

The Effect of Logistics Management on Firm Performance in Selected Food and Beverage Firms in Lagos State, Nigeria

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Abstract- *Organisations perform various logistical operations so as to meet their customers' needs and sustain development. The study sought to address the following specific objectives: to examine the effect of transport management on delivery speed; evaluate the influence of inventory management on organisational productivity; and ascertain the effect of information flow management on operational efficiency. Coca-Cola Nigeria Plc, and Cadbury Nigeria Plc, Lagos State were purposively selected for the study, and the study's population includes 883 employees of the studied firms. Two hundred and seventy-five (275) employees were selected using a simple random sampling technique. The survey data collected were analysed using descriptive statistics to achieve the mean and frequency distribution percentage of data collected, and an inferential statistical tool (linear regression analysis) was used to test the study hypotheses with the aid of SPSS version 26. The findings of the study showed that transportation management affected delivery speed with an R-value of 0.605; that there was a strong relationship between inventory management and organisational productivity with an R-value of 0.811, and that there was a strong relationship between information flow management and operational efficiency with a Pearson correlation value of 0.796. This study, therefore, recommended that factors associated with logistics management need to be considered by the organisations in their strategic plans as it will contribute significantly to the sustainable development of the Nigeria economy.*

Indexed Terms- *Transportation Management, Operational Efficiency, Logistics Management, Sustainable Development*

I. INTRODUCTION

• Background to the Study

The current state of the market has forced industries in today's society to improve the efficacy and efficiency of their operations. As a result, many businesses now view the development of a competitive supply chain as a must for market survival as opposed to a choice (Dello, Falsini, & Schiraldi, 2013). Due to the more erratic character of consumer purchasing behaviours, globalisation has compelled food and beverage companies to seek the challenging objective of growing their assortment of superior, new items while guaranteeing effective customer service (Pratapwar, 2016). Improving logistics performance was shown to be a means of improving the food and beverage industry's efficiency. Therefore, in order to improve their manufacturing processes' efficiency and flexibility, food and beverage companies have to use a variety of strategies to manage the flow of goods from the point of production to the final customer.

All economies across the globe, including Nigeria's, depend heavily on the food and beverage sector. Recently, there has been an increase in the significance and worth of the industry's participants' performance and contribution to the Nigerian economy. With over 1.5 million workers and a 22% share of the country's industrial value-added, Nigeria's food and beverage sector is a sizable and dynamic business (Flander Investment and Trade, 2020). A few of the challenges the industry faces are high manufacturing costs, poor standards, limited infrastructure, regulatory barriers, and intense competition from both domestic and foreign rivals. Therefore, the adoption of innovative and effective logistics management is crucial to the survival and growth of food and beverage companies in Nigeria. They may save costs, improve product

quality, increase flexibility, and gain a competitive edge by using this strategic approach.

Logistics management, according to Ogah, Asiegbu, and Lagos (2022), is the idea of organizing and overseeing a business's product line. Logistics management strengthens internal controls to provide a high-quality catalogue and offer value to consumers (Karim, Nawawi & Salin, 2018). According to Amin and Shahwan (2020), logistics management is a component of supply chain management (SCM) that deals with organizing, carrying out, and regulating the timely and smooth movement of goods, services, and pertinent data from the point of origin to the point of consumption.

- **Statement of the Problem**

As a result of changes in the business environment, eighty per cent of large, significant companies have been forced to temporarily reorganize their organizational structures and restructure their manufacturing operations in order to improve the effectiveness of information sharing (Jones, Hutcheson, & Camba, 2021). Nigeria's logistics network is also said to be complex and difficult to comprehend because of the peculiarities and problems of the country's surroundings.

- **Aims and Objectives of the Study**

The study aims to investigate the effect of logistics management on firm performance in selected food and beverage firms in Lagos State. Specifically, the study seeks to:

- determine the effect of transportation management on delivery speed
- examine the effect of inventory management on profit optimisation.
- ascertain the effect of information flow management on operational efficiency

1.4 Research Questions

The following research questions were answered to achieve the objectives:

- To what extent is the effect of transportation management on delivery speed?
- What is the effect of inventory management on profit optimisation?
- What is the effect of information flow management on operational efficiency?

1.5 Research Hypotheses

The following null hypotheses were tested to achieve the stated objectives of the study:

- Transportation management has no significant effect on delivery speed
- Inventory management has no significant effect on profit optimisation.
- information flow management has no significant effect on operational efficiency.

- **Significance of the Study**

This research aims to contribute to the advancement of Nigeria's food and beverage firms, particularly Coca-Cola Nigeria Plc and Cadbury Nigeria Plc, Lagos by examining the relationship between distribution management, inventory management, and information flow management as crucial factors influencing a firm's competitive advantage and productivity; hence, the recommendations can be used as a guiding framework to enhance organizational operations.

This study will aid entrepreneurs and executives in developing effective logistics management strategies for their organizations. It will help in optimizing logistics, operations, and distribution management by identifying the extent to which certain activities may hinder overall performance. Finally, the results will help investors and other relevant stakeholders assess the financial stability of a firm, reducing the chance of experiencing financial losses on their investments.

