JUST-IN-TIME INVENTORY MANAGEMENT IMPORTS ON SALES PERFORMANCE OF PAINT MANUFACTURING FIRMS IN RIVERS STATE, NIGERIA

HARCOURT, Horsfall
Department of Marketing, Faculty of Management Sciences,
Rivers State University, Port Harcourt, Nigeria
harcourthorsfall@gmail.com

and

ALI, Faith Odage
Department of Marketing, Faculty of Management Sciences,
Rivers State University, Port Harcourt, Nigeria
faith.odage@gmail.com

ABSTRACT

This study investigated just-in-time inventory management imports on sales performance of paint manufacturing firms in Rivers State, Nigeria. The study adopted an explanatory research design with causal type of investigation. Primary and secondary methods of data collection were employed to obtain relevant data for analysis. The instrument of data collection employed was questionnaire. The study population was made up of the 30 registered paint manufacturing firms operating in Rivers state. The study randomly selected three top management staff from each of the firms as the respondents hence a total of 90 top management staff were used for the study. The data was analyzed using the Pearson's Product Movement Correlation statistic through the aid of statistical packages for social science version 23.0. The result of the findings revealed existence of significant and positive relationship between just-in-time inventory management and sales performance of paint manufacturing firms in Rivers State. The study concluded that just-in-time inventory management has significant and positive relationship with sales performance of paint manufacturing firms in Rivers State. The study therefore, recommended that managers of paint manufacturing firms should adopt just-in-time

inventory management as a strategy to boost efficiency of inventory operation as well as improve the sales performance.

Keywords: *Just-In-Time, Inventory Management, Sales Performance, Sales Growth, Market Share*

INTRODUCTION

The manufacturing industry in Nigeria has undergone tremendous flux in recent times. According to Musara and Fatoki (2011), flux in the global marketplace has created room for intense competition and has put organizations under more pressure. Customers are now open to higher expectations and multiple choices. Also, due to this flux, there are drastic measures in management approach and techniques used in production and processing expectations of customers, attitudes of suppliers as well as competitive behaviour (Phebe & Njoku, 2018).

As the competition increases, organizations are now exploring means of delivering products with lead time and at cheaper rate aimed at improving their sales performance which cannot be achieved through slow actions in manufacturing operations (Franco & Rubha, 2017). Organizations need to change their production strategies, improve product quality and reduce cost of production at a faster rate than their competitors as well as review their inventory management process. Against this background, supply chain managers in the last quarter of the 20th century have identified just-in-time inventory management as a major programmatic operations improvement concept that has drastically changed the way manufacturing firms manage their operations and achieve timely delivery (Adeyemi, 2010).

Effective just-in-time inventory management is regarded by Ambe (2012) as one cardinal success factor which cannot be neglected in supply chain management practices. The challenge in managing inventory is to balance the supply of inventory with demand. A company would ideally want to have enough inventories to satisfy the demands of its customers- no lost sales due to inventory stock-outs. On the other hand, the company does not want to have too much inventory staying on hand because of the cost of carrying those inventories. Coyle, Bardi and Langley (2003) remark that enough and on-time but not too much is the ultimate objective of just-in-time inventory management. The role of just-in-time inventory management is to ensure faster inventory turnover.

Musara (2012) describes just-in-time inventory management as a mechanism that provides efficient and effective services at safer and faster rate. Adoption and implementation of inventory management principles can benefit manufacturers in reducing costs and improving customer service as well as sales performance (Banerjee, Kim & Burton, 2007). According to Agu, Obi-Anike and Eke (2016), the basic objective of just-in-time inventory management is to achieve a balance between the low inventory and high sales performance. Inventory levels have been seen as one of the most interesting areas for improvement in organization materials management (Wangari & Kagiri, 2015). Unfortunately, implementing the inventory management philosophy is difficult due to the misunderstanding and misinterpretation of the core of the concept by local manufacturers in Rivers State and Nigeria at large. The reason for this misinterpretation will not be unconnected with limitation in knowledge on the impact of just-in- time inventory management on business performance.

