The Effect of Supply Chain Management on Customer Satisfaction in the Nigerian Food and Drink Manufacturing Sector

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Abstract

Effective supply chain management (SCM) serves as a key component of food and beverage production because it ensures the timely transportation of products from suppliers to customers which directly affects customer satisfaction. The industrial sector in Nigeria faces multiple obstacles including regulatory barriers and market fluctuations along with poor infrastructure which makes effective supply chain management essential for maintaining customer loyalty and achieving competitive advantage. This research examines how SCM procedures impact client satisfaction within Nigeria's food and beverage production industry. This research provides practical recommendations to improve SCM so it better serves customer requirements while enhancing organisational performance. The approach enhances SCM effectiveness through key operational areas including supplier integration, customer relationship management, inventory management and technology use.

The study implemented a quantitative research framework to gather data from 50 industry personnel throughout Nigeria through structured questionnaires. The research enabled systematic analysis of SCM component correlations with customer satisfaction assessment methods while identifying areas requiring improvement. The study results demonstrate SCM practices operate at moderate efficiency but certain practices remain underutilized resulting in inadequate customer satisfaction. The study makes recommendations for how Nigerian manufacturers can better improve supply chain performance and customer satisfaction index from its current average of 4.06 by managing supplier relationships, customer relationships and technology management.

Keywords: Supply Chain Management; Customer Satisfaction; Food and Drink; Manufacturing; Nigeria.

1. Introduction

SCM serves a critical function in manufacturing operations because it provides operational support for managing the movement of goods from raw material suppliers to end consumers (Lu and Swaminathan, 2019). SCM techniques play a major role in elevating consumer satisfaction within Nigeria's food and drink manufacturing market while also boosting the profitability and competitiveness of the industry companies (Adebiyi et al., 2021). The economic size of Nigeria as the continent's leading economy and its global market influence make it an exceptional case for examining SCM impacts on consumer interactions (Oyedijo et al., 2021). The large manufacturing sector in Nigeria drives the nation's economic growth to depend on SCM performance (Kenneth et al., 2023).

The manufacturing sector holds substantial significance in Nigeria's economic structure yet struggles with SCM challenges that influence consumer satisfaction levels. Regulatory obstacles along with market instability and deficient infrastructure including inadequate road systems and unreliable power supplies disrupt supply chain operations and reduce their effectiveness (Kenneth et al., 2023). Nigerian manufacturers experience both opportunities and challenges through technological advancement and global supply chain integration. Technology holds the potential to improve SCM efficiency and optimize procedures but many organizations face difficulties in implementation due to insufficient funding and technical expertise alongside inadequate infrastructure. This research seeks to address the current research deficiency regarding how particular SCM strategies affect consumer satisfaction within Nigeria's distinct industrial and economic framework.

This research will advance the current understanding of supply chain management through an in-depth examination of how SCM techniques affect customer satisfaction levels within Nigeria's manufacturing industry. The study aims to identify the important factors that shape SCM in Nigeria as well as pinpoint the obstacles and prospects Nigerian manufacturers face during their operational processes. Through examining technological advancements and their implementation in SCM processes new possibilities may emerge for improving customer happiness and supply chain operations. The findings will benefit Nigerian practitioners and policymakers while enhancing the SCM

literature for emerging economies through a replicable research methodology. This study investigates how SCM affects customer satisfaction within Nigeria's food and drink manufacturing sector.

2. Literature Review

2.1 SCM in the Food and Drinks Sector in Nigeria

The food and beverage production sector represents a major component of the global economy as it supplies fundamental necessities to consumers. This industry spans various operations including packaging agricultural produce and distributing food products while transforming raw materials into finished food products. It gains importance because it strengthens employment opportunities and promotes economic development while ensuring food security (Marsh and Bugusu, 2007). The food and beverage sector in Nigeria functions as a manufacturing subsector that contributes significantly to GDP and maintains the living standards of millions of individuals (Akpan et al., 2015). Implementing agile supply chain techniques is essential to minimize waste while guaranteeing product availability during peak seasons and market trend shifts. The food and beverage industry struggles to sustain SCM because regulatory requirements for labelling and food safety create significant challenges according to Christopher and Towill (2017).

2.2 Review of related theories

The Supply Chain Operations Reference (SCOR) Model serves as an essential tool for improving supply chain performance while holding special significance for Nigeria's FMCG sector (Huan et al., 2014; van Engelenhoven et al., 2022). The Plan, Source, Make, Deliver, and Return activities form the core of the model which enables systematic management of operations while aligning them with company corporate objectives (Santos and Leite, 2018). Enhanced delivery processes lead to reduced lead times while also improving customer satisfaction through dependable order delivery and resolving infrastructure shortcomings. (Madhani, 2020). The SCOR model implementation process (Fig. 1) demands substantial financial resources and modifications to local infrastructure constraints necessitating a gradual and context-specific application. The adoption of the SCOR model needs substantial financial resources and local infrastructure adjustments which demands a gradual and context-specific approach (Govindan et al., 2022).



