how to coordinate supply with usage, distinguishing firms with efficient stock systems from those with reactive, poorly planned approaches (Wang, 2023). Inventory management practices have the potential to influence the cost structure and responsiveness of manufacturing firms, as they represent the combination of planning and control mechanisms that determine how effectively materials flow through the production process (Ibrahim & Danladi, 2022). Effective inventory management enables firms to avoid the twin risks of overstocking and stock-outs, thereby supporting both cost efficiency and service reliability.

Economic Order Quantity (EOQ)

Economic Order Quantity refers to the optimal order size that minimises the total costs of ordering and holding inventory, balancing the trade-off between the fixed cost of placing orders and the variable cost of storing stock (Harris, 1913, as revisited in contemporary inventory literature). It refers to the extent to which firms apply quantitative decision models to determine how much of an item to order at a time, rather than relying on intuition or ad-hoc judgment (Osei & Mensah, 2021). A firm that consistently applies EOQ principles is better positioned to minimise excess capital tied up in stock while avoiding the higher per-unit costs associated with frequent small orders, and it influences cost performance through more disciplined purchasing behaviour and reduced waste (Fernandes & Bala, 2022).

Cost Reduction

Cost reduction is widely defined as the deliberate and systematic effort by an organization to lower its operating expenses without compromising the quality of products or services delivered to customers. It is not limited to raw material savings but also includes reductions in holding costs, ordering costs, obsolescence losses, and wastage, signalling that resources are being efficiently deployed and thereby contributing to improved profitability and competitiveness (Adeyemi & Bello, 2023). Cost reduction achieved through inventory discipline strengthens working capital availability and reduces the firm's exposure to price volatility, mechanisms that explain why cost reduction is strongly associated with positive performance outcomes such as improved margins and sustained competitiveness (Okonkwo & Eze, 2021). Evidence also shows that cost savings achieved through structured ordering systems are more sustainable than ad-hoc cost-cutting measures, as the former addresses root causes rather than symptoms (Chen & Osei, 2021).

Just-In-Time (JIT) Inventory System

Just-In-Time inventory practice refers to a management philosophy in which materials, components, and finished goods are received or produced only as needed, in the exact quantities needed, and at the time they are needed, thereby minimising idle stock and associated holding costs (Wang, 2023). JIT itself presupposes close coordination between an organization and its suppliers, as materials must arrive precisely when production requires them, using tight scheduling and reliable supplier relationships to eliminate waste (Nnamdi & Uzor, 2021).

A well-implemented JIT system enhances responsiveness, reduces warehousing requirements, and fosters a culture of continuous improvement that directly improves operational efficiency and productivity, whereas poorly implemented JIT systems characterized by unreliable suppliers or weak coordination often result in production stoppages and reduced output (Chukwuemeka & Obi, 2022).

Operational Efficiency

Operational efficiency is broadly conceived as the ability of an organization to deliver its products or services using the minimum possible resources, time, and cost while maintaining desired quality standards, extending beyond simple measures of output to include process smoothness, machine uptime, and workforce productivity. Favourable inventory coordination creates a sense of production continuity and predictability, which enhances operational efficiency and reduces downtime, while poor coordination, including material shortages or excess handling, undermines productivity and increases waste (Ibrahim & Danladi, 2022). In manufacturing settings specifically, effective JIT practices enable firms to synchronise material flow with production schedules, while efficient inventory systems sustain output consistency and reduce production interruptions (Wang, 2023).

ABC Inventory Analysis

The way inventory items are prioritised in an organization forms part of its stock control system, known as ABC analysis. This classification technique groups inventory items into three categories, A, B, and C, based on their value and usage significance, with 'A' items receiving the tightest control due to their high value or criticality, while 'C' items receive more relaxed monitoring (Osei & Mensah, 2021). ABC analysis stands for allocating managerial attention and control resources in proportion to the significance of each inventory item, and its application involves periodic review, value-based ranking, and differentiated control policies for effective stock prioritisation (Uzoma & Ofor, 2022). Organizations that apply ABC analysis achieve better outcomes because they are able to concentrate limited resources on the

items that matter most to production continuity and customer demand, thereby reducing the likelihood of stock-outs on critical items (Olisa & Chukwu, 2023).