Although, several previous researches have empirically and theoretically highlighted the pivot role and relationship between just-in-time inventory management and sales performance, there are little or no empirical proofs depicting the relationship between above concepts particularly among paint manufacturing firms in Rivers State (to the best of our knowledge). For instance, Phebe and Njoku (2018) studied inventory management and organizational performance of Dansa Food Limited, Nigeria; Anichebe and Agu (2013) investigated effects of inventory management on organizational effectiveness in selected organizations in Enugu, none of these studied was concentrated in paint manufacturing sector in Rivers State of Nigeria. This paper sought to empirically determine just-in-time inventory management imports on sales performance of paint manufacturing firms in Rivers State thus, it is believed that the current study will fill the identified gap and that the recommendations will deliver increased sales performance to paint manufacturing firms in Rivers State.
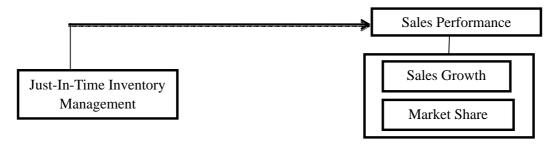
Figure 1: Conceptual framework of the relationship between just-in-time inventory management and sales performance of paint manufacturing firms in Rivers State.

Source: Research Desk, 2020

LITERATURE REVIEW

Theoretical Foundation

Lean theory

The lean theory is a theory of manufacturing, warehousing, and general supply chain management, propounded by John Krafcik in 1988 (cited in Vrat, 2014). The theory builds upon the inventory management model that seeks to optimize the quantity of any individual item ordered. In the theory, inventory constrains a firm's ability to respond to fluctuations in demand. Scholarly studies indicate that companies successfully optimize inventory through lean supply chain practices and systems to achieve higher levels of asset utilization and customer satisfaction leading to improved organizational growth, profitability, market share and sales performance (Mankazana & Mukwakungu, 2018).

The application of this theory to this paper is that since the lean theory can help eliminate buffer stock and minimize waste in organization's production process, manufacturing firms can optimize their inventory through lean supply chain practices and achieve higher levels of asset utilization and customer satisfaction leading to improved organizational growth, profitability, market share and sales performance. This therefore brings to the fore, the importance of just-in-time inventory management.

Concept of Just-In-Time Inventory Management

Organizations' quest to achieve higher standards of productivity and quality at a relatively reduced cost and faster time has remained the dominant contention for many manufacturers over the years (Kaneko & Nojiri, 2008). The result of a deep search for reductions in total manufacturing costs with corresponding improvements in profitability has given rise to just-in-time inventory management technique. Today, manufacturers have made a turn to it as a tool for variety, better quality and service, including reliability and faster delivery (Inan, Bahar & Zumrut, 2018).

The concept of just-in-time has been written about since the early 1970s. The just-in-time technique is a Japanese philosophy or rationality associated

with assemblage, which relates to having the right things in the right quality and amount in the correct place and at the opportune time. Pillai (2010) postulates that just-in-time inventory management technique is a fulcrum to increment in quality, profitability, enhanced correspondence, abatements in expenses and squanders. According to Agha (2010), just-in-time is a material management system which aims to work with zero inventory and to ensure materials when they are required; it requires minimum resources and responses in minimum time to the customers, having minimum waste and using all the factors of production.

Godana and Ngugi (2014) regard the just-in-time management approach as an effective technique for firms' improvement of productivity, quality, efficiency; lowering of costs and waste as well as improving communication especially, within the manufacturing sector (Singh & Ahuja, 2012). Due to volatility and scarceness of resources within the business environment, firms are now compelled by the climate of opinion to implement a wide variety of innovative managerial tools and philosophies to react to external and internal pressures. Just-in-time plays a central role in logistics management given its ability to work with low or even zero inventory and responds to materials needs when they are required by customers in minimum time.

One of the major functions of just-in-time is that it helps organizations in planning adequate amount of stock, be they rough materials or finished stock. Other functions are its role of opening organizations to meet the solicitations of their production strategy as well as the solicitations of the organization's ultimate customers (Chan & Zhang, 2011). The less a firm spends to store and pass on the stock, the less obsolete quality it has to markdown and this culminates into saving the company's money. Against this background, Adeyemi (2010) describes just-in-time as a process that is developed for moment or quick response to the order without the necessarily overstocking the warehouse, either in the desire for fulfilling an impromptu order application or as a concern of improvident characteristics.

