



Asian Journal of Management and Commerce

E-ISSN: 2708-4523
P-ISSN: 2708-4515
AJMC 2023; 4(2): 222-230
© 2023 AJMC
www.allcommercejournal.com
Received: 13-09-2023
Accepted: 23-10-2023

Abiji Emmanuel Abiji
Department of Business
Administration, University of
Cross River State, Calabar,
Nigeria

Dr. Aneozeng Awo Egbe Esq
Department of Business
Administration, University of
Cross River State, Calabar,
Nigeria

Otiala Paul Boniface
Department of Business
Administration, University of
Cross River State, Calabar,
Nigeria

Maurice E Eyo
Department of Supply Chain
Management, Federal
University of Technology
Owerri, Nigeria

Corresponding Author:
Abiji Emmanuel Abiji
Department of Business
Administration, University of
Cross River State, Calabar,
Nigeria

The effect of logistics management on organizational performance: A study of Niger mills Ltd. Calabar, Nigeria

Abiji Emmanuel Abiji, Dr. Aneozeng Awo Egbe Esq, Otiala Paul Boniface and Maurice E Eyo

Abstract

The main objective of this study was to examine the effect of logistics management on organizational performance: A study of Niger mills Ltd. Calabar. The specific objectives were; to examine the relationship between transportation management and organizational performance of Niger Mills Ltd. Calabar, to determine the relationship between warehouse management and organizational performance of Niger mills Ltd. Calabar, and to examine the relationship between inventory management and organizational performance of Niger mills Ltd. Calabar. The study used a descriptive research design with a population of 426 staff. The simple random sampling technique was adopted while the Taro Yamane formula was used to derive the sample size of 206. Data for the study were collected through a self-administered questionnaire and the Pearson product moment correlation technique was used to test the hypotheses. The study found that there is a significant relationship between transportation management and the organizational performance of Niger mills Ltd. Calabar, there is a significant relationship between warehouse management and organizational performance of Niger mills Ltd. Calabar. Furthermore, findings also revealed that there is a significant relationship between inventory management and organizational performance of Niger mills Ltd. Calabar. Based on these findings, the study recommended among others that firm should give priority to the development of cost-effective delivery and storage procedures, as well as the centralization of its transportation and logistics activities.

Keywords: Logistics management, inventory management, transportation management, warehouse, supply chain, just-in-time, performance

Introduction

The manufacturing sector serves as a primary source of innovation, generating the goods and services essential for fostering economic growth and advancement. Haraguchi, Cheng, and Smeets (2017) ^[16], posit that there is a global trend among countries to enhance their manufacturing sectors as a means of stimulating national economic development. Bureau of Labour Statistics (2022) ^[17], reports that the global manufacturing industry is projected to have a rise in employment figures, with an expected 12.3 million jobs in the first quarter of 2021, compared to an estimated 11.7 million during the same period in 2020. A report by Trading Economics (2021) ^[35], supports that the manufacturing sector in China, which is recognized as one of the rapidly advancing economies globally, is expected to significantly contribute to the rise of the country's Gross Domestic Product (GDP) during the second quarter of 2021. Anyalewechi (2021) ^[4], postulated that the National Bureau of Statistics (NBS) has reported that during the second quarter of 2021, the manufacturing sector made a contribution of 14.18 percent to Nigeria's Gross Domestic Product (GDP). This figure reflects an increase from the 11.79 percent contribution seen in the preceding year's corresponding quarter. This underscores the pivotal importance of the manufacturing sector in propelling economic growth.

The global manufacturing industry saw a decline in productivity due to the emergence of the COVID-19 pandemic. This was attributed to a scarcity of manufacturing supplies, a lack of manpower, and a significant increase in energy costs (Song & Zhou, 2020; Zamolo, 2021) ^[32, 37]. To address the adverse consequences of the pandemic, a number of firms used novel logistics management systems (Choi, 2021; Montoya-Torres, Muoz-Villamizar, & Mejia-Argueta, 2021) ^[9, 24]. Logistics management, which falls under the umbrella of supply chain management, focuses on the effective and punctual storage and transportation of products

and services from their source to their ultimate destination, to satisfy customer demands (Amin & Shahwan, 2020) ^[3]. Logistics management plays a crucial role within the broader framework of supply chain management (SCM), since firms use it in many ways to optimize operational effectiveness.

This study focuses on the domains of transportation management, inventory management, and warehouse management. Transport management encompasses the coordination of the inbound flow of raw materials into an organisation and the outbound distribution of finished products and services to end customers (Speranza, 2018) ^[33] while inventory management, as defined by Kritchanhai and Meesamut (2015) ^[20], involves the strategic management of raw materials, work-in-progress (WIP), and completed items in order to maintain optimum inventory availability, while simultaneously avoiding the issues of overstocking, understocking, and unexpected stock-outs. Warehouse management involves ensuring the presence and functionality of the essential infrastructure for storing products intended for future sale or production (Mao, Xing, & Zhang, 2018) ^[22]. Multiple research (Ristovska, Kozuharov, & Petkovski, 2017; Abdul, Iortimbir, Oladipo, & Olota, 2019; Chala, 2021) ^[30, 1, 8] have provided evidence that manufacturing enterprises, especially those of significant scale, use logistics management practices as a means to enhance their overall organisational performance. Scholars have conducted investigations on logistics management practices in order to explore their potential for sustainable enhancement of organisational performance, a critical imperative in the contemporary dynamic corporate environment.

