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Logistics Management Practices and Customer Patronage of Rice Distributors in South-East Nigeria

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ABSTRACT:
The paper determined the relationship between logistics management and customer patronage among rice distributors in South-East Nigeria. The study adopted purposive and multi-stage sampling methods in selecting 288 rice distributors. Descriptive statistics and correlation analysis were used to analyze the data collected. The findings revealed that logistic management practices are significant in determining the present and future inventory requirements to avoid overstocking or understocking. Further, it revealed significant increases in customer purchases. The result of the correlation analysis revealed a weak significant relationship between logistics management and customer patronage (r = 0.111). Thus, it was concluded that logistics management practices significantly impact customer patronage of rice distributors. The implication is that logistics management improves sales and customer attrition, thereby contributing to competitive advantage. Specifically, rice distributors in South-East Nigeria should prioritize investments in logistics infrastructure and technology to improve the efficiency and reliability of operations. This may include implementing and upgrading inventory management systems and optimizing warehouse layouts. Therefore, it is recommended that marketing management practices, especially logistics management approaches, should be effectively integrated into the operations of the ventures to impact customer patronage positively.

KEYWORDS: *Customer patronage, logistics, distribution, management, Nigeria*

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INTRODUCTION

Globalization is propelling firms to be more careful about customer satisfaction and profit maximization. Technological innovations and advancements are transforming the business landscape (Oloveze *et al.,* 2023). This has provided various tools for companies to utilize in the market to affect their customer loyalty and profit. For instance, Okezie *et al.* (2016) revealed the connection and important role of technological approaches in supply chain management in impacting performance. For instance, Karibo (2017) asserted that managers are now applying effective and efficient logistics management as a key tool that builds cost and service advantages for firms.

The responsibility of logistics management is to carry products (raw materials, work in progress, and finished product inventories) from supply sources to demand destinations, meeting demand on time and providing efficient service delivery to improve organizational performance (Banon & Sanchez, 2012). This means that any manufacturing firm's success in Nigeria points to the ever-growing awareness that the firm is enhanced through the even distribution of goods and services, from the point of production to the final consumer (Adedeji, 2015).

Logistics management is a subset of supply chain management which is involved in planning, executing, and controlling the seamless and timely flow as well as storage of products, services, and relevant

information from source or origin to the place of consumption to satisfy the requirements of customers (Amin & Shahwan, 2020). As a vital component of supply chain management, manufacturing companies apply various logistics management strategies to optimize organizational performance.

Logistics management refers to the plans and actions that determine and oversee a company's product line (Chalotra, 2013; Ogah *et al*., 2022). To meet customer expectations, it is also connected to inventory identification, procurement, planning, storage, packaging, and transportation (Karim *et al.,* 2018). Furthermore, logistics management improves inner controls to ensure a high-quality catalog while offering clients worth (Karim *et al*., 2018; Sitienei & Memba, 2015). It essentially lowers logistic waste, scarcities, theft, and production expenses while maintaining sales progress, client satisfaction, competitiveness, and business survival. Manufacturing companies can reduce risk by hedging against variations caused by main risk factors such as economic downturns, financial crises, market fluctuations, extreme weather phenomena, and changes in demand with proper logistics management. It also acts as a buffer, allowing for processing uncertainties and variances (Brandt *et al*., 2022; Sitienei & Memba, 2015). It also balances between too little and too many logistics, ensuring inventory levels are always at their best (Ogah *et al*., 2022). It determines present and future inventory requirements to avoid overstocking or understocking. Lysons and Farrighton (2012) stated that effective inventory management guarantees visibility at supply networks' upstream and downstream nodes.