Sales Performance
Performance is germane to the success of any business endeavor. It is viewed as a critical factor for organizations' wellness and survival. Singh (2011) regards performance as the effectiveness of firms in pursuing and achieving their purpose. For Ongore and Kusa (2013), performance refers to a business jargon

or construct that is applied in ascertaining the wellness status of the organization. The construct 'performance' is a multi-dimensional one that describes business wellness status be it financial, operational, process, administrative or behavioral output of an organization. Sales can be viewed as exchange transactions between two or more parties known as buyer and seller with the buyer receiving tangible or intangible products and the seller receiving money or something of same value (Iwase & Ohno, 2011). Olugu, Wong and Shadaroun (2010) view selling sales performance as one of the most important activities carried out in organizations.

Sales represent the quantity of goods sold in number or volume of units during a company's normal operating time. It amounts to the total aspects encompassing gross sales, credit memos, income, delayed billings and delayed shipments. Sales performance engages untreated information regarding the number of consumers' sales representative to compare the volume of actual sales. However, it could indicate the rate of customer allegiance to an organization, therefore improving sales performance can spontaneously increase the number of loyal customers. Ongore and Kusa (2013) opine that sales performance is a multidimensional perception; the rate at which it fluctuates depends on a multiplicity of reasons that encompass it.

Definitions of sales performance are almost inexhaustible. In fact, more and more definitions of the concept keep emerging with the passage of each day. Ongore and Kusa (2013) define sales performance as company's sales professionals' ability to 'win' at each stage of the customer buying process and the speed at which each task in the sales process is performed. Aktam and Ongore and Kusa (2013) viewed sales performance as a firm's tool for measuring its success which cuts across market demands response capability, the time and speed of response and its ability to adapt to environmental changes. Khantimirov (2017) puts it that sales performance is not just a sales function but an organization wide issue as it necessitates profound corporation between sales and marketing to appreciate what is working and what is not, and how to ensure uninterrupted improvement of knowledge, information, skills and stratagems that sales people must utilize as they encounter sales opportunities.

Sales Growth

The main goal of organizations decision makers is to increase revenue in the short and long-term through sales. Growth is a process function which happens over multiple time periods and is recognized as an important stage of life cycle for all humans, plants, animals and even profit organizations (Mwangi, Makau & Kosimbei, 2014). Due to its importance to the business parlance,

sources of business growth have been subjected to a considerable academic attention (Ondrej & Martin, 2014). According to [Odalo,] Njuguna and Achoki (2016), no business can grow in profit without creating value and delivering such value through an exchange process (sales). The growth of firm can be represented by the change in some variables over time. Typically, a firm's growth opportunities are measured in terms of the fraction of a firm's value represented for by assets-in-place (Bhutta & Hasan, 2013).

Growth in firm's sales is viewed as an indication of firm success and market acceptance.   In specific terms, sales growth is an indicator of firm's financial performance. The rate of sales growth is a parameter for evaluating business organizations competiveness. Because the increment in sales may vary from year to year (that is, many not be equal), sales growth highlights a significant measure of change in sales over recorded periods.

Market Share
A company's market share is its portion of total sales in relation to the market it operates within. Market share represents the percentage of an industry or market's total sales that is earned by a particular company over a specified time period. Omondi and Muturi (2013) argued that market share is calculated by taking the company's sales over the period and dividing it by the total sales of the industry over the same period.   Market share increase can allow a company to achieve greater scale on its operations and improve profitability. (Pervan & Visic, 2012) sees market share as one of the crucial sales performances measures any firm can achieve.
Market share represent the percentage of sales a firm achieve within a specific period of time and in a particular market. Khantimirov (2017) opine that market share is one of the marketing metrics that is constantly talked about in the field of marketing as a discipline as it compares the revenue of the firm with the total revenue of the market in question over a period of time. In relation to this study, the share of the firm in the market will be determined in relations to the extent of the promotional strategy. In effect it helps to understand the relative success of the firm in penetrating the market place, thus the relative market shares of a company attempts to compare a firm's market share with that of its nearest rivals.

Empirical Review
The impact of just-in-time inventory management on sales performance is recognized in empirical literature. Musara (2012) studied Impact of just-in-time inventory system on efficiency, quality and flexibility among manufacturing

sector, small and medium enterprise (SMEs) in South Africa. The study employed the questionnaire and personal interview to generate its data. The study used Regression Analysis to measure the level of impact of just-in-time inventory system on efficiency, quality and flexibility; it found that just-in-time impact significantly on efficiency, quality and flexibility. The study concluded that the application of just in time inventory management principles can benefit firms significantly in terms of improved quality of products, reduction in operational costs and increased flexibility. Mishra, Kumar & Garg (2018) investigated just in time supply chain through general system theory and found that the implementation of just in time inventory management is key to firms' success.