Statement of the problem

Niger Mills Ltd. located in Calabar, Nigeria has a consistent requirement for a smooth and uninterrupted flow of products, ensuring timely availability of inventory. Consequently, the logistics aspect assumes a critical role in determining the optimal route and mode of transportation for goods to reach customers in a cost-effective and timely manner. In the event of any delay in the delivery of things or an increase in price, it is quite probable that the customer may experience dissatisfaction and choose to switch to a competitor. The suboptimal performance and customer discontentment experienced by Niger Mills Ltd. Calabar may be attributed to the company's deficient oversight of its logistics operations including inventory management, lead time, transportation, and warehouse supervision. The authors of this research aimed to examine the effects of logistic management on production at Niger Mills Ltd. in Calabar, based on the aforementioned concerns.

Objectives of the study

The main objective of this study was to examine the effects of logistic management on organizational performance: A study of Niger mills Ltd., Calabar. The specific objectives were as follows:

1. To examine the relationship between transportation management and organizational performance of Niger mills Ltd., Calabar
2. To determine the relationship between warehouse management and organizational performance of Niger mills Ltd., Calabar
3. To examine the relationship between inventory

management and organizational performance of Niger mills Ltd. Calabar

Research questions

This study was guided by the following questions:

1. To what extent does transportation management relate to organizational performance of Niger mills Ltd. Calabar?
2. To what extent does warehouse management relate to organizational performance of Niger mills Ltd. Calabar?
3. To what extent does inventory management relate to organizational performance of Niger mills Ltd. Calabar?

Statement of hypotheses

The following hypotheses guided the study;

1. **H₀1:** There is no significant relationship between transportation management and organizational performance of Niger mills Ltd. Calabar
2. **H₀2:** There is no significant relationship between warehouse management and organizational performance of Niger mills Ltd. Calabar
3. **H₀3:** There is no significant relationship between inventory management and organizational performance of Niger mills Ltd. Calabar

Literature Review

Conceptual review

Concept of Logistics management

The term "logistics" originates from the French word "Logistique," which is derived from the verb "Loger" meaning "to lodge" (Ltifi & Gharbi, 2015) ^[21]. The process of providing logistical support to a military unit as it transitions from its home base to the front lines is often referred to as "logistics" (Rui & Luis, 2014) ^[31]. According to the Council of Supply Chain Management Professionals (Kotler & Armstrong, 2011) ^[19], logistics management encompasses the strategic processes of planning, implementing, and controlling the optimal and productive movement and storage of goods, services, and associated information from the point of origin to the point of consumption, with the aim of satisfying customers' demands. Logistics management is a customer-centric operations management discipline that comprises a comprehensive range of activities required for the efficient delivery of goods. Logistics management, which falls under the umbrella of supply chain management, focuses on the effective and punctual storage and transportation of products and services from their source to their ultimate destination, with the aim of satisfying customer demands. Amin and Shahwan (2020) ^[3], aver that the comprehensive supply-chain job encompasses the planning, organisation, and supervision of the transportation of raw materials, market data, completed products, and services from their initial point of origin or manufacture to the locations where they are ultimately sold and consumed by customers.

The concept of organizational performance

The efficacy of an organization may be assessed by juxtaposing the achieved outcomes with the initial forecasts. The synergistic functioning of various components inside an organization leads to an increase in the value proposition offered to customers, which may be seen as the ultimate

measure of success. The integration of both financial and non-financial components of sustainability has presented significant challenges for organizations in their pursuit of market domination. Lebens (2016) [38], posit that the integration of cost of capital, capacity, and systems metrics provides both favourable and unfavourable insights for management in terms of market positioning. Before the acknowledgment of operations design, control, and feedback circuit, which encompasses the utilization of recorded information and solutions provided in daily activities that align with customer demands to shape technological change and execute strategies (Simons, 2016) [39], the practice of performance measurement was not extensively employed. Profit is often regarded as the surplus resulting from the subtraction of the cost of capital. This financial measure, as elucidated by Kaplan and Norton (2000) [17], serves as a means to comprehend and evaluate performance. Performance management plays a pivotal role in the market positioning of the majority of firms, as well as in the assessment of many management facets. Consequently, the effectiveness of performance evaluation is contingent upon the use of additional mechanisms. A comprehensive understanding of performance cannot be attained only by emphasizing profits, since it fails to account for the concept of value for money.