On the other hand, poorly managed logistics may lock up almost 70% of a company's assets, impacting its operational and overall performance (Karim *et al*., 2018; Kontus, 2014). It could also open large gaps in internal controls, exposing manufacturing organizations to financial risks, such as theft and fraud schemes (Zakaria *et al.,* 2016), production and delivery delays, numerous faulty products, and wasteful product shortages (Jacobs *et al.*, 2014; Ogah *et al*., 2022; Orobia *et al.*, 2020). It could also put these companies at risk of logistical losses (expirations, pollution, theft, and damage), lack of competitive advantage, inefficient storage methods, frequent material waste, product shortages, high customer dissatisfaction, poor product quality, a lack of flexibility, and employee dissatisfaction. As a result, the study relied on the theory of limitations and strategic decision theory to correctly understand logistics management. Manufacturing enterprises, for example, are primarily susceptible to logistic limitations from theft, expirations, shortages, and extended lead periods, which could impede their whole system, according to the idea of constraints (Gupta &Boyd, 2008; Puche *et al.*, 2019). Only by implementing applicable inventory management strategies can manufacturing organizations overcome inventory restrictions while enhancing performance levels (Deressa, 2022; Flynn *et al.*, 2010).

These facts also show that logistics management strategies can never be successful, which aim to balance supply and demand by regulating and tracking manufacturing and purchasing orders to guarantee continuous material flow and value-adding activities (Opoku *et al*., 2020). The most popular logistics management techniques include economic order quantity (EOQ), just-in-time (JIT) replenishment, vendor-managed inventory (VMI), strategic supplier relationships, material replenishment planning (MRP), and Pareto analysis (Chalotra, 2013; Sitienei & Memba, 2015). These tactics have been shown to lower production costs while improving operational performance across various metrics, including product quality, operating speed, flexibility, and dependability.

The rice distribution sector plays a crucial role in the food supply chain in South-east Nigeria. Studies have been carried out in the rice segment, such as those of Oloveze et al. (2021), mediating the effect of cost in managing rice millers' safety for service quality. However, there is a dearth of literature on logistics management practices in the rice segment. This is significant because of the important nature of rice as a staple food and its consumption by seemingly all classes of Nigerians. Thus, efficient logistics management is essential for ensuring the timely and cost-effective delivery of rice products to customers. In this context, little research has been conducted to investigate the relationship between logistics management practices and customer patronage. This paper seeks to address this gap by examining how logistics management influences customer satisfaction and patronage within the rice distribution sector in South-east Nigeria. Therefore, the null hypothesis:

H0$_1$: There is no significant relationship between logistics management and customer patronage of rice distributors in South-East Nigeria.

The Concept of Logistics Management

Logistic management is an offshoot of supply chain management, particularly in planning, executing, and controlling inventory and information flow from source points to consumption points (Amin & Shahwan, 2020). The concept is about plans and actions undertaken to oversee a company's product line (Ogah *et al.,* 2022). Further, logistics management connects with inventory identification, procurement, planning, storage, packaging, and transportation (Karim *et al.,* 2018). The economic growth of national and global operations increases the need for logistics services, primarily transport services, which are increasingly

critical to business and operational performance (Omoush, 2022). Hence, globalization has a profound and powerful impact on all countries, changing how businesses operate and expanding the transport and logistics market (Adelwini *et al*., 2023). Logistics management practices are described as a group of activities carried out by the company to facilitate auspicious logistics management (Omoush, 2022). In today's competitive environment, logistics management practices encourage effective and timely responses to ever-changing customer tastes and preferences, which have become essential for successful marketing performance (Nthiwa & Wanjiru, 2018). The components are important for firm design and strategy and useful in enhancing business and marketing performance (Pakurar *et al*., 2020). Hoang and Son (2019) argue that logistics is the movement of resources to fulfill the requirements of consumers or businesses between the place of origin and the destination of consumption. Bihter and Ali (2015) show that logistics expect the right product to be delivered in the best possible quality and right quantity at the right location and time, for the right customer, and at the right price. Ali *et al*. (2016) maintained that managing logistics activities involved fundamental practices and support practices. Customer service, inventory management, transportation, and information flow are fundamental, whereas the complementary practices supporting the core practices encompass warehousing, packaging, and order and information processing.