Iwase & Ohno (2011) explored the performance evaluation of a multi-stage JIT production system with stochastic demand and production capacities in Nigeria. The study adopted the descriptive survey design and correlation analysis techniques to analyze data for the study. The study found out that there is a moderate positive relationship between just in time and performance of production systems in Nigeria. Kaneko and Nojiri (2008) investigated logistics of just-in-time between parts suppliers and car assemblers' performance in

Japan. The study adopted the descriptive survey design method. It used the questionnaire for data generation and regression analysis to measure the significance level between the variables. The study found that there is a strong positive relationship between logistics of just in time and parts suppliers and car assemblers' performance in Japan.

Edwin and Florence (2015) tried to determine the effect of inventory management on profitability of cement manufacturing companies in Kenya. A cross-sectional data from 1999 to 2014 was gathered for the analysis of the annual reports for the three sampled firms listed at Nairobi Securities Exchange (NSE). The ordinary least squares (OLS) stated in the form of multiple regression models was applied in the data analysis to establish the relationship between inventory management and firm's profitability. The variables used include inventory turnover, just-in-time, inventory conversion period, economic order quantity, inventory levels, automatic replenishment, storage cost and size of firm, gross profit margin, return on assets and growth of the firm. The results revealed a moderate positive relationship between just in time and profitability of cement manufacturing companies in Kenya.

Phebe and Njoku (2018) studied inventory management and organizational performance of Dansa Food Limited, Nigeria. The study conceptualized

inventory management with economic order quantity, just in time, system replenishment and automatic replenishment. A survey research was conducted with a purposive non- probability sampling technique. The instrument of data collection and measurement was well- structured and standardized questionnaire and five point weighted scale. The statistical tool used for data analysis and test of research hypotheses was one sample t-test. The results of the analysis indicate that just in time dimension of inventory management has significant positive impacts on the performance parameters of organizations and therefore contributes to economic production quantity and quality of Dansa Food Limited products at budgeted costs and scheduled time to customers and hence profitability of manufacturing firms.

Ho_1:   Just-in-time does not significantly relate with sales growth of paint manufacturing firms in Rivers State.

Ho_2:   Just-in-time does not significantly relate with market share of paint manufacturing firms in Rivers State.

METHODOLOGY

This study adopted an explanatory research design with causal type of investigation. The study population was made up of the thirty (30) registered paint manufacturing firms operating in Rivers state which are enlisted in the Rivers State Yellow Pages (2013/2014). The study randomly selected three (3) top management staff from each of the firms as the respondents hence a total of ninety (90) top management staff were used for the study. Categories of persons that constituted the respondents were business managers, warehouse/store keepers and procurement managers of paint manufacturing firms in Rivers State. The 90 copies of questionnaire were usable for the data analysis. Pearson Product Moment Correlation technique was used in testing the various hypotheses in order to determine the conjectural relationship between the predictor variable (just-in-time inventory management) and the criterion variable (sales performance) with the help of the Statistical Packages for Social Sciences version, 23.0.

DATA ANALYSIS AND RESULTS

Test of Hypotheses

Ho_1:   Just-in-time does not significantly relate with sales growth of paint manufacturing firms in Rivers State.

Table 1: Relationship between Just-In-Time and Sales Growth

		Just-In-Time	Sales growth
Just-In-Time	Pearson Correlation	1	. .866 **
	Sig. (2-tailed)		.000
	N	69	69
Sales growth	Pearson Correlation	.866**	1
	Sig. (2-tailed)	.000	
	N	69	69

**. Correlation is significant at the 0.01 level (2tailed).

Source: SPSS Output 2021

From the SPSS output on Table 1, it can be observed that there is a correlation coefficient of 0.866[**] between just-in-time and sales growth, indicating a very strong and positive relationship between just-in-time and sales growth. More so, the probability value (0.000) is less than the critical value (0.05), this shows that there is a very strong significant relationship between just-in-time and sales growth. This further implies that most of the changes in sales growth among paint manufacturing firms in Rivers State are caused by just-in-time while others are caused by externalities. Based on this, we reject the null hypothesis that there is no significant relationship between just-in-time and sales growth of paint manufacturing firms and incline to the alternate hypothesis that there is a very strong, significant relationship between just-in-time and sales growth of paint manufacturing firms.