In the contemporary dynamic and unpredictable business environment, organizations need to possess a comprehensive understanding of their core competencies, market positioning, and strategic objectives to achieve success. The use of standardized measurement units across all departments has the potential to enhance overall organizational productivity. Neely (2005) [26], said that an organization's productivity may be improved by evaluating and enhancing standard metrics, quality procedures, and human resource skills. Performance measurement in the manufacturing sector primarily focuses on key indicators such as revenue, operational efficiency, market share, and quality of service to assess industry performance.

Transportation management and organizational performance

Effective transportation management may significantly improve logistics performance, which in turn contributes to the overall success of a company. Based on this theoretical framework, the implementation of transport management has the capacity to enhance the marketing efficacy of enterprises. The study conducted by Ristovska, Kozuharov, and Petkovski (2017) [30] provides support for the aforementioned premise, as it reveals a positive correlation between enhancements in transportation management and increased productivity in Macedonian enterprises. The aforementioned notion is in accordance with the findings of Abdul, Iortimbir, Oladipo, and Olota (2019) [1], whose study shown a significant positive impact of transportation management on the organizational performance of Dangote Flour Mills. In a similar vein, the study conducted by Chala (2021) [8] revealed that the implementation of effective transport management has a substantial positive impact on the financial performance of firms in Ethiopia.

Inventory management and organizational performance

Efficient inventory management has the dual purpose of mitigating the risk of customer attrition resulting from stock-outs and minimizing the financial burden associated

with excessive inventory storage. Additionally, it ensures a consistent and adequate supply of items to fulfil consumer demand (Mora-Ochomogo, Mora-Vargas, & Serrato, 2016) [25]. Hence, the use of efficient inventory management practices has the potential to enhance the advertising outcomes of a corporation. The assertion is substantiated by the results of a study done by Wasike and Juma (2020) [36], whereby empirical research indicated a strong impact of inventory management on the logistical performance of humanitarian groups in Kenya. The findings of Gitonga's (2017) [15] study align with the conclusion, suggesting that inventory management significantly enhances the operational effectiveness of fast-moving consumer goods enterprises in Nairobi. This assertion aligns with the conclusions made by Takwi and Mavis (2020) [34], whose research shown a significant influence of inventory management on the operational effectiveness of Gas Depot Atem in Cameroon.

Warehouse management and organizational performance

The study conducted by Mao, Xing, and Zhang (2018) [22], concluded that warehouse management can be defined as the systematic approach used to guarantee the accessibility and operational efficiency of facilities required for the secure and efficient storage of goods. The process involves strategically locating warehouses in suitable locations, equipping them with the required facilities and accessories for effective storage, and ensuring the proper maintenance of these facilities to enable uninterrupted storage operations. When warehouses are well managed, companies may have peace of mind, as they are certain of having the necessary components and finished items readily available to meet their order fulfilment requirements. The optimisation of warehouse operations is crucial for enhancing the marketing efficiency of firms. This assertion aligns with the conclusions drawn from a study conducted by Kirui and Nondi (2017) [18], whereby it was discovered that the efficiency of warehouse management had a substantial influence on the operational effectiveness of shipping enterprises in Kenya. The findings of Wasike and Juma (2020) [36] align with the notion that warehouse management has a significant role in influencing the logistical efficiency of charity organizations in Kenya. The study conducted by Gitonga (2017) [15] showed a strong correlation between warehouse management practices and the operational performance of fast-moving consumer items producers in Nairobi. This finding provides support for the assertion that effective warehouse management has a substantial influence on the operational performance of such producers.

Theoretical framework

This study was anchored on theory of constraints.

Theory of constraints (TOC)

Gupta and Boyd (2018) [40] assert that theory of constraints (TOC) is a managerial ideology aimed at identifying the elements that impose restrictions on a system's capacity. At least one constraint also referred to as a limiting factor (Puche., Ponte, Costas, Pino, & De la Fuente, 2016) [28] impedes the realisation of the complete potential and attainment of the declared objectives of any given organisation, in accordance with this theory. Antwi (2019) [41], submits that the term "limitation" refers to any obstacle

that impedes the achievement of an organization's objectives. Dodoo, Appiah, and Donkoh (2020) ^[11] as well as Prempeh (2015) ^[27] posit that the most substantial impediment to an organization's achievement is the system's most vulnerable component.

The notion further posits that firms can only achieve success in the presence of challenges if they adopt a methodical, strategic, and all-encompassing approach to problem-solving. Flynn *et al.* (2020) ^[14] assert that the Theory of Constraints (TOC) is a managerial framework that prioritises comprehensive quality management and streamlined operational processes as a means to overcome limitations within a system. Manufacturing companies may have a higher prevalence of logistical issues, such as longer lead times, substandard material orders, an excessive volume of unfilled and time-sensitive orders, diminished customer satisfaction, and subpar performance (Qrunfleh & Tarafdar, 2013) ^[29].