Fig. 1. SCOR model

Lean SCM was developed from the Toyota Production System and focuses on waste elimination to increase customer value while removing unnecessary activities and improving information and material flow efficiency (Pakdil et al., 2019). In the Nigerian food and beverage manufacturing sector Lean SCM principles provide effective solutions to high operating costs and inventory management problems while addressing operational inefficiencies (Nwanya and Oko, 2019).

Agile SCM plays an important role in managing market instability within industries that require rapid product differentiation and have brief product life spans by focusing on sectors like Nigerian food and beverage manufacturing. Business agility remains a fundamental element of SCM since it enables companies to quickly adjust to supply and demand fluctuations. Organizations that implement Agile SCM need to allocate substantial resources

to develop infrastructure and technology systems that enable rapid reconfiguration and instantaneous data sharing (Swafford et al., 2006).

The SERVQUAL model evaluates service quality by contrasting customers' perceived quality with their preconceived expectations. Five aspects of service quality are identified by the model: The five dimensions of this model encompass Assurance, Empathy, Responsiveness, Reliability and Tangibles. The characteristics of service quality evaluation enable the assessment of SCM performance regarding supply chain interactions and customer impact. The research pursues its objective by utilizing multiple SCM theories and customer satisfaction models to develop a complete understanding of how effective SCM methods could improve customer satisfaction within the Nigerian food and drink manufacturing sector. By implementing these models supply chain operations become synchronized with customer expectations and occasionally surpass them.

2.3 Review of Studies

Alahmad's (2021) research demonstrates that supply chain management practices including information sharing and supply chain planning along with customer and supplier relationship management correlate positively with supply chain performance. The study demonstrates that SC performance maintains a positive relationship with FFP based on perceptual performance variables including sales, revenues, and return on investment. The research depends primarily on perceptual performance measures that could result in subjective outcomes but also deliver valuable insights into how integrated SCMPs can enhance SC performance alongside financial returns. The analysis of SCMP benefits should be strengthened with real financial data as this would provide solid evidence. The research's concentration on Saudi Arabia's unique cultural and economic environment challenges the applicability of its findings to other nations and economic sectors.

Adebiyi et al. (2021) found that implementing strategic partnerships and customer relationship management (CRM) methods leads to better customer satisfaction and improved overall business performance. The limited effect of information sharing on production output suggests these companies may experience inefficiencies during information utilization and distribution. Collaborative practices generate innovation through the positive outcomes of participatory design and engineering processes. Prior research from various geographical areas reinforces these findings as demonstrated in studies by Al Jaghoub et al., 2024; Aseer et al., 2024; and Gernal et al., 2024. Research by Gilani and Faccia (2022) as well as Gilani et al. (2023b) demonstrate the necessity of dependable infrastructure to support innovation-based collaborations. Gilani et al. (2023b) demonstrate how dependable infrastructure is critical to enabling collaborations that drive innovation. The literature has highlighted key findings by finding practices like information sharing along with supply chain planning and CRM leading to improved supply chain performance and financial returns across various cultural and economic contexts including Saudi Arabia and Nigeria. Through internal organizational integration companies can strengthen their external supply chain partnerships which leads to better customer satisfaction and improved financial performance based on evidence from Chinese manufacturing firms. The research reveals shared limitations such as dependence on selfreported information that creates bias and difficulties in applying results to various regions and industrial sectors.

Research shows that supply chain management methods in developing countries such as Nigeria remain understudied compared to extensive research on developed nations. Research has not yet explored the unique difficulties as well as potential benefits within Nigeria's food and beverage manufacturing sector through empirical studies. The proposed research seeks to address these identified gaps by exploring how SCM practices affect customer satisfaction within Nigeria's food and drink manufacturing industry. The research will deliver actionable steps to enhance SCM procedures and customer satisfaction in Nigeria and comparable markets while revealing quantitative insights into distinct SCM challenges and opportunities in this area.

3. Methodology

The SCOR model established the theoretical foundation of this study by combining business processes with performance metrics and essential skills into a unified structure which allows for a rigorous analysis of SCM practices and their performance impacts. The SCOR model was enhanced through the integration of customer satisfaction frameworks such as SERVQUAL to evaluate the effects of SCM practices on customer satisfaction. This research uses SERVQUAL's metrics on reliability, assurance, tangibles, empathy, and responsiveness to connect operational data with customer expectations for the Nigerian food and drink manufacturing sector through a theoretically robust and practically applicable analysis.