Some of these variables are used as dimensions of logistics management practices, which are further discussed.

Warehouse Management: A warehouse can be considered a spinal cord of small and medium enterprises, including manufacturing organizations, that carry out various logistics activities. An ideal manufacturing organization can be measured by its efficacy in warehousing decisions (Gueta, 2021). A warehouse should be located near a point of consumption. It should be able to store sufficient products in case of unforeseen product demand (Zunaira *et al*., 2021). According to Omoush (2022), warehousing comprises the planning of space arrangement of stocks and the setting and positioning of stocks. Furthermore, Mukolwe and Wanyoike (2015) argued that factors such as warehouse location, size, layout, and design play a crucial role in the logistics activities of small and medium-scale enterprises in Calabar – Nigeria.

Muslimini *et al.* (2015) argued that warehousing activities include large-scale product storage in a structured and organized fashion, allowing them to be conveniently accessible where appropriate. Logistics enhance small and medium-scale enterprises by supporting the right product at the right volume based on the correct selection and dispatch of the warehousing. The warehouses serve as an entry and storage place for raw materials and component items while assisting in manufacturing operations (Edo, 2021). Warehouse management is influential in determining logistics performance because the operation of those two components is interrelated. Proper warehouse management will improve the flow of materials, provide a strong backbone for increased inventory, and indirectly lower shipping costs (Petelina, 2016).

Inventory management: Proper inventory management ensures a seamless supply of products and reduces storage costs (Petelina, 2016). Logistics ensure that neither excess products are in inventory deficit (Mogaka & Arani, 2020). Haphazardly managed inventory will lower the profits of manufacturing firms and may even lead to stock pilferage (Mwangangi, 2016). According to Omoush (2022), inventory stores any material or item a company uses. The inventory management system refers to a collection of policies and procedures that regulate stock levels and decide how stocks must be retained and the order size to replenish the shortage (Wasike & Juma, 2020). In the assertion of Mpuon *et al*. (2022) and Omoush (2022), inventory management or inventory planning and control pertain to the continuous provision of standard items with independent demand, where specific speculative quantities should always be. Ajoke *et al*. (2019) argued that companies keep such inventories for different purposes, which include safety from general deficiencies or possible supplier issues or because fluctuations in unit prices are likely inevitable. Mpuon (2018a, 2018b) and Edo (2021) maintained that inventories allow businesses to deliver provisions without costly delays for the recipients.

Omoush (2022) maintained that there are two inventory management methods. The first is the just-in-time approach, where companies prepare to obtain goods as required instead of retaining high inventory levels. The second is preparing materials needs, which involves arranging materials delivery based on demand productions. Efficient inventory management necessitates a company's ability to pursue stocking and use optimized inventory valuation methods to avert under or overstating profits (Nthiwa &Wanjiru, 2018). Chow *et al*. (2014) found that the use of different approaches to inventory management will assist companies in enhancing their performance.

Transportation: Transportation is the most important aspect of logistics activities in manufacturing organizations (Balou, 2017). The physical movement of finished products is pivotal as unless products do not reach the target customers, the demand or customer satisfaction cannot be fulfilled (Kalkan, 2018). Transportation ensures the delivery of products from the point of origin to the point of consumption (Adelwini *et al*., 2023). Pakurar *et al*. (2020) declared that the timely availability of products is of prime importance as only then can the reason for manufacturing a product be attained. In essence, a company's

transport and logistics system can be formed through the processes involved in managing transportation services (Honay & Son,2019; Omoush, 2022). Therefore, transportation plays a vital role in logistics and, as such, can represent an important aspect of logistics management. Bihter and Ali (2015) noted that the forecasting and planning of cargo flows, as well as the distribution of resources, significantly impact the efficiency of these processes (Ali *et al*., 2016).