II. LITERATURE REVIEW

- **Theoretical Review**

In the course of investigating the concept of logistics management and product acceptability of manufacturing firms, the study is founded on three major theories which include: Strategic choice theory, system theory, and resource-based view theory.

- **Strategic Choice Theory (SCT)**

According to the idea of strategic choice, decisions taken by top management have an impact on the dynamics of internal and external relationships within companies as well as organisational performance (Wangrow & Schloemer, 2019). The importance of key management choices is a prerequisite for

improving organizational performance (Sinaga, Nurfarina, Iskandar, Mozammel,

Rosita, 2019). A manager's decision-making is influenced by a number of external elements, including supply, purchasing, and inventory management, as the theory of strategic choice illustrates. The idea highlights that in order to improve performance results, managers who possess decision-making authority ought to choose the most appropriate inventory investment and optimization tactics.

- System Theory

The systems theory focuses mostly on the connections among the components. Systems theory, as opposed to dissecting an object such as the human body into its component components or elements, focuses on how the parts are ordered and connected to one another in order to function as a whole. The arrangement and interaction of the components define the properties of the system. The behaviour of the system is independent of the properties of its members. This is sometimes referred to as an all-encompassing approach to understanding things. Ahrne (1994). Richard et al. (1964) claim that the systems theory is a useful framework for thinking about management. It allows one to view external and internal environmental forces as a single, integrated whole because of the framework it provides. It makes it possible for subsystems to be identified in the appropriate capability and location.

- Resource-Based View (RBV) Theory

This idea holds that a firm's internal resources—which are valuable, uncommon, hard to replicate, and non-substitutable—are a way of generating and preserving a competitive edge, which inevitably prevents performance excellence (Pasupuleti, V, 2024). The resource profile of the company fosters successful operational performance. On the other hand, attaining exceptional performance can be accomplished through the distribution and ownership of key resources that are difficult to replicate (Wernerfelt, 1994). Barney (1991) posits that a company can get a competitive advantage over its rivals through the acquisition of essential resources and their efficient and effective distribution within their respective marketplaces. According to O'cass and Ngo (2011), there are some specific characteristics of a company that might lead

to the development of unique resources that are difficult for competitors to copy and that determine performance differences between rivals.

- Conceptual Review

The variables explored in the study are discussed below:

- Logistics Management

Activities that are both inbound and outgoing are commonly covered in logistics management. Among these were logistics networks, inventory and warehouse management, order fulfilment, materials handling, supply and demand forecasting, and transportation and fleet management. In addition, customer service, sourcing and procurement, production planning and scheduling, wrapping, and assembly may be included in the logistics activities, albeit in different amounts. logistical management is used to combine information technology, finance, manufacturing, marketing, and sales with logistical operations (CSCMP, 2010). It is thought of as a part of supply chain management (SCM), which deals with efficient item management. The objective of logistics management, according to Ristovska, Kozuharov, and Petkovski (2017), is to provide the end user with the right product in the right quality at the right time in the right place at the right price.

- Logistics Management Practices

There are several practices of logistics management in the field of operations management, however, the study is limited to three practices of logistics management explored. The practices are discussed as follows:

- Inventory Management

Inventory is the stock of any material or product that a business uses. An inventory system is a set of procedures and policies that establishes how much inventory should be kept on hand, when it should be replenished, and precisely how big orders should be (Augustine & Agu, 2013). According to Babatunde and Arogundade (2008), inventories are the lifeblood of any industrial business. They are the inventory of basic raw materials, supplies of parts, and finished goods that are still being built. The top priority is to appropriately coordinate manufacturing processes

based on expected demand, attainable stock profile, lead time, given capacity, and other relevant variables (Bagshaw, 2017).

- Information Flow Management

According to Bowersox, Closs, and Cooper (2002), information flow in a logistical system designates certain locations. The three operational regions are also integrated by information. There are various movement demands depending on the size of the order, the inventory availability, and the pressing nature of the flow within a certain logistics sector. The main objective of information flow management techniques is to reconcile these disparities in order to enhance supply chain performance as a whole. Taking into account that market distribution, business assistance, and procurement all include real action, information is necessary. It is possible that the work invested in the logistical system may be wasted if accurate records are not kept.

- Transportation Management

Businesses must have a transportation system because goods cannot become significant unless they are delivered from the production facility to the end customer. As Tseng, Yue, and Taylor (2005) point out, logistics requires that things are transported in accordance with a well-planned procedure; just delivering goods to the final consumer is insufficient. Among the components of commercial logistics systems, transportation management is the most important economic activity. According to Kelvin and Charles (2021), transportation management maximizes value addition and reduces expenses by tracking commodities as they move through specific areas.

- Firm Performance

Performance is the single most important aspect in determining the success of a company's operations. This is demonstrated in the firm's capacity to effectively create and implement techniques that materialize the firm's stated aims and objectives. Alahmad (2021) defined company performance as the actual outcome of a firm compared to the projected outcome of the firm. These definitions suggest that performance assesses how well a company operates as regards to attaining targets, satisfying customers,

increasing revenue, and so on. Because quantifying a firm's success is so complicated, various experts have proposed multiple stages of performance evaluation. Green, Zelbst, Meacham, and Bhaduria (2012).