Hence, by the concept, organizations may only address their logistical challenges by using the most efficient logistics management strategies to mitigate concerns related to bottlenecks and maintain production timelines while ensuring uninterrupted inventory management. Moreover, as stated by Puche *et al.* (2016) ^[28], this concept encourages the enhancement of value without disrupting the operational efficiency of the organisation by eliminating any constraints. The study places significant emphasis on Total Ownership Cost (TOC) as a fundamental aspect, as it aims to enlighten businesses regarding the notion of limited inventory availability and strategies to address it. These strategies include the implementation of Just-in-time (JIT) production, supply-side platforms/storage service providers, Materials Requirements Planning (MRP), Economic Order Quantity (EOQ), and vendor-managed inventory (VMI).

Empirical review

The study conducted by Edim and Inyang (2022) ^[12] centered on the examination of logistics management and marketing performance inside small and medium-sized manufacturing firms. The primary aim of the study was to assess the impact of the small and medium-sized enterprise (SME) manufacturers' operational practices, namely, order processing, shipping, inventory management, and warehouse management, on their marketing endeavors. The primary data used in this cross-sectional study was obtained by the administration of a questionnaire to a sample of 216 small and medium-sized enterprise (SME) industrial workers and operators. The study's validity was established via the use of both face validity and content validity, while the reliability of the instrument was verified using Cronbach's alpha. The inquiry used multiple linear regression to test the given hypotheses. Therefore, the study determined that the successful administration of order processing, transportation, inventory, and warehouses has a substantial influence on the marketing effectiveness of small and medium-sized manufacturing firms. The study revealed that there is a considerable relationship between logistics management and marketing performance for small and medium-sized enterprises (SMEs) operating in the industrial sector.

In their study, Ayantoyinbo and Gbadegesin (2021) ^[5] examined the impact of logistics outsourcing on the financial performance of Nigerian enterprises listed on the stock exchange. A panel data regression analysis was

conducted to examine the influence of logistics operations on the financial performance of the selected enterprises over a five-year period (2015-2019). Information on the cost of logistical activities and important financial indicators was obtained by extracting data from secondary sources. The study revealed that the logistics function has a substantial and favourable impact on the financial performance of manufacturing enterprises in Nigeria. Hence, it is strongly recommended that firms priorities logistics procedures to enhance their financial performance.

In their study Chala (2021) ^[8] aimed to examine the influence of logistics management on the overall performance of the organization. The study used a structured questionnaire as a means of gathering primary data. The data was collected from a sample of 190 plant workers at the Wonji/Shoa Sugar facility. Pearson's correlation, multiple regression, and descriptive statistics were used to analyze the data. The study conducted in Ethiopia revealed a notable improvement in organizational performance via the implementation of improved transportation, inventory, and warehouse management practices.

Dieudonné (2021) ^[10] conducted a study on the influence of logistics on supply chain performance within the private pharmaceutical sector in Rwanda. The used research methodology included the utilization of a cross-sectional technique. The data collected by the questionnaire was analysed using inferential statistics. The study revealed that logistics has a significant role in predicting the performance of the supply chain in the private pharmaceutical sector in Rwanda. The correlation coefficient of 0.48 indicates that there is a positive relationship between logistics performance and supply chain performance, with each unit improvement in logistics performance resulting in a corresponding rise in supply chain performance. The study revealed a substantial and positive correlation between transportation and supply chain performance ($B=0.705$, $p<0.005$). Ultimately, the researchers were able to establish that the management of inventory, storage practices, and the interchange of information had a positive albeit statistically insignificant correlation with the overall performance of the supply chain.

Esther and Dennis (2020) ^[13] conducted an investigation on the influence of logistical management practices on the logistics output of humanitarian agencies in Kakamega County. The objective of the study was to ascertain the potential impact of inventory management, transport management, information flow, and warehouse management on the operational efficiency of humanitarian groups operating in Kakamega County, Kenya. The present inquiry adopted research methodologies that included both descriptive and explanatory approaches. The study primarily focused on the non-governmental organizations (NGOs) that are actively engaged in providing assistance to those in need within the Kakamega North Sub County. The research population consisted of sixty-four individuals residing in the Kakamega North sub-county who were associated with local non-governmental organizations (NGOs) or had positions as humanitarian officers for international NGOs. The delivery of a semi-structured questionnaire was conducted using a drop and pick technique. The examination of the questionnaire's validity and reliability was conducted. The data underwent analysis using a combination of quantitative and qualitative methodologies, facilitated by the use of SPSS software. The study revealed that humanitarian

organizations use logistic management practices to mitigate inventory disruptions in the production cycle. Additionally, they utilize transport management practices to assure the prompt delivery of goods and services to clients. The study's results indicate that the implementation of excellent warehouse management practices contributes to the prompt and accurate delivery of the appropriate quantity of commodities to customers. The results of the regression analysis indicated that each of the practices examined, namely inventory management, transportation, information flow, and storage, had positive beta coefficients. According to the findings of the study, it is indicated that any kind of enhancement would provide positive effects on the effectiveness and efficiency of logistical operations.

