

**IMPACT OF LOGISTICS MANAGEMENT ON ORGANIZATIONAL PERFORMANCE
(A CASE STUDY OF DANGOTE FLOUR MILLS PLC, NIGERIA)**

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ABSTRACT

Organizations perform various logistical operations so as to meet their customers' needs and sustain development. The study sought to address the following objectives: to analyze the influence of transport management on organization effectiveness; evaluate the influence of inventory management on organizational productivity and to examine the influence of information flow on employee's efficiency. Descriptive survey research design was used to sample 115 employees of Dangote Flour Mills Ilorin . Findings of the study shows that transportation management affects organizational effectiveness with a R^2 value of 0.769; that there is strong relationship between information flow management and employees' efficiency with a R^2 value of 0.923 and that there is strong relationship between inventory management and organizational productivity with a Pearson correlation value of 0.859. This study therefore recommended that factors associated with logistics management needs to be considered by the organization in their strategic plans as it will contribute significantly to a sustainable development of the Nigeria economy

Keywords; Organization, Logistic, Sustainability, Inventory, Management, Performance, Kwara state

INTRODUCTION

The globalization process enables the sale of products for the same purpose from different manufacturers and with different prices. The increased offer on the market has led to intensive competition and some of the companies are faced with the problem of survival. The development of information technology has led to increased flow of information around the world, which resulted in enhanced education of producers and consumers (Delfmann & Gehring, 2003). The only way for companies to survive on the market is constant lowering the price of products and regular improvement of product characteristics. Hence, the continuous intensive development of the company is crucial to its survival on domestic and global markets. Globalization had a critical impact on manufacturing, both locally and internationally. Through broadening the marketplace and increasing competition, globalization led customers to place greater demands on manufacturers to increase quality, serviceability and flexibility, while maintaining competitive costs (Laosirihongthong & Dangayach, 2005). One of the ways of improving efficiency on manufacturing firms was to improve logistics performance. That is why if manufacturing firms needed to become efficient and flexible in their manufacturing methods, they needed different strategies to manage the flow of goods from the point of production to the end user, (Awino, 2011).

One important management practice that can be applied in organizations today is Logistics management. Logistics management provides business organizations with the total operations costs and increases the efficiency of the company's business activities. Collaboration among all the supply chain players coupled with a responsive approach can enhance organizational competitiveness through reduced lead-time facilitated by smooth flow of material from upstream towards the downstream end of supply chain. This approach will ensure end customers get value for their money and also reduce the level of uncertainty in the industry (Waiganjo & Gatobu, 2014).

Many factors such as deregulation, competitive pressures, information technology, globalization, profits leverage, contributed to the increase of Logistics management in the form we know it today (Ittmenn & King, 2010). The goal of Logistics management was to optimize the number, size, and geographical arrangement of plants and warehouse facilities, select transportation methods, and control distribution costs (Mentzer, Soonhong, & Bobbitt, Toward a unified theory of logistics, 2004). Consequently, Logistics management has done an excellent job of managing and moving inventory and the operational aspect of Logistics (Mentzer, Flint, & Kent, 1999)

RESEARCH OBJECTIVES

The research objectives are :

- i. to analyze the extent to which transport management has affected Organizational effectiveness;
- ii. to evaluate the significant relationship between inventory management and organizational productivity;
- iii. to examine the impact of information flow management on employee's efficiency.

LITERATURE REVIEW

With the increasing awareness of strategic implications of logistics and the growing awareness of the benefits of leveraging logistics to increase customer value measuring the performance of logistics had become a high priority (Cheng & Grimm, 2006; Griffis, Goldsby, Cooper, & Closs, 2007). In this study the dependent variable was organizational performance and it was called dependent because any successful firm's performance depended on many different factors which were termed as independent variables. The independent variables in this case were the core factors that led to success of logistics management and they included: transport management, inventory management, and information flow. A logistics information system was the intervening variable.