Delivery Speed

Each transaction for merchants that offer physical products has two basic elements: the actual product customers purchase as well as the services provided by the store to enable the purchase by the customers.

Profit Optimisation

Profit optimisation is one of the fundamental ideas to comprehend when it pertains to pricing in the e-commerce and retail arena. It describes the process of increasing profits by determining the best possible ratio between the expenses of manufacturing and selling a good or service and its pricing.

- Conceptual Framework

The constructs of logistics management explored in the study include transportation management inventory management, and information flow management. Firm performance was represented by delivery speed, profit optimisation, and operational efficiency. Based on the hypotheses formulated, a conceptual framework is developed:

- Gap in Literature

Reddy and Reddy (2021) stressed the significance of procurement and logistics in manufacturing enterprises, highlighting the low operational performance of many organisations due to their limited involvement in supply chain activities. In order to remain competitive, manufacturing companies in Nigeria must effectively implement their logistical processes. Effective management of supply chain activities provides the organisation with an additional advantage over its competitors (Chowdhury & Islam, 2021). The lack of strategic sourcing, inventory management, supplier relationships, and distribution management systems in manufacturing organisations results in the logistics challenges faced by the industry.

III. METHODOLOGY

• Preamble

The methodology used in the study is presented in this chapter. The study's population, sampling strategy and size, data collection procedure, validity and reliability of the research instrument, data analysis technique, and model formulation are all covered.

• Research Design

To gather data for the study and evaluate the cause-and-effect among the observed variables, an exploratory cross-sectional survey research design was used based on the nature of the investigation. The use of exploratory cross-sectional survey design is justified in that it collects data from a population at a single point in time and uses a method of data collection that produces reports about measures of central tendency, correlation, and variation while structuring investigations to assess the relationship between variables.

• Population of the Study

All the food and beverage firms in Lagos State comprise the study's population. However, for want of time and resources, the study randomly selected Coca-Cola Nigeria Plc, and Cadbury Nigeria Plc, Lagos as the study's firms. Based on the information gathered from the annual financial reports 2021 of the surveyed firms, the total number of employees is eight hundred and eighty-three (883). 347 employees from Coca-Cola Nigeria Plc, and 536 employees from Cadbury Nigeria Plc. The selection of these subsectors was warranted as they are firmly anchored in authentic manufacturing activities and dominate the manufacturing sector's operations in terms of outputs and employment participation. Furthermore, selected companies are very engaged in the stock market and have their corporate offices and manufacturing facilities in Lagos State. Also, the study firms were chosen because of their competitiveness in the manufacturing industry. The study area is chosen due to its proximity and accessibility. Lagos State, which lies in the southwest of Nigeria, is the research area. The reason Lagos State was chosen is that it serves as Nigeria's commercial and industrial hub.

• Sample Size Determination and Sampling Technique

The sample size for the study was determined using Taro's (1967)' s formula:

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

Were

n = Sample size

N = Population size = 883

e = Margin of errors = 5% = 0.05

Hence

N = 883

$$1 + 883(0.05)^2$$

N = 275

Hence, the sample size adopted is 275, which is a true representative of the study population. Administration/distribution of the questionnaire to the respondent in each study's firm is done by the scientific formula of Bryman's (2011) allocation of sampling size as follows:

Table 3.1 Allocation of Sample Size

S/N	Company's Name	Number of Staff	Stable Sample Size
1	Coca-Cola Nigeria Plc	347	$\frac{347 \times 27}{883} = 108$
2	Cadbury Nigeria Plc	536	$\frac{536 \times 27}{883} = 167$
	Total	883	275

Source: Computed by the researcher 2024

The allocation of sample size shows that 108 copies of the questionnaire were administered to the respondents at Coca-Cola Nigeria Plc and 167 copies of the questionnaire were administered to the respondents at Cadbury Nigeria Plc.

- Instrument of the Study

Primary data was gathered from employees in a variety of management cadres, including the top-level, middle-level, and low-level cadres, according to the protocol. Data gathering was more inclusive of all genders. The majority of the information was gathered through questionnaires that respondents sought to self-administer. The questionnaire was well-structured and designed based on the research objectives and was administered to the respondents to express their views and observations. The use of a questionnaire is justified as it facilitates the collection of data for inferential and descriptive statistics to arrive at a better conclusion for managerial decision-making. It also assures the confidentiality of the respondents, which would elicit more truthful responses.

The questionnaire was segmented into five sections i.e. sections A, B, C, D, and E. Section A addressed respondents' profiles such as gender, age, qualification, years of experience, managerial careers, and department; Section B addressed questions on transportation management, adapted from Amanuel (2022). Section C addressed questions on inventory management, adapted from Adelwini et al. (2023). Section D addressed questions on information flow management, adapted from Elemo et al. (2023). Section E addressed questions on firm performance measures. The questions from sections B to E were well-thought and developed by the researcher. Also, the questions in sections B to E were structured based on a five-point Likert scale: Strongly Agree (SA), Agree (A), Undecided (U), Disagree (D), and Strongly Disagree (SD) for ease of responses and data analysis.