Mercy and John (2020) ^[23] examined the impact of logistics management on the performance of the supply chain within the manufacturing sector in Kenya. The researchers decided to use a descriptive methodology. The sample population of the research consisted of all 708 manufacturing businesses in Kenya that were registered with the Kenya Association of Manufacturers in the year 2017. Out of a total population of 708 enterprises, a subset of 96 businesses was chosen based on the implementation of an equation. The individual responsible for procurement inside each organization was considered the primary source of knowledge and understanding. The assessment produced significant quantitative data. The investigation used a combination of illuminating and inferential measures for evaluation. In order to determine the relationship between the variables, a relapse model was used. The data analysis was conducted with version 21 of the statistical software SPSS. The results were presented in tabular and graphical formats. The study's findings indicate that proficient warehouse management significantly and positively influences the supply chain performance of manufacturing businesses in Kenya. The results also indicate that the implementation of good inventory management practices has a positive influence on the overall supply chain efficiency of industrial firms. As a result, it was observed that the management of order processing had a positive impact on the supply chain performance of manufacturing firms in Kenya. The study's findings indicate that the implementation of efficient transportation management practices has a positive influence on the overall efficiency of industrial supply chains in Kenya.

Methodology

Research design

This study used descriptive research design.

Population of the study

The target population for this study comprises of 426 workers of Niger mills Ltd. Calabar.

Sample and sampling techniques

The study sample included individuals occupying various managerial positions inside Niger Mills Ltd. in Calabar. Consequently, the researcher used a simple random sampling procedure to choose participants. The sample size was determined using the Taro Yamane formula.

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

Where:

N = population size
n = sample size
e = tolerable error term
1 is constant

$$n = \frac{426}{1 + 426(0.05)^2}$$

$$n = \frac{426}{1 + 426(0.0025)}$$

$$n = \frac{426}{1 + 0.923}$$

$$n = \frac{426}{1.923}$$

n = 206

Therefore, the sample size is 206

Research instrument

The research employed primary data that were acquired using self-administered questionnaire with closed ended questions. The survey used a five-point Likert scale and was filled out using a drop-and-pick system.

The questionnaire contained two sections in which section A contained the demographic information, section B contained questions on the relationship between logistics management and organizational performance.

Validity and Reliability of Instrument

The study used the content validity method to validate the research instrument. Test and measurement experts were asked to critique the contents of the questionnaire. In addition, a pilot survey was carried out, and the feedback received through the use of Cronbach alpha analysis was used to improve the instrument.

Data analysis technique

The gathered information is presented in tables. The Pearson product moment correlation, also known as the correlation coefficient, was used to investigate the relationship between the dependent and independent variables. The equation for the correlation coefficient is as follows:

$$r = \frac{n \sum xy - (\sum x) (\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2) (n \sum y^2 - (\sum y)^2)}}$$

Where;

N = Sample size

$\sum xy$ = Sum of product x and y

$\sum x$ = Sum of x

$\sum y$ = Sum of y

$\sum x^2$ = Sum of square of x

$(\sum x)^2$ = Squares of the sum of all Xs

$\sum y^2$ = Sum of square of y

$(\sum y)^2$ = Squares of the sum of all Ys

The Decision Rule

If (r) is positive, then H_0 should be rejected and H_1 should be accepted; otherwise, H_0 should be accepted and H_1

should be rejected.

Test of hypotheses

Test of Hypotheses one

H₀: There is no significant relationship between transportation management and organizational performance of Niger mills Ltd. Calabar.

H₁: There is a significant relationship between transportation management and organizational performance of Niger mills Ltd. Calabar.

Table 1: Computation of the responses on the relationship between transportation management and organizational performance

X	Y	XY	X ²	Y ²
117	5	585	13,689	25
61	4	244	3,721	16
11	3	33	121	9
4	2	8	16	4
7	1	7	49	1
Σx = 200	Σy = 15	Σxy = 877	Σx ² = 17,596	Σy ² = 55

Source: Field survey (Questionnaire, 2023), *p* < 0.05, *df* = 118, *t* = 1.98

$$r = \frac{n \sum xy - (\sum x) (\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2) (n \sum y^2 - (\sum y)^2)}}$$

$$r = \frac{5 * 877 - (200 * 15)}{\sqrt{(5 * 17,596) - (200)^2} (5 * 55 - (15)^2)}$$

$$r = \frac{4,385 - 3000}{\sqrt{(87,980 - 40,000) (275 - 225)}}$$

$$r = \frac{1,385}{\sqrt{47,980 * 50}}$$

$$r = \frac{1,385}{\sqrt{2,399,000}}$$

$$r = \frac{1,385}{1548.87}$$

r = 0.89

Based on the aforementioned outcome, the value of *r* is roughly 0.89, which is close to 1. According to the decision rule, the null hypothesis is rejected when the correlation coefficient (*r*) is positive or equal to 1. Therefore, we reject the null hypothesis that posits no significant association between transportation management and organizational performance of Niger Mills Ltd. Calabar.