Logistics is the process of planning, implementing and controlling procedures for the efficient and effective transportation and storage of goods including services and related information from the point of origin to the point of consumption for the purpose of conforming to customer requirements and includes inbound, outbound, internal and external movements. (Lambert & Stock, 2008). Logistics management is a supply chain management component that is used to meet customer demands through the planning, control and implementation of the effective movement and storage of related information, goods and services from origin to destination. Logistics management helps companies reduce expenses and enhance customer service. (Fugate, *et al*, 2010). Logistics management is the part of supply chain management that plans, implements, and controls the efficient, effective forward, and reverses flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customer's requirements. The complexity of logistics can be modeled, analyzed, visualized, and optimized by dedicated simulation software. The minimization of the use of resources is a common motivation in all logistics fields. A professional working in the field of logistics management is called a logistician. (Christopher, 2011). According to the Council of Logistics Management (CLM) "Logistics is the process of planning, implementing and controlling the efficient and effective flow of goods, services and related information from point of origin to point of consumption in order to meet customer requirements". Logistics management is the process of strategically managing the procurement, movement and storage of materials, parts and finished inventory (and the related information flows) through the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders (Christopher, Logistics & Supply Chain Management, 2011). Logistics encompasses all of the information and material flows throughout an organization. It includes everything from the movement of a product or from a service that needs to be rendered, through to the management of incoming raw materials, production, the storing of finished goods, its delivery to the customer and after-sales service (Ittmenn & King, 2010). The commonality of the recent definitions in logistics is that, it is a process of moving and handling goods and materials, from the beginning to the end of the production, sale process and waste disposal, to satisfy customers and add business competitiveness (Tseng, Yue, & Taylor, 2005). It is _the process of anticipating customer needs and wants; acquiring the capital, materials, people, technologies, and information necessary to meet those needs and wants; optimizing the goods or service-providing network to fulfill customer requests; and utilizing the network to fulfill customer requests in a timely way (Tseng, Yue, & Taylor, 2005).

Logistics Management

There has been a change in the way business is conducted today. Due to the development in technology, the logistics management has evolved and gained greater significance in doing business. Logistics management is treated as a part of the supply chain management that deals with management of goods in an efficient way. It is the management process that integrates the movement of goods, services, information and capital, right from the sourcing of raw material, to the consumer (Springinklee & Wallenburg, 2012). The goal of the logistics management is to provide the right product with the right quality at the right time in the right place at the right price to the ultimate customer (Mentzer *et al.*, 2004). Logistics management has been defined as a high priority for contemporary organizations. The success of logistics management is determined through the combination of efficiency, effectiveness and differentiation (Fugate *et al.*, 2010). Eventually, supply chain management measures through procrastination affect price/cost, product's quality, innovation (Mamad & Chahdi, 2013).

Information Flow Management

In today's competitive environment, effective and timely responses to ever-changing customer tastes and preferences have become essential components for successful business performance (Han & Trienekens, 2009). In achieving performance, information flow comes in handy. According to Harisson and van Hoell (2002) information flow was defined as the flow of data in different directions with variable contents between various data base (department) within a company. Before, the information flow within the logistics had become vital since it enabled chains to respond on real time and accurate data (Harisson& van Hoell, 2002). Firms then, looked at information flow as an asset, since it was not possible to have efficient and reliable materials flow without it (Mattsson & Lemmink, 2002) (Stevenson & Spring, 2009) concurred that, the flow of accurate and real time information in logistics was considered very important to the flow of materials.

This information explosion had enabled logistics to become an important weapon in the firm's arsenal to add value to the bottom line (Closs, *et al.*, 2005). Information sharing was a key to success of logistics performance (Whipple, Lambert, Vermeersch., 2002). In their study, Wardaya and Baskara (2013) confirmed that information flow had become an important element that reflected collaboration within the logistics management and firm performance. Sharing of information on transfer; exchange of information indicating the level and position of inventory; sales data and information on the forecasting; information about the status of orders, production schedules and delivery capacity, and firm performance measures had become essential to all firms (Wardaya, *et al.*, 2013).