According to Gudeta (2021), transportation can be described as the practice of transporting materials or persons from a location to a designated place. Transport plays a significant part in the success, as the entire system will not be capable of functioning to its full capacity without the effective transportation of final goods and raw materials (Zunaira *et al*., 2021). According to Mukolwe and Wanyoike (2015), transportation can be described as the practice of transporting materials or persons from a location to a designated place. Muslimin *et al*. (2015) asserted that transportation management involves activities that, if dealt with correctly, are considered the most successful and realistic in helping organizations attain their transportation objectives, particularly concerning cost savings, timelines, transport-associated optimization, and resource maximization.

According to Mogaka and Arani (2020), a transportation and logistics system is formed by managing transportation services. Mwangangi (2016) noted that forecasting and planning of cargo flows, as well as the distribution of resources, significantly impact the efficiency of these processes management. Similarly, for Wiasike and Juma (2020), transportation is one of the six key logistics activities that drive total logistics costs along with customer service (including parts, service support, and returns goods handling), inventory management (including packaging and reverse logistics), warehousing and storage, materials handling and procurement and order processing (including information management and demand forecasting). Consequently, the position of these authors on transportation is about the facilitative role of transportation in logistics management. Whether it helps in moving goods from one destination to another or serves as a means of facilitating efficiency in the distribution network, the fundamental aspect from the position of these authors is that transportation is an essential component in achieving efficiency in logistics management.

Order processing: Order processing refers to handling voluminous products to make them reach the desired destination (Mpuon *et al*., 2021). Order processing operations or facilities are generally known as distribution centers (Mpuon *et al*., 2022). According to Omoush (2022), order processing comprises verifying the order received and checking whether the facility has the required goods. At the individual level, order processing includes crating, filling, distributing, and fulfilling the requests and orders of the customers (Nthiwa &Wanjiru, 2018; Chow *et al*., 1994).

Omoush (2022) argued that in logistics, order processing management aims to ensure that every machine and workspace receives the right product in a suitable quantity and quality at the right time. Customer response and capital efficiency can only be accomplished by order processing logistics (Kalkan, 2018).) The more responsive the supply chain and logistics management, the more reliable and up-to-date information about consumer purchasing behavior is relevant (Mukolwe & Wanyoike, 2015; Muslimin *et al.,* 2015). Customer preference is conveyed as instructions in most supply chains. Nevertheless, such orders cover anything from the original issuance, shipping, invoicing, or order selection to handling the customer's needs (Mogaka & Arani, 2020; Wasike & Juma, 2020; Omoush, 2022).

METHODOLOGY

The sample size for the study consisted of 300 respondents (rice distributors), which were generated using purposive and multi-stage sampling methods. The data for the study was collected primarily through the use of questionnaire instruments distributed to the respondents selected in the study area. Out of 300 copies of questionnaire instruments administered to the rice distributors across the South East region of Nigeria, only 288 copies were completed and returned, and these were analyzed using descriptive statistics and correlation models. This gives 96% of the total response rate in the study. This is considered sufficient for analysis as revealed from extant literature (Saunders *et al.,* 2009; Oloveze *et al.,* 2021). Face validity and content validity were used to validate the measurement scale. Content validity helps to ensure appropriate coverage as measurement items were adapted from earlier studies (Oloveze *et al.,* 2020). The approach is consistent with the literature (Oteh *et al.,* 2021a). The analytical approach followed Pearson's correlation analysis. This is adequate in studies seeking to establish a relationship between variables, as extant studies revealed its adequacy (Oteh *et al.,* 2021b). The formula is stated as:

$$r = \frac{\varepsilon(x_i-\bar{x})(y_i-\overline{y})}{\sqrt{\varepsilon(x_i-\bar{x})\varepsilon(y_i-\overline{y})^2}}$$ where

+0.001 - + 0.499 = Weak positive relationship
+0.5 - + 0.99 = Strong positive relationship
+ 1 = Perfect positive relationship
- 0.001 - -0.499 = Weak negative relationship

- 0.5 - -0.99 = Strong negative relationship
-1 = Perfect negative relationship

RESULT AND DISCUSSION

Descriptive Statistics on Logistics Management

With a five-point Likert scale, the respondents were asked to indicate the degree to which their respective firms scored on each item, ranging from 'strongly disagree = 1' to strongly agree = 5'. Table 1 displays scores on the rice distributors' perception of logistics management as one of the major components of supply chain management practices.