Test of Hypotheses two

H₀: There is no significant relationship between warehouse management and organizational performance of Niger mills Ltd. Calabar.

H₁: There is a significant relationship between warehouse management and organizational performance of Niger mills Ltd. Calabar.

Table 2: Computation of the responses to questions on the relationship between warehouse management and organizational performance

X	Y	XY	X ²	Y ²
115	5	575	13,225	25
65	4	260	4,225	16
8	3	24	64	9
5	2	10	25	4
7	1	7	49	1
Σx = 200	Σy = 15	Σxy = 876	Σx ² = 17,588	Σy ² = 55

Source: Field survey (Questionnaire, 2023), *p* < 0.05, *df* = 118, *t* = 1.98

$$r = \frac{n \sum xy - (\sum x) (\sum y)}{\sqrt{(n \sum x^2 - (\sum x)^2) (n \sum y^2 - (\sum y)^2)}}$$

$$r = \frac{5 * 876 - 200 * 15}{\sqrt{(5 * 17,588 - (200)^2) (5 * 55 - (15)^2)}}$$

$$r = \frac{4380 - 3000}{\sqrt{(87940 - 40000) (275 - 225)}}$$

$$r = \frac{1380}{\sqrt{47940 * 50}}$$

$$r = \frac{1380}{\sqrt{2,397,000}}$$

$$r = \frac{1380}{1548.22}$$

r = 0.89

Based on the aforementioned observations, the correlation coefficient (*r*) has a value of around 0.89, which may be approximated to 1. According to the decision rule, the null hypothesis is to be rejected if the value of *r* is equal to or higher than 1. Given that the value of *r* is larger than or equal to 1, it is imperative to reject the null hypothesis that posits the absence of any link between warehouse management and organizational performance of Niger mills Ltd. Calabar.

Test of Hypotheses three

H₀: There is no significant relationship between inventory management and organizational performance of Niger mills Ltd. Calabar.

H₁: There is a significant relationship between inventory management and organizational performance of Niger mills Ltd. Calabar

Table 3: Computation of responses to questions on the relationship between inventory management and organizational performance

X	Y	XY	X ²	Y ²
127	5	635	16,129	25
65	4	260	4,225	16
3	3	9	9	9
3	2	6	9	4
2	1	2	4	1
Σx = 200	Σy = 15	Σxy = 912	Σx ² = 20,376	Σy ² = 55

Source: Field survey (Questionnaire, 2023), *p* < 0.05, *df* = 118, *t* = 1.99

$$r = \frac{n[\sum xy] - [\sum x][\sum y]}{\sqrt{(n\sum x^2 - (\sum x)^2)(n\sum y^2 - (\sum y)^2)}}$$

$$r = \frac{5 * 912 - 200 * 15}{\sqrt{5 * 20,376 - (200)^2 (5 * 55 - (15)^2)}}$$

$$r = \frac{4560 - 3000}{\sqrt{(101880 - 4000)(275 - 225)}}$$

$$r = \frac{1560}{\sqrt{61880 * 50}}$$

$$r = \frac{1560}{\sqrt{3094000}}$$

$$r = \frac{1560}{1758.97}$$

$$r = 0.87$$

Based on the aforementioned computation, the obtained value for r is around 0.87, which is in close proximity to 1. Based on our analysis, it is evident that a significant positive correlation exists between inventory management and the performance of Niger Mills Ltd. in Calabar, Nigeria. Consequently, we reject the null hypothesis, which suggests the absence of any association between these variables.

Discussion of findings

The study's r value of 0.89 indicates that transportation management and the performance of Niger Mills Ltd. in Calabar are significantly correlated. This is supported by Dieudonne (2021) ^[10] who demonstrates that the performance of the supply chain in the private pharmaceutical sector of Rwanda is substantially influenced by logistics. The methodology employed in this study involved the utilization of a cross-sectional approach. To derive conclusions from a survey, inferential statistics were applied to the data. The findings revealed that logistics performance and supply chain performance in Rwanda's private pharmaceutical supply chain were highly correlated. For each unit of improvement in logistics performance, supply chain performance increased by 0.48 units, indicating a positive correlation between the two variables. A significant positive correlation ($B=0.705$, $p0.005$) exists between supply chain and transportation performance, according to the data. Upon careful examination, the researchers concluded that supply chain performance was positively correlated with inventory management, storage, and information exchange. Nevertheless, this correlation fell short of statistical significance.

At Niger Mills Ltd. Calabar, a significant correlation ($r = 0.89$) was discovered between warehouse management and organizational performance. This conclusion is consistent with the results of a study conducted by Chala (2021) ^[8] which examined the influence of logistics management on the Wonji/Shoa Sugar Factory's output. The preliminary data was gathered through the administration of a standardized questionnaire to 190 employees of the plant. In order to analyse the data, descriptive statistics, Pearson's correlation, and multiple regression were all implemented.

Transportation, inventory, and warehouse management enhancements were found to significantly affect the performance of an organization, according to Ethiopian research.