As a result, Bowersox *et al.*, (2010) named four reasons why timely and accurate information flow had become more critical for effective logistics systems' design and operations: Customers perceived information about order status, product availability, delivery schedule, shipment tracking, and invoices as necessary elements of total customer service. With the goal of reducing total supply chain assets, managers realized that information could be used to reduce inventory and human resource requirements; Information flow increased flexibility with regard to how, when, and where resources may be utilized

to gain strategic advantage; Enhanced information transfer and exchange capability utilizing the internet was changing between buyers and sellers and redefining the channel relationships (Somuyiwa & Adewoye, 2010).

However, this information flow can only be successful when firms impress on information technology use. Information technology provides the capacity to see data that is private in a system of cooperation and monitor the development of products, where information is passing in every process in the supply chain (Simatupang & Sridharan, 2002).

Forms of Logistics Management

Manufacturing companies are constantly faced with the challenges of keeping track of inventory and ensuring that their products are successfully delivered to the customers. This workflow generally involves various forms of logistics, each of which functions a little differently. The various forms of Logistics Management according to (Ristovska, Kozuharov, & Petkovski, 2017) are:

Warehousing Management

Warehousing is an important part of a firm's logistics system that stores products (raw materials, parts, goods-in-process and finished goods) at and between points of origin and points of consumption. Warehousing can be provided by either warehouses or distribution centres (Murphy & Wood, 2008). An important decision for many firms is the criteria for locating the warehouse facilities. Cost factors are prevalent in the decision making models. Resources such as skilled labour are also emphasized in some of the models. Another dominant factor is what might be named as accessibility, meaning infrastructure and availability of transportation modes (Melachrinoudis, *et al*, 2000). Alberto (2000) also emphasizes time and reliability related considerations. This includes the proximity of customers manufacturing facilities and suppliers.

Inventory Management

Besides the various activities associated with a lean supply chain, many firms across the world are always finding different methods and techniques to reduce their investments in inventory, because it is indirectly taxing on the profitability of the firm. Inventory management is a strategic area in logistics operation and has an impact of efficiency and effectiveness of the overall supply chain system. Whilst inventories provide some security against fluctuations in the level of customer demand, there is concern that they may reduce the ability of supply chains to respond to changes in the nature of demand. Inventories in the international supply chains may therefore act as a buffer against one risk whilst increasing another type of risk.

Etienne (2005) lists factors such as speed to the market for new products, responsiveness to market niches, and feedback time for quality issues. Harrison and Van (2008) have put forward inventory reduction strategies such as: reduction of production lead times, product postponement, total cycle time, compression, centralization of inventory and the virtual warehousing concept. Managing all kinds of assets in an organization can be viewed as an inventory problem.

Transport Management

Transport management is the planning, controlling and decision making on operational area of logistics that geographically moved and positioned inventory (Bowersox, Closs, & Cooper, 2010). Because of its fundamental importance and visible cost, transportation had traditionally received considerable managerial attention and almost all enterprises, big and small, had managers responsible for transportation (Bowersox, *et al.*, 2010). Transportation occupied one-third to two thirds of the amount in the logistics costs hence transport management influenced the performance of logistics system immensely (Bowersox, *et al.*, 2010). Transporting is required in the whole production procedures, from manufacturing to delivery to the final consumers and returns. Only a good management and coordination between each component would bring the benefits of logistics to a maximum. A good transport management in logistics activities could provide better logistics efficiency, reduce operation cost, and promote service quality on firms (Bowersox, *et al.*, 2010).

From the logistical system point of view, three factors were fundamental to transportation performance: cost, speed, and consistency (Bowersox, *et al.*, 2010). The cost of transport is the payment for shipment between two geographical locations and the expenses related to maintaining on-transit inventory. Logistical systems utilized transportation that minimized total system cost (Bowersox, *et al.*, 2010). According to Bowersox, (2010) speed of transportation was the time required to complete a specific movement. Speed and cost of transportation were related in two ways. First, transport firms capable of offering faster delivery typically charged higher rates for their services. Second, the faster the transportation service was, the shorter the time interval during which inventory were on transit and the higher the charges (Bowersox, *et al.*, 2010). Thus, a critical aspect of selecting the most desirable method of transportation to a firm is to balance speed and cost of service.