Customer Satisfaction

Customer satisfaction is a process where customers form judgments about the extent to which a firm's products and service delivery meet or exceed their expectations, particularly regarding product availability, consistency, and timeliness. It is recognized as a critical outcome of effective inventory and production management, as customers who consistently find desired products available and delivered on time are more likely to remain loyal and make repeat purchases (Nwosu, 2024). Customer satisfaction can be strengthened through multiple channels, including consistent stock availability, prompt order fulfilment, and product quality assurance, and effective inventory classification is critical to its achievement, as prioritising high-demand items reduces the frequency of stock-outs that frustrate customers (Adeyemi & Bello, 2023). Firms that maintain reliable stock availability for priority items demonstrate stronger customer retention, improved reputation, and faster order turnaround, while also reporting higher repeat patronage as customers perceive that the organization can consistently meet their needs.

Theoretical Framework

Economic Order Quantity Theory

The Economic Order Quantity Theory was propounded by Ford W. Harris (1913) and further developed in subsequent operations management literature. The theory holds that there exists an optimal order quantity at which the total cost of inventory, comprising ordering cost and holding cost, is minimised, and that deviating from this quantity in either direction increases total inventory cost. In the context of paint manufacturing firms, application of the EOQ model may be reflected in the determination of optimal raw material order sizes for resins, pigments, and packaging materials, thereby minimising the tension between excessive stockpiling and frequent, costly reordering. The theory provides a useful lens for understanding how EOQ practices shape cost reduction outcomes in manufacturing firms.

Theory of Constraints

The Theory of Constraints (TOC) was introduced by Eliyahu Goldratt (1984). Its central idea is that every production system has at least one constraint or bottleneck that limits its overall throughput, and that organizational performance can be improved by identifying, exploiting, and managing this constraint rather than optimising the system as a whole in isolation. In the organizational context, inventory-related bottlenecks, such as material shortages or excessive work-in-progress, directly limit production throughput and operational efficiency. TOC explains that firms are more likely to achieve operational efficiency when they synchronise material supply, exemplified by Just-In-Time practices, with the actual pace of production, thereby eliminating idle time and excess handling. In paint manufacturing firms, where production depends on the timely availability of multiple raw material inputs, managing material flow as a constraint-driven system can significantly enhance operational efficiency.

Resource-Based View

The Resource-Based View (RBV), developed by Barney (1991), explains how firms achieve and sustain competitive advantage through the possession and deployment of valuable, rare, inimitable, and non-substitutable resources and capabilities. Applied to inventory management, an organization's inventory classification system and its ability to consistently avail high-priority products to customers can be viewed as a valuable internal capability that differentiates it from competitors. In paint manufacturing firms, effective ABC inventory analysis strengthens the firm's capability to reliably

meet customer demand for priority products, thereby demonstrating how internally developed inventory control competencies contribute to superior customer satisfaction and, ultimately, organizational performance.

Empirical Review

Osei and Mensah (2021) examined the effect of Economic Order Quantity models on inventory cost among manufacturing firms in Ghana, establishing that firms that applied EOQ-based ordering decisions recorded significantly lower total inventory costs than firms relying on intuitive ordering, an effect that reinforces cost-reduction-oriented purchasing practices.

Chen and Osei (2021) used survey data to establish the relationship between structured inventory planning and cost performance among manufacturing SMEs, finding that firms with formal ordering systems achieved significantly lower operating costs, though firms with weak record-keeping struggled to sustain the cost benefits over time.

Wang (2023) investigated Just-In-Time practices and their impact on production efficiency in Asian manufacturing firms and found that effective JIT coordination significantly improved production throughput and reduced idle inventory, while poorly coordinated JIT systems were associated with production stoppages and reduced efficiency.

Chukwuemeka and Obi (2022) examined the effect of supplier coordination and JIT scheduling on manufacturing efficiency in Nigerian firms and found that closer supplier-firm coordination significantly enhanced operational efficiency, demonstrating that timely material availability is essential for continuity in production-based organizations such as paint manufacturing firms.

Olisa and Chukwu (2023) explored ABC inventory classification and stock availability among manufacturing firms in South-East Nigeria and found that firms applying ABC analysis, mediated by differentiated control policies, significantly reduced stock-outs on high-priority items, indicating that value-based classification creates the conditions necessary for reliable product availability.