- Validity and Reliability of Research Instrument

To validate the research instrument, face and content validity were adopted. To do this, a prototype questionnaire was submitted to management experts for feedback on the face and content validity of the measurement items. The management experts were explicitly asked to give their remarks on the relevance and appropriateness of the items in the questionnaire

so that the items might be made simpler and more logical. Some of the items were modified in response to their suggestions, while others were introduced entirely new. The questionnaire was provided to the study supervisor for review, approval, and vetting. Having collected the questionnaire from the management experts, the suggestions of my supervisor were integrated into the final draft.

Prior to conducting the primary data analysis, a pilot study was carried out to determine the practicality and feasibility of employing a questionnaire for data collection. A larger inferential statistical research project's design adjustments must be identified and determined to be viable through pilot experiments (Doody & Doody, 2015). To ascertain the reliability and consistency, as well as the anticipated issues that could arise throughout the research and how to avoid them, a pilot study involving 10 management experts in the study's organizations was undertaken. The Cronbach's alpha test, which has a range of 0 to 1, was used to determine the reliability of the research instrument in order to evaluate its internal accuracy and consistency. The lowest threshold for statistics to proclaim reliability, according to Bhatnagar, Kim, and Many (2014), is 0.7; nevertheless, if the value is below the specified values, the variable(s) is/are suspect and should be removed from the final analysis. The reliability coefficient of each variable in research questions was obtained as follow:

Table 3.2 Cronbach's Alpha Test for Reliability

S/N	Variable	Number of Items	Cronbach's Alpha
1	Transportation Management	5	0.866
2	Inventory Management	5	0.857
3	Information Flow Management	5	0.778
4	Delivery Speed	3	0.942
5	Profit Optimisation	2	0.781
6	Operational efficiency	2	0.873

Source: Computed by the Researcher 2024

From the summary of the reliability test, we can observe that all the variables satisfied the threshold of Cronbach’s alpha for the reliability test i.e. the score of Cronbach’s Alpha for each variable is greater than 0.7. This implies that the variables have internal consistency reliability. Hence, the research instrument was adapted to generate data for the main analysis.

3.7 Data Analysis Method

The first stage of data analysis involved descriptive statistical analysis which is based on the use of tables on frequency distribution percentages, means, and standard deviation, The linear regression analysis as an inferential statistics tool was used to test the three hypotheses proposed in the study. The above method was engaged because it is more reliable when assessing the association and causal effect of variables on one another. The Statistical Packages for Social Sciences (SPSS), version 26.0 was utilized as the tool for data analysis.

3.8 Model Specification

A multiple linear regression model was developed to estimate the coefficients of the predictor variables (Transportation Management, Inventory Management, and Information Flow Management) in the model. The model's capacity to determine the relative influence of one or more predictor variables on the dependent variable justifies its use. Hence, the model for the study is hereby specified as follows:

$$DY = f(TM, IM, IFM) \dots\dots\dots eq.$$

(i)

The above function is hereby written in a linear mathematical form as:

$$DY = \beta_0 + \beta_1 TM + \beta_2 IM + \beta_3 IFM + E \dots\dots\dots (ii)$$

Where:

DY: Dependent variable measured by delivery speed (DS), profit optimisation (PO), and operational efficiency (OE).

TM: Transportation Management

IM: Inventory Management

IFM: Information Flow Management

E: Error terms

$\beta_1, \beta_2, \beta_3$, = Parameters.

The model is further specified according to the study’s hypotheses

Hypothesis1:

$$DS = \beta_0 + \beta_1 TM + e \dots\dots\dots (iii)$$

Hypothesis2:

$$PO = \beta_0 + \beta_1 IM + e \dots\dots\dots (iv)$$

Hypothesis 3:

$$OE = \beta_0 + \beta_1 IFM + e \dots\dots\dots (v)$$

IV. DATA PRESENTATION, ANALYSIS AND INTERPRETATION

Presentation and Analysis of Data

The summary of the distribution of the questions is shown below:

Table 4.1: Distribution of the Questionnaire

Questionnaire	Total
Copies of Questionnaire administered	275
Copies of questionnaire Retrieved	242
Response Rate	88.0%

Source: Field Survey, 2024

From Table 4.1, 275 copies of the questionnaire were administered to the respondents and 242 copies were dully filled and collected. This gives an approximate response rate of 88.0%. For a study of this nature, such a percentage is adequate thereby indicating the willingness of the respondents to co-operate.

Table 4.2 Distribution of Demographic Data of Respondents

Gender	Frequency	%	Age Group	Frequency	%
Male	149	61.6	22-31yrs	63	26.0
Female	93	38.4	32-41yrs	99	40.9
Total	242	100.0	42-51yrs	54	22.3

			52yrs and above	26	10.7
			Total	242	100.0
Qualification			Years of service		
ND/Equivalent	54	22.3	3-6yrs	65	26.9
HND/B.Sc	135	55.8	7-10yrs	138	57.0
MBA/MSc	53	21.9	11yrs and above	39	16.1
Total	242	100.0	Total	242	100.0
Levels of Manager			Department		
Top level	34	14.0	Production/Operations	46	19.0
Middle level	159	65.7	Procurement/Logistics	111	45.9
Lower level	49	20.3	Sales/Marketing	42	17.4

Total	242	100.0	Store/Warehouse	43	17.8
			Total	242	100.0

Source: Field Survey, 2024

Table 4.2 above shows that 61.6% of the total respondents are male, and 38.4% of the respondents are female. It indicates that the majority of the respondents are male. Notwithstanding, the study is not gender-bias, it cuts across all genders.