Sustainable Development

Sustainable development has been defined by many authors ,According to Wikipedia encyclopedia Sustainable development can be defined as the principle for meeting human developmental goals while at the same time sustaining the natural resource and ecosystem services upon which the economy and society depend. it can be deduced from this definition that it is a development that meets the present need without compromising the ability of the future generation to meet their own needs. It is a blue print to achieve better and guarantee more sustainable futre for all.

The growth and development of any nation depends largely on the manufacturing sector which contributes significantly to economic development of all nations. The development of information technology has led to increased flow of information around the world, which resulted in enhanced education of producers and consumers (Delfmann & Gehring, 2003). The only way for companies to survive on the market is constant lowering the price of products and regular improvement of product characteristics. Hence, the continuous intensive development of the company is crucial to its survival on domestic and global markets with adequate logistics so as to maintain sustainable development in a developing economy such as Nigeria.

THEORETICAL FRAMEWORK

The Resource Based View (RBV)

RBV identifies the (valuable, rare, imitable and non-substitutable) resources owned by the firm as the source of the firm's sustainable competitive advantage. Extensions of the theory have produced several theoretical refinements including the knowledge-based view of the firm (Grant, 1996), core competency (Prahalad & Hamel, 1990) capabilities theory (Helfat & Peteraf, 2003) and the dynamic capabilities view (Teece, Pisano, & Sheun, 1997).

The principal contribution of the resource based view of the firm to date has been as a theory of competitive advantage. Its basic logic is a relatively simple one. It starts with the assumption that the desired outcome of managerial effort within the firm is a sustainable competitive advantage (SCA). Achieving an SCA allows the firm to earn economic rents or above-average returns. In turn, this focuses attention on how firms achieve and sustain advantages. The resource-based view contends that the answer to this question lies in the possession of certain key resources, that is, resources having the characteristics of value, barriers to duplication and appropriability. An SCA can be obtained if the firm effectively deploys these resources in its product-markets. Therefore, the RBV emphasizes strategic choice, charging the firm's management with the important tasks of identifying, developing and deploying key resources to maximize returns. In summary, the essential elements of the resource-based view are: sustainable competitive advantage and superior performance; the characteristics and types of advantage-generating resources; and strategic choices by management (Barney, 1991).

Empirical Framework

Fugate, Mentzer and Stank (2010) conducted a study on logistics performance and its influence on firm performance in USA on 150 firms. The study revealed that increase in logistics efficiency, effectiveness, and differentiation decreased expenses, inventory, cash requirements and increased inventory availability, timely delivery, on-time and damage-free deliveries, line-item fill rates and sales which improved net margin and asset turnover, which improved return on assets and overall firm performance.

Liu and Luo, (2008) examined the effect of logistics capabilities on performance in manufacturing firm's in China. The study based on a survey of 1000 manufacturing firms in central south, south and central china regions. By exploratory and confirmatory factor analyses, the scale of manufacturing firm's logistics capabilities is obtained. The results show that logistics capabilities can be conceptualized as a three dimensional construct: process capability, flexibility capability and information integration capability

METHODOLOGY

The study adopted a survey research design. The studied company is Dangote Flour Mills Plc in Ilorin, Kwara State. A simple random sample technique was adopted. A sample of one hundred and sixty two (162) employees was drawn from the population using Yamane (1973) formula for estimating sample size. Primary source of data collection was used with the aid of a structured questionnaire as it instrument. The questionnaire was divided into two sections; section A on demographic questions while section B bothers on questions relating to the subject matter of the research. Using a Likert scale of 5 points,

the degree of agreement by the respondents to each of the items in the questionnaire is measured by calibrating the scale into Strongly agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly disagreed (SD) with the value of 5, 4, 3, 2, and 1 respectively. The data obtained by means of questionnaire were analysed and interpreted, simple frequency tables were used in presenting the results. The hypotheses were tested using Regression analysis and Pearson Product Moment Correlation with the aid of Statistical Packages for Social Scientists (SPSS).