Nwosu (2024) examined inventory prioritization strategies and customer satisfaction outcomes in Nigerian manufacturing firms and found that organizations applying structured stock classification achieved stronger customer satisfaction outcomes, as customers experienced fewer instances of unavailability for frequently demanded products.

In the Nigerian context, Williams and Okeke (2025) found that economic factors of corporate sustainability significantly influenced the performance of foam manufacturing firms, while Okeke, Akpamgbo, Dike and Williams (2025) found that workplace management practices significantly enhanced organizational productivity among aluminium manufacturing firms in Anambra State, Nigeria, through more coordinated internal systems. Similarly, Nwokedi, Williams and Ibekwe (2025) found that strategic planning significantly enhanced organizational productivity in brewing industries in South-East Nigeria, an industrial context comparable to paint manufacturing, while Nwokedi, Mbah and Williams (2025) found that strategic planning significantly enhanced organizational efficiency in brewing industries in South-East Nigeria, reinforcing the consistent link between structured internal planning systems, of which inventory management is a core component, and positive performance outcomes across Nigerian manufacturing industries.

METHODOLOGY

This study adopted a survey research design, which allowed the researcher to gather data from a reasonable number of respondents within a relatively short time and was appropriate for establishing the relationship between inventory management practices and organizational performance. The study was conducted in Anambra State, Nigeria. The population of the study consisted of 512 employees drawn from four (4) paint manufacturing firms in the state, selected based on registration with the Manufacturers Association of Nigeria (MAN), a minimum of 15 years in operation, and a minimum staff strength of 50.

The sample size was determined using Borg and Gall's (1973) formula, which recommends that for a population of this range, 15-20% of the population is adequate for survey research. Applying a 20% guideline to the population of 512 employees yielded a sample size of 102 respondents drawn proportionately from the selected firms. A stratified random sampling technique was employed, with the population stratified along the four firms and proportional allocation used to ensure that each firm was represented according to its workforce strength, while simple random sampling was used to select respondents within each firm.

The validity of the research instrument was ensured through content and construct validity, as the draft questionnaire was reviewed by three experts in management and operations research at Chukwuemeka Odumegwu Ojukwu University, whose feedback was incorporated before final administration. The reliability of the instrument was established through a pilot test conducted with 20 employees from two paint manufacturing firms outside the study sample, using the Cronbach Alpha reliability coefficient, which yielded a coefficient of 0.81, above the 0.70 benchmark recommended by Nunnally (1978), confirming that the instrument was reliable.

Primary data were collected using a structured questionnaire designed on a five-point Likert scale ranging from Strongly Agree (5) to Strongly Disagree (1), administered directly to respondents with the assistance of trained research assistants. Data collected were coded and analysed using the Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics such as frequency, percentages, and mean scores were used to summarize demographic information and responses, while the study hypotheses were tested using the Pearson Product Moment Correlation Coefficient (PPMC) at a 0.01 level of significance to determine the strength and direction of the relationships. Out of 102 copies of questionnaire administered, 93 copies representing 91.2% were correctly completed and found valid for analysis, while 9 copies representing 8.8% were invalid due to incomplete or inconsistent responses.

RESULTS AND DISCUSSION

Demographic Characteristics of Respondents

The demographic analysis revealed that 57.0% of the respondents are male, while 43.0% are female. Regarding marital status, 54.8% of respondents are married, 33.3% are single, and 11.9% are separated or divorced. In terms of educational qualification, 39.8% of respondents hold a B.Sc/HND degree, followed by OND/NCE holders (27.9%) and MSc/MBA holders (22.6%), while 9.7% hold a PhD or other advanced qualification. The age distribution shows that most respondents (36.6%) fall within the 31-40 years bracket, followed by those aged 20-30 years (28.0%) and 41-50 years (22.6%), indicating that the workforce is largely composed of individuals in their active and productive years. Respondents were also fairly distributed across the four sampled firms, with Firm A (27.9%), Firm B (25.8%), Firm C (24.7%), and Firm D (21.6%), ensuring comprehensive coverage

of paint manufacturing firms in Anambra State.

Hypothesis One: EOQ Practices and Cost Reduction

H_{01}: There is no significant relationship between EOQ practices and cost reduction of paint manufacturing firms in Anambra State, Nigeria.

Descriptive analysis showed that respondents generally agreed that EOQ practices are applied in their firms, with mean scores for EOQ items ranging from 3.86 to 3.93, while cost reduction items recorded mean scores ranging from 3.90 to 3.96, indicating that employees perceive structured ordering decisions as contributing to lower inventory-related costs.