The organizational performance of Niger Mills Ltd. Calabar was significantly influenced by inventory management ($r = 0.87$). The findings of the present investigation validate the prior research conducted by Edim and Inyang (2022) ^[12] regarding the relationship between logistics management and marketing performance in small and medium-sized enterprises (SMEs). Data analysis was the objective of this study in an effort to provide an answer to the following inquiry: "To what extent do order processing, transportation, inventory, and warehouse management impact the marketing performance of small and medium-sized manufacturing firms?" The primary data for this cross-sectional study was collected through a questionnaire survey completed by 216 industrial workers and operators at SMEs. In addition to face validity and content validity, Cronbach's alpha was employed to ascertain the instrument's reliability and ascertain the validity of the research. Multiple linear regression was employed to examine the research inquiries. The results of the study indicated that marketing performance in small and medium-sized manufacturing firms was positively impacted by effective supply chain management, which included order processing, transportation, inventory, and warehousing. The researchers reached the conclusion, through data analysis, that the marketing achievements of SME firms are significantly impacted by logistics management.

Conclusion and Recommendations

Conclusion

The main objective of this study was to examine the effects of logistic management on organizational performance: a study of Niger mills Ltd. Calabar. Based on the findings of the study, it was concluded that there is a significant relationship between transportation management and organizational performance of Niger mills Ltd., Calabar. It was concluded that there is a significant relationship between warehouse management and organizational performance of Niger mills Ltd., Calabar. It was also concluded that there is a significant relationship between inventory management and organizational performance of Niger mills Ltd., Calabar.

Recommendations

Based on the findings of the study, it was recommended that:

1. The corporation is advised to enhance control over its truck operations and enhance the efficacy of its fleet management.
2. The firm should furthermore give priority to the development of cost-effective delivery and storage procedures, as well as the centralization of its transportation and logistics activities.
3. The organization employs Just-in-Time (JIT) methodologies to effectively oversee the supply chain of both raw materials and finished products, minimizing wastage and reducing costs.