Data was gathered through questionnaires from a 50-participant sample size in Nigeria between August 1st and August 31st, 2024. Online surveys created with Google Forms reached both manufacturing professionals and consumers across Nigeria to gather data. The questionnaires used closed-ended questions to measure variables that connect SCM practices with customer satisfaction. The research team analyzed the quantitative data from questionnaires by applying descriptive statistics together with correlation analysis and regression analysis to examine how SCM practices connect to customer satisfaction. Participants' anonymity and consent as well as the confidentiality of the data was informed by the Ulster University research guidelines and the Data Protection Act 2018 (UK Government, 2018; Ulster University, 2025).

4. Findings

Table 1 demonstrates moderate effectiveness of SCM practices while supplier performance monitoring (2.86) and continuous investment in new technologies (2.76) score lower which identifies potential improvement areas. Although Customer Relationship Management practices perform better than other areas, they still require improvements in supplier collaboration, customer engagement, and technological integration.

| Question | Average Score (1-5) |
|---|---------------------|
| Supplier Integration | |
| Strong relationships with suppliers | 3.02 |
| Collaboration with suppliers | 3.1 |
| Supplier performance monitoring | 2.86 |
| Customer Relationship Manager (CRM) | |
| Strong communication with customers | 3.12 |
| Regular customer feedback | 2.98 |
| Prompt response to customer complaints | 3.14 |
| Inventory Management | |
| Effective Inventory Management | 3.04 |
| Monitoring inventory turnover rates | 3.2 |
| Use of advanced inventory management tools | 3.06 |
| Technology utilisation | |
| Use of technology for supply chain management | 2.88 |
| Technology has improved supply chain efficiency | 3.04 |
| Continuous investment in new technologies | 2.76 |

| Table 1. Responses from Respondents for SCIVI Fractices | Table 1. Res | sponses from | Respondents | for SCM | Practices |
|--|--------------|--------------|-------------|---------|-----------|
|--|--------------|--------------|-------------|---------|-----------|

Respondents report high levels of customer satisfaction in Table 1 with specific emphasis on product quality (4.14) and service reliability (4.04) which demonstrates excellent performance in these aspects. Delivery timeliness received a low score of 3.5 which demonstrates a need to improve delivery schedules to boost overall customer satisfaction in SCM practices (see Table 2).

| Question | Average Score (1-5) |
|--|---------------------|
| Product quality satisfaction | 4.14 |
| Delivery timeliness satisfaction | 3.5 |
| Service reliability satisfaction | 4.04 |
| Overall customer satisfaction with SCM practices | 4.06 |

Table 2. Responses (Average Scores) for Customer Satisfaction

As shown in Table 2, responses to the open-ended question are summarised into common themes:

- Need for Improved Supplier Collaboration: Several respondents suggested that enhancing supplier collaboration could further improve product quality.
- **Technology Integration:** Respondents emphasized the importance of adopting the latest technology to streamline SCM practices.

• **Customer Feedback:** Some respondents highlighted the need for more frequent customer feedback collection to continuously improve services.

The categorical frequency is in Table 3.

| | Gender distribution | Age | Experience | Job role |
|--------------------------|---------------------|--------------|--------------|--------------|
| | | distribution | distribution | distribution |
| | | | 18% | |
| | | | 28% | |
| | | | 18% | |
| | | 26% | | |
| | | 32% | | |
| | | 34% | | |
| | | 8% | | |
| | | | 36% | |
| | | | | 20% |
| Female | 32% | | | |
| Male | 68% | | | |
| Operation manager | | | | 40% |
| Other | | | | 10% |
| Supply chain | | | | 30% |
| manager | | | | |

Table 3. Categorical Frequency Table

The analysis demonstrates how various SCM practices influence customer satisfaction levels. The findings indicate positive customer satisfaction outcomes are linked to Supplier Collaboration and Technology Investment while negative outcomes stem from Supplier Relationships and CRM Communication practices. The strength of the correlations between SCM practices and customer satisfaction remains low which implies that no individual SCM practice demonstrates a strong direct correlation with customer satisfaction.

The coefficients demonstrate that Technology Investment positively influences customer satisfaction with both statistical significance and direction strength. Within this model, the other SCM practices display non-significant p-values which indicates they fail to independently predict customer satisfaction in a statistical context. Figure 2 demonstrates the comparison between predicted customer satisfaction and actual customer satisfaction results.



Fig. 2. The predicted versus actual customer satisfaction

Fig. 2 shows the alignment between the regression model's predicted overall customer satisfaction and the actual recorded values. A red dashed line illustrates the perfect alignment between predicted values and actual values. The scatter points illustrate the degree of alignment between model predictions and the actual satisfaction scores.