Test of Hypotheses

HO₁: Transport Management has no significant effect on Organizational Effectiveness

Table 1.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.877 ^a	.769	.766	1.44449

a. Predictors: (Constant), Transport Management

Source; Author’s Computation, (2018)

The table shows the model summary. It shows how much of the variance in the dependent variable (Organizational effectiveness) is explained by the independent variable (Transport Management). In this model, the value of R square is 0.769. When expressed as a percentage, it shows that Transport Management accounts for 76.9% of variances in Organizational productivity. The remaining 23.1% is due to other variables that will affect organizational effectiveness but are not present in the model.

Table 2.0 ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	679.359	1	679.359	325.591	.001 ^b
1 Residual	204.481	113	2.087		
Total	883.840	114			

a. Dependent Variable: Organizational Effectiveness

b. Predictors: (Constant), Transport Management

Source: Author’s Computation, 2018

The results of the findings above revealed that the level of significance was 0.001 which is less than 0.05. This implies that the null hypothesis is rejected and the regression model is significant in predicting the effect of Transport Management on Organizational Effectiveness.

Table 3.0 **Coefficients^a**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	1.297	.300		4.325	.001
Transport Mgt.	.818	.045	.877	18.044	.000

a. Dependent Variable: organizational Effectiveness

Source: Author’s Computation, 2018

The table above shows how transport management contributes to the prediction of organizational effectiveness. The beta is 0.877 and p-value of 0.001 lesser than 0.05% which is the critical value. This implies that Transport Management is accumulated to 87.7 % of organizational effectiveness and since the p-value which is 0.001 is lesser than 0.05, this reveals that the null hypothesis is rejected and we can therefore conclude that Transport Management has a positive impact on Organizational effectiveness. The Coefficients value for Transport management which is 0.818 also reveals that Transport management has a positive impact on organizational effectiveness because a unit increase in the Transport management will bring about a 0.818 increase in organizational effectiveness.

HO₂: Inventory Management has no significant relationship with Organizational Productivity

Table 4.0

		Inventory Management	Organizational Productivity
Inventory Management	Pearson Correlation	1	.859**
	Sig. (2-tailed)		.002
	N	115	115
Organizational Productivity	Pearson Correlation	.859**	1
	Sig. (2-tailed)	.002	
	N	115	115

Source: Author’s Computation, 2018

The result presented in table above shows the estimate of correlation analysis for hypothesis two which shows the relationship between Inventory Management and Organizational Productivity. The result displayed above shows that there is a significant relationship between the dependent variable (Organizational productivity) and the independent variable (Inventory Management). The Pearson correlation value of 0.859 implies a very strong relationship. The level of significance

is also 0.002 which is less than 0.05, hence we would reject the null hypothesis stated above which means that there is a positive relationship between Inventory management and Organizational productivity.

HO₃: Information flow management has no significant impact on employees efficiency

Table 5.0 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.961 ^a	.923	.922	1.30004

a. Predictors: (Constant), Information Flow Management

Author’s Computation, (2018)

The table depicts a R² Value of 0.923. This implies that 92.3% variation in Employee Efficiency is explained by Information flow management. The Other 7.7% consists of Variables that will affect firm performance but are not present in the model. The R-value of 0.961 also shows a strong relationship between Information flow management and employees efficiency. This implies that the regression model is useful for making predictions since the value of R² is close to 1.

Table 6.0 ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	3958.747	4	989.687	585.573	.000 ^b
1 Residual	329.573	195	1.690		
Total	4288.320	199			

a. Dependent Variable: Employees Efficiency

b. Predictors: (Constant), Information Flow Management

Source: Author’s Computation, 2018

The ANOVA table is analyzed to see if any of the variables are significant. If the P-value is greater than 0.05 then we accept the null hypothesis. From the ANOVA table, the P-Value = 0.000 which is less than 0.05 that is the level of significance. This means that we will reject the null hypothesis and accept the alternative hypothesis which states that Information flow management has a significant effect on employees’ efficiency.