As captured in Table 1, respondents were required to indicate the extent to which they agreed or disagreed on items measuring logistics management. From the table above, it was indicated that majority of the respondents strongly agree with a mean score of 4.81 which affirms that they determine their present and future inventory requirements to avoid overstocking or understocking, followed by the fact that they operate effective inventory management that guarantees inventory visibility at the upstream and downstream nodes of supply networks (3.78), they have a good and well-defined warehouse management system for effective storage (3.64), they have sufficient vehicles for transporting items from their warehouses to wholesalers and retailers (3.42), and they have an effective distribution mechanism for order accuracy and on-time delivery (3.41). The overall result revealed that the rice distributors practice a high level of logistics management in the study area.

Table 1: Descriptive statistics on Logistics Management ***(n = 288)***

Item Statements	SD	D	N	A	SA	Mean
1. We determine our present and future inventory requirements to avoid overstocking or understocking.	0 (0.0)	4 (1.4)	61 (21.2)	102 (35.4)	121 (42.0)	4.81
2. We operate an effective inventory management that guarantees visibility at the supply network's upstream and downstream nodes.	24 (8.3)	33 (11.5)	56 (19.4)	60 (20.8)	115 (39.9)	3.78
3. We have an effective distribution mechanism for order accuracy and on-time delivery	24 (8.3)	33 (11.5)	86 (29.9)	90 (31.3)	55 (19.1)	3.41
4. We have sufficient vehicles to transport items from warehouses to wholesalers and retailers.	24 (8.3)	33 (11.5)	80 (27.8)	100 (34.7)	51 (17.7)	3.42
5. We have a good and well-defined warehouse management system for effective storage	14 (4.9)	33 (11.5)	64 (22.2)	108 (37.5)	69 (24.0)	3.64

Source: Field survey, 2024

Descriptive Statistics on Customer Patronage

With a five-point Likert scale, the respondents were asked to indicate the degree to which their respective firms scored on each item, ranging from 'strongly disagree = 1' to strongly agree = 5'. Table 2 displays scores on the rice distributors' perception of customer patronage as one of the major components of marketing performance.

Table 2: Descriptive statistics on Customer Patronage ***(n = 288)***

Item Statements	SD	D	N	A	SA	Mean
1. Our market share has increased reasonably as compared to our competitors	14 (4.9)	0 (0.0)	70 (24.3)	100 (34.7)	104 (36.1)	3.97
2. Our overall number of monthly purchases has increased reasonably as compared to our competitors	0 (0.0)	0 (0.0)	74 (25.7)	106 (36.8)	108 (37.5)	4.12
3. Our profit margin on sales has increased reasonably as compared to our competitors	20 (6.9)	51 (17.7)	51 (17.7)	48 (16.7)	118 (41.0)	3.67
4. Our overall competitive position in the market has increased reasonably.	20 (6.9)	51 (17.7)	83 (28.8)	81 (28.1)	53 (18.4)	3.33
5. We have recorded a reasonable increase in the amount of repeat purchases from our loyal customers	20 (6.9)	51 (17.7)	92 (31.9)	94 (32.6)	31 (10.8)	3.23

Source: Field survey, 2024

As captured in Table 2, respondents were required to indicate the extent to which they agreed or disagreed on items measuring customer patronage. From the table above, it was indicated that majority of the respondents strongly agree with a mean score of 4.12, which affirms that the overall number of times of purchases done by their customers per month has increased reasonably as compared to competitors, followed by the fact that their market share has also increased reasonably as compared to competitors (3.97), their profit margin on sales has increased reasonably as compared to competitors (3.67), their overall competitive position in the market has increased reasonably (3.33) and they have recorded a reasonable increase in the amount of repeat purchases from our loyal customers (3.23). The overall result showed that the rice distributors have a high level of customer patronage in the study area.