Table 1: Pearson Correlation between EOQ Practices and Cost Reduction

Variables	**EOQ Practices / Cost Reduction**
EOQ Practices	1
Cost Reduction	0.634**
Sig. (2-tailed)	.000
N	93

*Source: SPSS Version 23 (2026). **Correlation is significant at the 0.01 level (2-tailed).*

Table 1 shows a Pearson correlation coefficient (r) of 0.634, indicating a strong positive and statistically significant relationship between EOQ practices and cost reduction ($p < 0.01$). This implies that firms which apply structured EOQ-based ordering decisions are more likely to achieve lower inventory and operating costs. Accordingly, the null hypothesis (H_{01}) is rejected. This finding is consistent with Osei and Mensah (2021), who found that EOQ-based ordering decisions significantly lowered total inventory costs among manufacturing firms, and with Chen and Osei (2021), who established that formal inventory planning significantly improved cost performance among manufacturing SMEs. Similarly, Williams and Okeke (2025) found that economic factors of corporate sustainability significantly influenced the performance of foam manufacturing firms, reinforcing that disciplined management of cost-related operational factors strengthens firm performance. These findings reinforce the present result, indicating that EOQ practices foster a culture of cost discipline among paint manufacturing firms in Anambra State, Nigeria.

Hypothesis Two: JIT Inventory Practices and Operational Efficiency

H_{02}: There is no significant relationship between JIT inventory practices and operational efficiency of paint manufacturing firms in Anambra State, Nigeria.

Descriptive analysis showed that JIT inventory items recorded mean scores ranging from 3.88 to 3.95, reflecting reasonably strong coordination between suppliers and production schedules, while operational efficiency items recorded mean scores ranging from 3.91 to 3.97, indicating that employees perceive production processes as fairly continuous and well-coordinated.

Table 2: Pearson Correlation between JIT Inventory Practices and Operational Efficiency

Variables	**JIT Inventory Practices / Operational Efficiency**
JIT Inventory Practices	1
Operational Efficiency	0.701**
Sig. (2-tailed)	.000
N	93

*Source: SPSS Version 23 (2026). **Correlation is significant at the 0.01 level (2-tailed).*

Table 2 reveals a Pearson correlation coefficient of 0.701, indicating a strong positive and statistically significant relationship between JIT inventory practices and operational efficiency ($p < 0.01$). This implies that improved coordination between material supply and production schedules enhances the operational efficiency of the organization. Consequently, the null hypothesis (H_{02}) is rejected. This finding aligns with Wang (2023), who found that effective JIT coordination significantly improved production throughput, and with Chukwuemeka and Obi (2022), who established that closer supplier-firm coordination significantly enhanced operational efficiency in Nigerian manufacturing firms. Similarly, Okeke, Akpamgbo, Dike and Williams (2025) found that workplace management practices significantly enhanced organizational productivity among aluminium manufacturing firms in Anambra State, while Nwokedi, Mbah and Williams (2025) found that strategic planning significantly enhanced organizational efficiency in brewing industries in South-East Nigeria. These findings reinforce the present study by showing that synchronised material flow contributes to more efficient production operations in paint manufacturing firms.

Hypothesis Three: ABC Inventory Analysis and Customer Satisfaction

H_{03}: There is no significant relationship between ABC inventory analysis and customer satisfaction of paint manufacturing firms in Anambra State, Nigeria.

Descriptive analysis showed that ABC inventory analysis items recorded mean scores ranging from 3.85 to 3.92, reflecting a moderately structured approach to stock classification and prioritisation, while customer satisfaction items recorded mean scores ranging from 3.89 to 3.95, indicating that customers generally experience satisfactory product availability and order fulfilment.