DISCUSSIONS OF FINDINGS

The first hypothesis was built on the statement that transport management does not have any significant impact on Organizational effectiveness of the manufacturing organization. The study findings rejected the null hypothesis and established that organizational effectiveness was significantly influenced by transport management positively. Performance was measured based on market share, response time and customer satisfaction. This study therefore established that transport

management provides better logistics efficiency, timely delivery, reduces operation costs and promotes services quality, hence will affect performance of the organization positively. This finding is in line with the study of Musau, Namusonge, Makhokha and Ngeno (2017) who concluded that Transport Management has a significant effect on organizational performance which is measured by effectiveness.

The second hypothesis was based on the statement that there is no significant relationship between Inventory management and Organizational productivity. The finding therefore rejected the null hypothesis, and established that there is a strong relationship between inventory management and Organizational productivity. In manufacturing, inventory management is even more important to keep production running. Every minute that is spent down because of the supply of raw materials is interrupted costs on company's unplanned expenses. In this way, inventory management is more than a means to control costs; it becomes a way to promote the business. Due to this, every organization must focus and take into serious the inventory control and management towards their business. This result agrees with the finding of Anichebe and Agu (2013) who concluded that there is a significant relationship between good inventory management and organizational productivity.

The third hypothesis was able to measure the impact of Information flow management on Employees efficiency. The study findings rejected the null hypothesis and established that the impact of information flow management on employee's efficiency was statistically significant. This finding submits that an improvement in information flow would lead to an increase in mean index of information flow management increases the performance of the company by a positive unit. This finding is in line with the findings of Asamu (2014) who opined that effective flow of information within an organization helps to improve workers performance according to a study carried out in Lagos.

CONCLUSION AND RECOMMENDATIONS

This study considers the impact of logistics management on organizational performance. Based on the responses of 192 respondents of the Dangote Flour Mills, Ilorin, Kwara State. We found that; transport management has a significant effect on Organizational effectiveness. The need for materials movement along a supply chain puts transport management at the core of logistics which is why Organizations must pay proper attention to Transport management if they want to record success in Logistics management.

Secondly, this study has proven that Inventory management contributes largely to productivity within an organization. Inventories are vital to the successful functioning of manufacturing and retailing organizations. They may consist of raw materials, work-in-progress, spare parts/consumables, and finished goods. It is not necessary that an organization has all these inventory classes. But, whatever may be the inventory items, they need efficient management as, generally, a substantial share of its funds is invested in them. This therefore reiterates the conclusion that there is a significant relationship between Inventory management and Organizational productivity.

Thirdly, employees in organizations will perform more efficiently if there is proper flow of information within the organization. Information flow management ensures seamless flow of Information from the Top level to the lower cadre of

management. Therefore, organizations must realize that communication is an important component of organization activity as it will help employees to understand what is expected of them during the logistics management process.

However, we recommend that organizations should incorporate transport management in their operations processes such as proper fleet management, vehicle scheduling, route planning, proper maintenance of vehicles in order to ensure procurement of raw materials and distribution of products in order to increase overall cost efficiency, enhanced market share, and reduced lead time thereby impacting positively on their performance.

Secondly, inventory management should be enhanced as it will help to improve productivity within the organization. High level of inventory management will tie down capital of the organization, so one of the major focuses in formulating strategic plans of a manufacturing organization should be inventory management. Also, various Inventory management strategies such as just-in-time(JIT) should be used to manage the stocks that is kept in storage, increase efficiency, decrease waste by receiving goods only as they need them for the production process which reduces inventory costs and economic order quantity (EOQ) should be used to minimize the total holding Costs and ordering costs.

Lastly, there should be accurate flow of logistics Information from Managers to employees. This will help to prevent confusions that may lead to error in meeting customers demand. There should be investment on information technology gadgets, and information systems to process, transmit and disseminate data useful to managers in manufacturing operations to bring about quality products, reduce the cost of transformation of goods and efficiency amongst workers and contribute significantly to sustainable development for the present and future generation.

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