Relationship between Logistics Management and Customer Patronage

The relationship between logistics management and customer patronage was analyzed using correlation analysis and presented in Table 3 below:

Table 3: Correlation Analysis (Logistics Management and Brand Awareness)

Variables		Logistics Management	Customer Patronage
Logistics Management	Pearson's Correlation	1	0.111* 0.040
	Sig. (2 tailed)	288	288
	N		
Customer Patronage	Pearson's Correlation	0.111* 0.040	1
	Sig. (2 tailed)	288	288
	N		

Source: Field Survey, 2024. *Correlation is significant at the 0.05 level (2-tailed).

From Table 3 above, the analysis revealed a positive correlation with a statistically significant relationship between logistics management and brand awareness. The results showed a positive correlation value (r = 0.111) with a P value of less than 0.05, indicating statistical significance. We, therefore, reject the null hypothesis (**$H0_1$**), which states that there is no significant relationship between logistics management and customer patronage of rice distributors in South East, Nigeria and accept the alternative hypothesis, which

states that "there is significant relationship between logistics management and customer patronage of rice distributors in South East, Nigeria".This implies that as the level of logistics management increases, customer patronage also increases. This result indicates that good logistics management practices, such as effective inventory, transportation, and warehouse management systems, will greatly improve customer patronage. This result is in tandem with Karim *et al.* (2018) and Sritharan (2019), who suggest that an organization's profitability and inventory management are significantly related and that effective inventory management increases profitability, while ineffective management results in subpar performance. In line with this result, Wambua *et al.* (2015) and Buzu (2021) also found that good warehousing management influences organizational results. Transportation management was also found to be a key and positive determinant of organizational success, consistent with earlier literature (James & Inyang, 2022; Muhalia *et al.*, 2021). The faster and more flexible the logistics system, the more successful customer needs are fulfilled (Zentes, 2014).

Furthermore, efficient logistics systems save costs, which can, in turn, be passed on to the customer. Subsequently, this positively influences customer satisfaction and loyalty (Dragan & Aleksandra, 2016). An optimally organized logistics system can also satisfy customer needs because a rapid and flexible reaction to such needs and out-of-stock situations will be avoided (Dragan &Aleksandra, 2016).

CONCLUSION AND IMPLICATIONS

The study sought to establish the relationship between logistics management and customer patronage of rice distributors in South-east Nigeria. The study adopted purposive and multi-stage sampling techniques, and questionnaire instruments were used to generate valid 288 data for the study. The analysis conducted through descriptive statistics and correlation analysis revealed a linkage between logistics management and customer patronage. Further, logistics management was proven to help determine present and future inventory requirements and positively impact customer purchases. Therefore, it was concluded that logistics management is positively linked to customer patronage, although the strength of the relationship is weak.

The implication is that effective logistics management practices contribute to higher customer satisfaction, loyalty, and patronage. By investing in improving logistics operations, rice distributors can enhance their competitiveness and position themselves for long-term success in the market. Further implications of the result are that logistics management improves sales and customer attrition, thereby contributing to competitive advantage. Specifically, rice distributors in South-East Nigeria should prioritize investments in logistics infrastructure and technology to improve the efficiency and reliability of operations.

Following the findings, we conclude that rice distributors in South-east Nigeria should prioritize investments in logistics infrastructure and technology to improve the efficiency and reliability of their operations. This may include upgrading transportation fleets, implementing inventory management systems, and optimizing warehouse layouts. Furthermore, rice distributors should streamline order processing, reduce delivery lead times, and enhance customer communication regarding order status and availability. Additionally, distributors can explore the use of advanced technologies such as GPS tracking and route optimization software to optimize delivery routes and minimize transportation costs.

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