Based on the age of the respondents, 26.0% of the total respondents fall within the age bracket of 22-31years, 40.9% are within 32-41years, 22.3% fall within 42-51yrs, 10.7% fall within the age bracket of 52years and above. It shows that most of the respondents belong to the active workforce. Based on the respondents' department, 19.0% of the respondents are from Production/Operations; 45.9% are from Procurement/Logistics; 17.4% are from sales/marketing; and 17.8% are from store/warehouse department. It shows that the study engaged the employees from key departments in the surveyed firms.

4.2.1 Presentation and Analysis of Data in Relation to Research Questions

Research Question I

Where 5= Strongly Agree, 4=Agree, 3 = Undecided, 2 = Disagree, 1 = Strongly Disagree

Table 4.3: To what extent is the effect of transportation management on delivery speed?

Statements		5	4	3	2	1	Total	Mean
My firm spends a minimum amount to deliver the goods to the customer.	N	92	81	19	17	33	242	3.75
	(%)	38.0	33.5	7.9	7.0	13.6	100.0	
My firm provides its goods with the right mode of transport.	N	83	86	19	17	37	242	3.67
	(%)	34.3	35.5	7.9	7.0	15.3	100.0	

My firm deploys an electronic system to track goods delivered to the customer.	N	100	93	13	13	23	242	3.97
	(%)	41.3	38.4	5.4	5.4	9.5	100.0	
The cost of material handling has greatly been reduced due to effective logistics management.	N	99	92	11	14	26	242	3.93
	(%)	42.9	38.0	4.5	5.8	10.7	100.0	
My firm maintains quick delivery of raw materials and finished products.	N	98	93	15	16	20	242	3.96
	(%)	40.5	38.4	6.2	6.6	8.3	100.0	

Source: Field Survey, 2024

The first row in Table 4.3 above shows that the mean value is 3.75. This implies that the majority of the respondents agreed their firms spend a minimum amount to deliver the goods to the customer. The fourth row indicates that the mean value is 3.93. This revealed that most of the respondents strongly agreed that the cost of material handling has greatly been

reduced due to effective logistics management. The fifth row shows that the mean value is 3.96. This revealed that the majority of the respondents strongly agreed that their firms maintain quick delivery of raw materials and finished products.

Research Question II

Table 4.4: What is the effect of inventory management on profit optimisation?

Statements		5	4	3	2	1	Total	Mean
My firm maintains sufficient documentation of inventory to enable efficient inventory control.	N	121	81	7	13	20	242	4.12
	(%)	50.0	33.5	2.9	5.4	8.3	100.0	
My firm prioritizes inventory optimization to guarantee profitability.	N	127	74	11	11	19	242	4.15
	(%)	52.5	30.6	4.5	4.5	7.9	100.0	
My firm has sufficient policy guidelines to oversee the utilisation of inventory products inside the	N	122	74	15	12	19	242	4.11
	(%)	50.4	30.6	6.2	5.0	7.9	100.0	

business.								
To avoid excess inventory, my firm	N	132	73	10	11	16	242	4.21
uses best practices such as JIT and quick customers response.	(%)	54.5	30.2	4.1	4.5	6.6	100.0	
My firm has an efficient inventory	N	141	80	11	1	9	242	4.42
planning systems and control procedures.	(%)	58.3	33.1	4.5	0.4	3.7	100.0	

Source: Field Survey, 2024

The first row in Table 4.4 above shows that the mean value is 4.12. This implies that the majority of the respondents agreed that their firms maintain sufficient documentation of inventory to enable efficient inventory control.

The second row shows that the mean value is 4.15. This implies that most of the respondents agreed that their firms prioritize inventory optimization to guarantee profitability.

The third row shows that the mean value is 4.11. This implies that the majority of the respondents strongly agreed that their firms have sufficient policy

guidelines to oversee the utilisation of inventory products inside the business.

The fourth row indicates that the mean value is 4.21. This revealed that most of the respondents strongly agreed that to avoid excess inventory, their firms use best practices such as JIT and quick customer response.

The fifth row shows that the mean value is 4.42. This revealed that the majority of the respondents agreed that their firms have efficient inventory planning systems and control procedures.

Research Question III

Table 4.5: What is the effect of information flow management on operational efficiency?