Table 3: Pearson Correlation between ABC Inventory Analysis and Customer Satisfaction

Variables	**ABC Inventory Analysis / Customer Satisfaction**
ABC Inventory Analysis	1
Customer Satisfaction	0.658**
Sig. (2-tailed)	.000
N	93

*Source: SPSS Version 23 (2026). **Correlation is significant at the 0.01 level (2-tailed).*

Table 3 shows a Pearson correlation coefficient of 0.658, indicating a strong positive and statistically significant relationship between ABC inventory analysis and customer satisfaction ($p < 0.01$). This suggests that firms which classify and prioritise inventory items by value and usage significance are more effective in maintaining product availability and meeting customer expectations. The null hypothesis (H_{03}) is therefore rejected. This finding is supported by Olisa and Chukwu (2023), who found that ABC inventory classification significantly reduced stock-outs on high-priority items, and by Nwosu (2024), who established that structured stock classification significantly strengthened customer satisfaction outcomes. In addition, Nwokedi, Williams and Ibekwe (2025) found that strategic planning significantly enhanced organizational productivity in brewing industries in South-East Nigeria, an industrial context comparable to paint manufacturing. These studies support the current finding, demonstrating that value-based inventory prioritisation facilitates reliable product availability and stronger customer satisfaction among paint manufacturing firms in Anambra State, Nigeria.

Summary of Findings

This study examined the relationships between EOQ practices, JIT inventory practices, ABC inventory analysis, and organizational performance, specifically cost reduction, operational efficiency, and customer satisfaction, in paint manufacturing firms in Anambra State, Nigeria. A sample of 93 employees was surveyed, and Pearson's Product Moment Correlation was used to test the hypotheses. The key findings are as follows:

(i) There is a strong positive and significant relationship between EOQ practices and cost reduction ($r = 0.634$, $p < 0.01$).
(ii) There is a strong positive and significant relationship between JIT inventory practices and operational efficiency ($r = 0.701$, $p < 0.01$).
(iii) There is a strong positive and significant relationship between ABC inventory analysis and customer satisfaction ($r = 0.658$, $p < 0.01$).

CONCLUSION

The study concludes that EOQ practices, JIT inventory practices, and ABC inventory analysis significantly contribute to cost reduction, operational efficiency, and customer satisfaction among paint manufacturing firms in Anambra State, Nigeria. EOQ practices enhance cost reduction by ensuring that ordering decisions minimise the combined burden of holding and ordering costs. JIT inventory practices improve operational efficiency by synchronising material supply with production schedules, thereby reducing idle time and production interruptions. ABC inventory analysis plays a critical role in facilitating customer satisfaction, as it enables firms to concentrate control efforts on high-priority items and maintain reliable product availability. The study therefore concludes that structured inventory management, characterized by disciplined ordering, synchronised supply, and value-based classification, is essential for enhancing organizational performance, cost competitiveness, and long-term sustainability. The findings reinforce the Economic Order Quantity Theory, the Theory of Constraints, and the Resource-Based View by demonstrating that disciplined ordering decisions, constraint-focused material coordination, and internally developed inventory classification capabilities constitute valuable organizational resources that enhance cost reduction, operational efficiency, and customer satisfaction, thereby contributing to sustainable organizational performance in paint manufacturing firms. Based on the findings of this study, the following recommendations are made:

i. Management of paint manufacturing firms should institutionalize EOQ-based ordering systems, supported by periodic cost reviews, to minimise ordering and holding costs and sustain cost competitiveness.
ii. Organizations should strengthen Just-In-Time scheduling and supplier coordination mechanisms, including supplier performance monitoring and reliable communication channels, to improve operational efficiency and reduce production interruptions.
iii. Firms should adopt and consistently apply ABC inventory analysis to classify stock items by value and usage significance, thereby prioritising control efforts on high-demand items to sustain product availability and enhance customer satisfaction.

Contribution to Knowledge

This study contributes to knowledge in the following ways. Empirically, the study provides statistical evidence on how EOQ practices, JIT inventory practices, and ABC inventory analysis influence cost reduction, operational efficiency, and customer satisfaction in paint manufacturing firms, extending existing literature by demonstrating that these inventory management dimensions are closely associated with better organizational outcomes. Geographically, the study contributes by focusing on paint manufacturing firms in Anambra State, Nigeria, a context that has received limited empirical attention, providing location-specific insights relevant to industrial and operations management studies within the Nigerian manufacturing sector. Theoretically, the study confirms the relevance of the Economic Order Quantity Theory, the Theory of Constraints, and the Resource-Based View in explaining organizational outcomes, showing that disciplined inventory practices characterized by structured ordering, synchronised supply, and value-based classification motivate firms to achieve improved cost reduction, operational efficiency, and customer satisfaction outcomes, thereby strengthening existing theoretical understanding of how inventory-related resources influence firm performance within manufacturing firms.

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