5. Discussion

The study showed that 64% of participants were male while the most common age bracket was 31-40 years at 40%, with the next largest group being 41-50 years at 28%. The survey found that 34% of participants possessed between 11 to 15 years of professional experience while Operations Managers made up 40% of respondents. The demographic profile demonstrates that experienced strategic professionals make up the majority of respondents thereby supporting the credibility of the study findings. The survey's focus on experienced professionals in strategic roles creates a limitation because the views of young professionals and employees in non-strategic positions may have been insufficiently represented, which could have yielded different insights into SCM practices.

The evaluation of SCM practices demonstrated moderate supplier integration scores of 3.02 for strong supplier relationships and 3.1 for supplier collaboration while supplier performance monitoring scored lower at 2.86. The data indicates that supplier integration exists but falls short of its full potential, especially regarding the supervision of supplier performance. Supplier relationships face additional complexity in Nigeria because of infrastructural deficiencies and inconsistent regulatory environments. The supplier performance monitoring score of 2.86 highlights substantial room for improvement while supporting existing research that shows strong supplier performance management is essential for supply chain efficiency (Simchi-Levi et al., 2008).

Technology utilization received moderate scores with 2.88 for technology use in SCM and 3.04 for perceived technology improvement of supply chain efficiency while continuous technology investment scored 2.76. The low continuous investment in technology score of 2.76 raises concerns because it indicates that companies may not be maximizing technological progress to enhance supply chain operations. Prajogo and Olhager (2012) established technology as a decisive factor in supply chain performance and this current finding fully supports their analysis. The observed positive relationship between technology investment and customer satisfaction (r = 0.27) highlights why bridging this investment gap remains crucial. Increased technology investment leads to greater customer satisfaction with SCM practices as shown by a score of 4.06 despite their moderate effectiveness. The delivery timeliness rated at 3.5 signals an urgent need for improvement in this area. Literature findings support this data because they show that dependable and punctual delivery services are essential for sustaining high levels of customer satisfaction.

The regression analysis demonstrates that SCM practices account for 20.6% of the variance in overall customer satisfaction as shown by an R-squared value of 0.206. The statistical analysis revealed that technology investment functions as a significant predictor (p = 0.031) whereas supplier relationships and CRM practices demonstrated no significant impact on customer satisfaction. Technology proves to be a key factor in achieving customer satisfaction but other supply chain management practices may not be fully utilized because of unique challenges within the Nigerian environment. The current SCM practices in Nigeria's food and drink manufacturing sector demonstrate moderate effectiveness yet require substantial improvements in areas such as supplier performance monitoring and continuous investment in technologies along with CRM practices. Firms can enhance their overall performance by focusing their efforts on the critical customer satisfaction improvements that result from technology investments. The research findings present important enhancements to the existing literature by identifying distinct difficulties and potential advantages within emerging markets and explaining how supply chain management practices can be refined to fulfil Nigerian customer expectations.

6. Conclusion

The study confirmed that effective SCM practices, particularly supplier integration and CRM, are crucial determinants of customer satisfaction. These findings align with and extend the existing literature by providing empirical evidence from an emerging market, filling a critical gap identified in previous studies.

6.1 Research Implications

The study results show that Nigerian policymakers must develop supportive systems to enable successful supply chain management operations in the food and beverage manufacturing industry. The available data shows that

policymakers need to focus on promoting investments in advanced technological solutions like real-time tracking systems, automation technology and digital communication tools because they reliably improve supply chain operations as well as customer satisfaction levels.

The research results can guide business owners and managers by pinpointing essential SCM practices that have a direct impact on customer satisfaction. Research indicates that supplier partnership improvements must be prioritized because they maintain product standards and delivery punctuality which directly contribute to customer happiness. Advanced technologies like digital inventory management tools and automated tracking systems enhance operational efficiency by offering real-time supply chain visibility and minimizing delays.

6.2 Recommendations

To further enhance SCM practices in food and drink manufacturing, the authors recommend the adoption of innovative technologies in everyday operations which is supported by previous studies highlighting the positive impact of innovative technologies on business operations and growth (Krupicka et al., 2024; Gilani et al., 2024a; Moussa et al., 2024). To better support the generation of innovative ideas to improve efficiency, various studies have identified increased innovation through strategic partnerships between businesses from different industries which has been reflected in partnerships between education and industrial institutions (Yasin and Gilani, 2022; Yasin et al., 2023). However, it should be noted that the adoption of innovation and partnerships can only be possible with the right vision and leadership in the organisation which has been demonstrated in previous studies where appropriate leadership styles have allowed businesses to survive and thrive during challenging periods, eg challenging periods could have been brought on by the COVID-19 pandemic or the social exclusion caused by organisations' rurality (Gilani et al., 2022; Gilani et al., 2023a; Sulthan et al., 2022).

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