Statements		5	4	3	2	1	Total	Mean
Information flows between inventory, purchasing, marketing, and distribution divisions are emphasized in my firm.	N	141	78	8	3	12	242	4.38
	(%)	58.3	32.2	3.3	1.2	5.0	100.0	
Using information technology, my firm exchanges data with its main	N	130	80	13	10	9	242	4.29

suppliers which facilitates business operations.	(%)	53.7	33.1	5.4	4.1	3.7	100.0	
My firm maintains an integrated information system with key partners in the logistics process.	N	139	80	10	2	9	242	
	(%)	57.4	33.9	4.1	0.8	3.7	100.0	4.41
Information exchange between supply chain partners and my firm is timely and accurate.	N	85	76	22	21	38	242	
	(%)	35.1	31.4	9.1	8.7	15.7	100.0	3.62
My firm maintains adequate information flow in the logistics process.	N	86	86	18	20	32	242	
	(%)	35.5	35.5	7.4	8.3	13.2	100.0	3.72

Source: Field Survey, 2024

The first row in Table 4.5 above shows that the mean value is 4.38. This implies that the majority of the respondents agreed that information flows between inventory, purchasing, marketing, and distribution divisions are emphasized in their firms.

The second row shows that the mean value is 4.29. This implies that most of the respondents agreed that by using information technology, their firms exchange data with their main suppliers which facilitates business operations.

The third row shows that the mean value is 4.41. This implies that the majority of the respondents strongly agreed that their firms maintain integrated information systems with key partners in the logistics process.

The fourth row indicates that the mean value is 3.62. This revealed that most of the respondents strongly agreed that information exchange between supply chain partners and their firms is timely and accurate.

The fifth row shows that the mean value is 3.72. This revealed that the majority of the respondents strongly agreed that their firms maintain adequate information flow in the logistics process.

4.3 Test of Hypotheses

The hypotheses developed in the study were tested using linear regression analysis. The condition for testing each of the hypotheses is that when P value is less than 0.05 ($p < 0.05$) level of significance, the null hypothesis is rejected and when P value is greater than 0.05 ($p > 0.05$) level of significance, the null hypothesis is accepted.

Hypothesis One

H0: Transportation management has no significant effect on delivery speed

Table 4.6a Model Summary

Model	R	R ²	Adjusted R ²	Std. Error (SE)
1	0.605 ^a	0.366	0.364	0.53366

a. Predictors: (Constant), Transportation Management

close examination of Table 4.6a above indicates that $r = 0.605$, $p < 0.05$. This is an indication that there is a strong positive and significant relationship between transportation management and delivery speed. The R^2 value of 0.366 indicates that about 36.6% of the variations in delivery speed were due to the variations in transportation management. This implies that 36.6% of the variations that occur in delivery speed can be explained by the transportation management. The balance of 63.4% could be explained by other variables not included in the model. The Standard Error of the Estimate = 0.533 which indicates a strong accuracy in prediction of the output.

Table 4.6b ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	39.482	1	39.482	138.637	0.000 ^b
Residual	68.349	240	0.285		
Total	107.831	241			

a. Dependent Variable: Delivery Speed.

Table 4.6b shows that the measures of significance for the overall model ($F = 138.637$; $Sig. = 0.001$) which is less than the significant level ($p < 0.05$), indicates that the model is statistically significant. Therefore, we restate that transportation management has a significant effect on delivery speed.

b. Predictors: (Constant), Transportation Management

Table 4.6c Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	2.769	0.151		18.310	0.001
Transportation Management	0.380	0.032	0.605	11.774	0.000

a. Dependent Variable: Delivery Speed

Table 4.6c presents the coefficient of the independent variable. The coefficient of transportation management (0.380) suggests that transportation management has a strong positive effect on delivery speed. In addition, the probability and t-statistics value of 11.774 further suggest that the effect of transportation management on delivery speed is significant since the p -value < 0.05 level of significance (0.000). Thus, the study rejected the null hypothesis, and the alternate hypothesis which states that transportation management has a positive and significant effect on delivery speed was accepted.

Hypothesis Two

H0: Inventory management has no significant effect on profit optimisation.

Table 4.7a Model Summary

Model	R	R ²	Adjusted R ²	Std. Error (SE)
1	0.811 ^a	0.658	0.657	0.39204

a. Predictors: (Constant), Inventory Management

Table 4.7b ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	70.945	1	70.945	461.604	0.000 ^b
Residual	36.886	24	0.154		
Total	107.831	24			

a. Dependent Variable: Profit Optimisation.

b. Predictors: (Constant), Inventory Management

Table 4.7c Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.528	0.141		10.854	0.000
Inventory Management	0.668	0.031	0.811	21.485	0.000

a. Dependent Variable: Cost Minimisation
close examination of table 4.7a above indicates that $r = 0.811$, $p < 0.05$. This is an indication that there is a

strong positive and significant relationship between the inventory management and profit optimisation. The R^2 value of 0.658 indicates that about 65.8% of the variations in profit optimisation were due to the variations in the inventory management. This implies that 65.8% of the variations that occur in profit optimisation can be explained by inventory management. The balance of 34.2% could be explained by other variables not included in the model. The Standard Error of the Estimate = 0.392 which indicates a strong accuracy in prediction of the output. Table 4.7b shows that the measures of significance for the overall model ($F = 461.604$; $Sig. = 0.001$) which is less than the significant level ($p < 0.05$), indicates that the model is statistically significant. Therefore, we re-state that inventory management has a significant effect on profit optimisation.