References

1. Abdul FA, Iortimbir AI, Oladipo GT, Olota OO. Impact of logistics management on organizational performance

- (A case study of Dangote Flour Mills Plc, Nigeria). *Journal of Sustainable Development in Africa*. 2019;21(1):36-49.
2. Alberto P. The logistics of industrial location decisions: An application of the analytical hierarchy process methodology. *International Journal of Logistics: Research and Application*. 2020;3(3):273-289.
 3. Amin HM, Shahwan TM. Logistics management requirements and logistics performance efficiency: The role of logistics management practices-evidence from Egypt. *International Journal of Logistics Systems and Management*. 2020;35(1):1-27.
 4. Anyalewechi C. Nigeria's manufacturing sector records real GDP growth of 3.49% in Q2 2021; c2021. Available at: <https://nairametrics.com/2021/08/26/nigerias-manufacturing-sector-records-real-gdp-growth-of-3-49-in-q2-2021/> (Accessed: January 3, 2023).
 5. Ayantoyinbo BB, Gbadegesin AE. Examination of the Effect of Logistics Functions on Financial Performance of Organization. *International Journal of Engineering Technologies and Management Research*. 2021;8(3):18-26.
 6. Bagashaw G. The Effect of Logistics Management Activities on Organizational performance. Department of Logistics and Supply Chain Management, Addis Abab University; c2019.
 7. Bureau of Labour Statistics. Employment Situation for 2021; c2020. Retrieved from https://www.bls.gov/schedule/news_release/empsit.htm
 8. Chala G. The effect of logistics management on organizational performance at Wonji/Shoa Sugar Factory. *Global Scientific Journals*. 2021;9(5):1962-1974.
 9. Choi TM. Risk analysis in logistics systems: A research agenda during and after the COVID-19 pandemic. *Transportation Research Part E: Logistics and Transportation Review*. 2021;145:102190.
 10. Dieudonne N. Effect of Logistics on supply chain performance in private pharmaceutical sector in Rwanda. Case of pharmaceutical wholesales-Nyarugenge District. *The International Journal of Business Management and Technology*. 2021;5(6):1-6.
 11. Dodoo RN, Appiah M, Donkoh DT. Examining the factors that influence firm performance in Ghana: a GMM and OLS approach. *National Accounting Review*. 2020;2(3):309-323.
 12. Edim EJ, Inyang BI. Logistics Management and Marketing Performance of Small and Medium-Sized Manufacturing Firms. *International Journal of Entrepreneurship and Business Innovation*. 2022;5(1):1-15.
 13. Esther RW, Dennis D. Influence of Logistics Management Practices on the Logistic Performance of Humanitarian Organizations in Kakamega County, Kenya. *International Journal of Scientific and Research Publications*. 2020;10(9):97-109.
 14. Flynn B, Huo B, Zhao X. The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of Operations Management*. 2020;28(1), 58-71.
 15. Gitonga S. Logistics management practices and operational performance of fast-moving consumer goods manufacturers in Nairobi [MBA Thesis, University of Nairobi, Kenya]; c2017.
 16. Haraguchi N, Cheng CF, Smeets E The importance of manufacturing in economic development: Has this changed? *World Development*. 2017;93:293-315.
 17. Kaplan RS, Norton DP. Having Trouble with Your Strategy? Then Map It. *Harvard Business Review*. 2000;78(5):167-176.
 18. Kirui MT, Nondi R. Effects of logistics management on the organizational performance of shipping firms in Mombasa County. *Strategic Journal of Business & Change Management*. 2017;4(3):821-839.
 19. Kotler P, Armstrong G. *Principles of Marketing* (14th ed.). Prentice Hall; c2011.
 20. Kritchanchai D, Meesamut W Developing inventory management in hospitals. *International Journal of Supply Chain Management*. 2015;4(2):11-19.
 21. Ltifi M, Gharbi J. The effect of logistics performance in retail store on the happiness and satisfaction of consumers. *Procedia Economics and Finance*. 2015;23:1347-1353.
 22. Mao J, Xing H, Zhang X. Design of an intelligent warehouse management system. *Wireless Personal Communications*. 2018;102(2):1355-1367.
 23. Mercy M, John A. Effect of Logistics Management Practices on Supply Chain Performance of Manufacturing Firms in Kenya. *International Journal of Supply Chain and Logistics*. 2020;4(3):50-69.
 24. Montoya-Torres JR, Muñoz-Villamizar A, Mejia-Argueta C. Mapping research in logistics and supply chain management during COVID-19 pandemic. *International Journal of Logistics Research and Applications*; c2021. p. 1-21.
 25. Mora-Ochomogo EI, Mora-Vargas J, Serrato M. A qualitative analysis of inventory management strategies in humanitarian logistics operations. *International Journal of Combinatorial Optimization Problems and Informatics*. 2016;7(1):40-53.
 26. Neely AD. The Evolution of Performance Measurement Research: Developments in the Last Decade and a Research Agenda for the Next. *International Journal of Operations and Production Management*. 2005;25(12):1264-1277.
 27. Prempeh K. The impact of efficient inventory management on profitability: Evidence from selected manufacturing firms in Ghana. Germany: University Library of Munich; c2015.
 28. Puche J, Ponte B, Costas J, Pino R, De la Fuente D. Systemic approach to supply chain management through the viable system model and the theory of constraints. *Production Planning & Control*. 2016;27(5):421-430.
 29. Qrunfleh S, Tarafdar M. Lean and Agile Supply Chain Strategies and Supply Chain Responsiveness: The Role of Strategic Supplier Partnership and Postponement. *Supply Chain Management*. 2013;18:571-582.
 30. Ristovska N, Kozuharov S, Petkovski V. The impact of logistics management practices on company's performance. *International Journal of Academic Research in Accounting Finance and Management Sciences*. 2017;7(1):245-252.
 31. Rui M, Luis A. *Logistics performance: A theoretical conceptual model for small and medium enterprises*. JEL Classification Books; c2014.
 32. Song L, Zhou Y). The COVID-19 pandemic and its

- impact on the global economy: What does it take to turn crisis into opportunity? *China & World Economy*. 2020;28(4):1-25.
33. Speranza MG. Trends in transportation and logistics. *European Journal of Operational Research*. 2018;264(3):830-836.
 34. Takwi FM, Mavis AA. The effects of logistic management on enterprise performance: A case of Gas Depot Atem in Yaounde, Cameroon. *American Journal of Operations Management and Information Systems*. 2020;5(3):41-48.
 35. Trading Economics. China GDP from industry; c2021. Available at: <https://tradingeconomics.com/china/gdp-from-manufacturing> (Accessed: October 3, 2023)
 36. Wasike ER, Juma D. Influence of logistics management practices on the logistic performance of humanitarian organizations in Kakamega County, Kenya. *International Journal of Scientific and Research Publications*. 2020;10(9):97-109.
 37. Zamolo A. Top 7 manufacturing trends for 2022; c2021. Available at: <https://www.beekeeper.io/blog/manufacturing-trends/> (Accessed: January 3, 2023).
 38. Copes H, Leban L, Kerley KR, Deitzer JR. Identities, boundaries, and accounts of women methamphetamine users. *Justice Quarterly*. 2016 Jan 2;33(1):134-58.
 39. Simons DJ, Boot WR, Charness N, Gathercole SE, Chabris CF, Hambrick DZ, *et al.* Do brain-training programs work?. *Psychological science in the public interest*. 2016 Oct;17(3):103-86.
 40. Boyd LE, Gupta S, Vikmani SB, Gutierrez CM, Yang J, Linstead E, *et al.* Vr Social: Toward immersive therapeutic VR systems for children with autism. In *Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems*; c2018 Apr 21. p. 1-12.
 41. Antwi F. Capital adequacy, cost income ratio and performance of banks in Ghana. *International Journal of Academic Research in Business and Social Sciences*. 2019 Oct;9(10):168-84.