Ho$_2$:   Just-in-time does not significantly relate with market share of paint manufacturing firms in Rivers State.

Table 2: Relationship between Just-In-Time and Market Share

		Just-In-Time	Market Share
Just-In-Time	Pearson Correlation	1	.592**
	Sig. (2-tailed)		.000
	N	69	69
Market Share	Pearson Correlation	.592**	1
	Sig. (2-tailed)	.000	
	N	69	69

**. Correlation is significant at the 0.01 level (2tailed).
Source: SPSS Output 2021

From the SPSS output on Table 2, it can be observed that there is a correlation coefficient of 0.592^{**} between just-in-time and market share, indicating a moderate and positive relationship between just-in-time and market share. More so, the probability value (0.000) is less than the critical value (0.05), this shows that there is a moderate significant relationship between just-in-time and market share. This further implies that some of the changes in market share among paint manufacturing firms in Rivers State are caused by just-in-time while others are caused by externalities. Based on this, we reject the null hypothesis that there is no significant relationship between just-in-time and market share of paint manufacturing firms and incline the alternate hypothesis that there is a moderate, significant relationship between just-in-time and market share of paint manufacturing firms.

DISCUSSION OF FINDINGS

The analysis of the study revealed a correlation coefficient of 0.866^{**} between just-in-time and sales growth, indicating a very strong and positive relationship between just-in-time and sales growth. More so, the probability value (0.000) is less than the critical value (0.05), this shows that there is a very strong significant relationship between just-in-time and sales growth. This further implies that most of the changes in sales growth among paint manufacturing firms in Rivers State are caused by just-in-time while others are caused by externalities. The analysis results also revealed a correlation coefficient of 0.592^{**} between just-in-time and market share, indicating a moderate and positive relationship between just-in-time and market share. More so, the probability value (0.000) is less than the critical value (0.05), this shows that there is a moderate significant relationship between just-in-time and market share. This further implies that some of the changes in market share among paint manufacturing firms in Rivers State are caused by just-in-time while others are caused by externalities.

These findings corroborate with the findings of other authors in the area of inventory management. For example, the study result is validated by the empirical findings of Musara (2012) on impact of just-in-time inventory system on efficiency, quality and flexibility among manufacturing sector, small and medium enterprise (SMEs) in South Africa. The study employed the questionnaire and personal interview to generate its data. The study used Regression Analysis to measure the level of impact of just-in-time inventory system on efficiency, quality and flexibility; it found that just-in-time impact significantly on efficiency, quality and flexibility. The findings also agree with the empirical findings of Mishra, Kumar and Garg (2018) that investigated just in time application on supply chain practice, and found that the application of

just in time inventory management is key to firms' success and significantly impact supply chain practice.

More so, the findings of the study is in conformity with the empirical Iwase and Ohno (2011) who explored the performance evaluation of a multi-stage JIT production system with stochastic demand and production capacities in Nigeria. The study adopted the descriptive survey design and correlation analysis techniques to analyze data for the study. The study found out that there is a moderate positive relationship between just in time and performance of production systems in Nigeria. The study analysis result agrees with Kaneko and Nojiri (2008) on logistics of just-in-time between parts suppliers and car

assemblers' performance in Japan. The study adopted the descriptive survey design method. It used the questionnaire for data generation and regression analysis to measure the significance level between the variables. The study found that there is a strong positive relationship between logistics of just in time and parts suppliers and car assemblers' performance in Japan.

CONCLUSION AND RECOMMENDATIONS

In line with the findings of this study and to the extent of its consistency with results of similar previous studies, we conclude that just-in-time inventory management has significant and positive relationship with sales performance of paint manufacturing firms in Rivers State. Just-in-time is a pivot function that accounts for enduring survival of the sales performance irrespective of any organization.

Based on the findings and conclusion of this study and given its consistency with the result of similar studies, we recommend that managers of paint manufacturing firms should adopt just-in-time inventory management as a strategy to boost efficiency of inventory operation as well as improve the sales performance. Managers of paint manufacturing firms should also use just-in-time inventory management as a means to maintain inventory stability as this can have greater impact on sales growth and market share.

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