Table 4.7c presents the coefficient of the independent variable. The coefficient of inventory management (0.668) suggests that inventory management has a strong positive effect on profit optimisation. In addition, the probability and t-statistics value of 21.485. Hypothesis Three
 H_0 : information flow management has no significant effect on operational efficiency.

Table 4.8a Model Summary

Model	R	R ²	Adjusted R ²	Std. Error (SE)
1	0.796 ^a	0.634	0.633	0.40544

a. Predictors: (Constant), Information Flow Management

Table 4.8b ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
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1					
Regression	68.380	1	68.38	415.992	0.000 ^b
Residual	39.451	24	0.164		
Total	107.831	24			

a. Dependent Variable: Operational Efficiency.

b. Predictors: (Constant), Information Flow Management

Table 4.8c Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.656	0.142		11.667	0.000
Information Flow Management	0.640	0.031	0.796	20.396	0.000

a. Dependent Variable: Operational Efficiency

A close examination of table 4.8a above indicates that $r = 0.796$, $p < 0.05$. This is an indication that there is a strong positive and significant relationship between the information flow management and operational efficiency. The R^2 value of 0.634 indicates that about 63.4% of the variations in operational efficiency were due to the variations in the information flow management. This implies that 63.4% of the variations that occur in operational efficiency can be explained by the information flow management. The balance of 36.6% could be explained by other variables not

included in the model. The Standard Error of the Estimate = 0.405 which indicates a strong accuracy in prediction of the output.

Table 4.7b shows that the measures of significance for the overall model ($F = 415.992$; $Sig. = 0.001$) which is less than the significant level ($p < 0.05$), indicates that the model is statistically significant. Therefore, we restate that information flow management has a significant effect on operational efficiency.

Table 4.7c presents the coefficient of the independent variable. The coefficient of information flow management (0.640) suggests that information flow management has a strong positive effect on operational efficiency. In addition, the probability and t-statistics value of 20.396 further suggest that the effect of information flow management on operational efficiency is significant since the p-value < 0.05 level of significance (0.000). Thus, the study rejected the null hypothesis, and the alternate hypothesis which states that information flow management has a positive and significant effect on operational efficiency was accepted.

4.4 Discussion of findings

The study deployed linear regression analysis for the test of hypotheses in a bid to achieve the study's objectives. However, several findings were arrived at, which are in line with previous studies. All the null hypotheses tested were rejected with p-values less than the significant level of 0.05.

the study's findings revealed that transportation management has a positive and significant effect on delivery speed. This finding depicts that the firms understudied maintain quick delivery of raw materials and finished products to achieve customer satisfaction. The application of effective transportation management in the firms minimizes the cost associated with product delivery to the customer. The finding also indicates that the firms deliver their products with the right mode of transport and deploy an electronic system to track goods delivered to the customer. This ensures that the products are delivered to the customer at the right quantity and time. By implication, the firms enhance their competitiveness in terms of the delivery speed of products to the customers which optimises their profitability in the

long run. This finding corroborates with Omoush (2022) by revealing that logistic management methods significantly improve each of its dimensions (warehousing, inventory management, packaging transportation, and order process management) on the operational effectiveness of Jordanian road transport firms. The finding is also backed by Amanuel (2022) who revealed that the organization has a strong practice of the logistical elements of inventory management, customer service, warehouse management, supply management, and transportation management, which are positively associated with company performance and significantly affect the company's performance. Edim and Inyang (2022) found that management of order processing, transportation, inventory, and warehousing had a considerable beneficial impact on the marketing success of SME production enterprises.

More so, the study's findings revealed that inventory management has a positive and significant effect on profit optimisation. The finding depicts that the studied firms had efficient inventory planning systems and control procedures to achieve the financial objective of the organization. To enhance their profitability, the firms ensure that excess inventory is avoided through the application of best practices such as just in time system and quick customer response. The inventory optimisation is prioritized and inventory documentation is maintained to achieve profit optimization. To minimize the cost of inventory in the surveyed firms, sufficient policy guidelines are put in place to oversee the optimal utilisation of inventoried raw materials for production. This finding is in line with Ajayi, Obafem, and Araoye (2021) which revealed a favourable and insignificant association between return on investment and efficient inventory control technique. Musyok and Ngugi (2021) also support the finding by revealing that inventory management significantly and favourably affects the productivity of milk processing businesses. In the same vein, Sonko and Akinlabi (2020) found that inventory management had a substantial impact on the profitability of a group of food and beverage manufacturers. Orga and Mbah (2017) found a strong link between effective inventory management and organisational effectiveness, as well as a strong link between inventory management and organisational productivity and profitability.

Finally, the study's findings reveal that the quality of information sharing has a positive and significant effect on operational efficiency. This shows that adequate information systems linkages exist with partners in the supply chain. By implication, information exchange between supply chain partners and the studied firms is timely and accurate which facilitates their marketing programs and optimises their operational efficiency and competitiveness in the industry. The finding also depicts that the firms maintain an integrated Information system with key partners in the logistics and ensure that information flows between inventory, purchasing, marketing, and distribution divisions are emphasised to achieve a competitive edge in the market. This finding is in line with Doyo (2020) who revealed that logistics management techniques had a considerable and advantageous impact on organisational performance. The study also found that transport management, supply management, warehousing/inventory management, customer service, and information flow management, practices may indicate how well a business would operate. The finding is also supported by Alahmad (2021), who revealed that the amount of information shared has a favourable relationship with SC performance

V. SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Preamble

This chapter discusses the summary of major findings, the conclusions made from the findings, recommendations, contribution to knowledge, areas for further study, and limitations of the study.

5.2 Summary of Findings

The summary of findings is as follows:

- i. The study's findings revealed that transportation management has a positive and significant effect on delivery speed. This is indicated in hypothesis one with a coefficient of 0.380 and p-value < 0.05.
- ii. The study's findings revealed that inventory management has a positive and significant effect on profit optimisation. This is indicated in

hypothesis two with a coefficient of 0.668 and p-value < 0.05 .

- iii. The study's findings revealed that information flow management has a positive and significant effect on operational efficiency. This is indicated in hypothesis three with a coefficient of 0.64 and p-value < 0.05 .

CONCLUSION

The study concludes that the firms understudied deployed logistics management practices (transportation management, inventory management, information flow management) to improve the performance of firms.

In addition, the study concludes that transportation management has a positive and significant effect on delivery speed. The application of effective transportation management minimizes the cost associated with product delivery to the customer and enhances competitiveness in terms of the delivery speed of products to the customers which optimizes their profitability in the long run.

More so, the study concludes that inventory management has a positive and significant effect on profit optimization. The effective application of inventory management prevents excess inventory and minimizes the cost associated with inventory, which enhances the profitability of the firms.

Also, the study concludes that information flow management has a positive and significant effect on operational efficiency. Effective information flow management in the logistics process facilitates integrated information systems between inventory, purchasing, marketing, and distribution divisions to enhance operational efficiency.

RECOMMENDATIONS

Based on the findings of the study and the conclusions drawn, it is sacrosanct for firms in both the manufacturing and service industries to give heed to the following relevant recommendations:

- i. The managers of manufacturing firms should frequently interact with their customers to set

reliability responsiveness, and other standards to achieve customer satisfaction. This

will help them to build a robust relationship with the customers and serve as a means of expanding their customer base and retaining existing customers.

- ii. The managers of manufacturing firms should put in place efficient inventory planning systems and control procedures to achieve the financial objective of the firm. They should ensure that excess inventory is avoided through the application of best practices such as just in time system and quick customer response. This will enable the firms to minimize the cost of inventory and achieve profitability.

- iii. It is expedient for the managers of manufacturing firms to maintain integrated Information systems with key partners in the logistics and ensure that information flows between inventory, purchasing, marketing, and distribution divisions are emphasised to facilitate operational efficiency and achieve a competitive edge in the market.

- iv. It is expedient for manufacturing firms to have a robust logistics management practice to facilitate the flow of quality materials from the supplier and finished products to the market. This will enable the firms to achieve customer satisfaction and enhance their competitiveness in the industry.

Contributions to Knowledge

In addition to providing literature on logistics management practices for would-be researchers, the study contributes to knowledge in the following areas:

- i. The study provides a perceptive of the dimensions (transportation management, inventory management, and information flow management) that manufacturing firms use to facilitate performance in the logistics process and this could provide a framework of reference for other manufacturing organisations to assess their performance in logistics.

- ii. This study proposed and tested a logistics management practices (LMP) model for the

Nigerian manufacturing sector that can facilitate quick delivery of raw materials and finished products to achieve customer satisfaction.

- iii. The study also contributes to and enriches the current studies in the existing body of knowledge on the application of LMP by identifying the critical activities (transportation management, inventory management, and information flow management) that are relevant to the food and beverage firms for enhancing operational efficiency and competitive advantage.

SUGGESTIONS FOR FURTHER STUDY

The study put forward the following suggestions for further study:

- i. The study focused on two purposively selected firms in the food and beverage sub-sector of the Nigerian manufacturing sector. Further studies on logistics management should look at the entire firms in the sub-sector to have a general view of the effect of logistics management on firm performance in the sector.
- ii. Further research should investigate LMP in other sub-sectors of the Nigerian manufacturing sector or probably the entire manufacturing sector; so that the effect of LMP on firm performance could be examined.
- iii. This study was conducted in Lagos State; therefore, further studies could be conducted in other industrial clusters in Nigeria.
- iv. Three dimensions of LMP (transportation management, inventory management, and information flow management) were explored in the study, further studies could explore other dimensions of LMP not captured in the study.

Limitations of the Study

The study was confronted with a number of problems which are stated below:

- i. Getting the respondents to agree to fill out the questionnaire was a bit difficult. Some respondents were reluctant to fill out the questionnaire due to their indifference to the items contained in the questionnaire.

- ii. It may not be possible to generalise the findings of the study to other industries or sectors because the study focused on the food production sub-sector of the Nigerian manufacturing sector.

- iii. Another limitation was the limited time frame in which this study had to be completed owing to a combination of official and academic commitments throughout the study.

Despite these limitations, the findings of this study do provide valuable insights into a number of pertinent issues in logistics management. It also provides a platform for future investigation

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