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Effect of Inventory Management on Financial Performance: Evidence from Nigerian Conglomerate Companies

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***Abstract*—**Inventory management is the determinant of effective and efficient work for any manager. This study looked at the relationship between inventory management and financial performance. The population of the study comprises all conglomerate quoted companies in the Nigerian Stock Exchange market as at 31st December 2010. The scope of the study covered the period from 2010 to 2014. Descriptive, Pearson correlation and multiple regressions are used to analyze the data. It was found that inventory management is significantly related to the profitability of the company. This entails that an efficient management of the inventory cycle will enhance the profitability of the company. Also, lack of proper management of it will hinder the financial performance of organizations. Based on the results, it was recommended that a conglomerate company should try to see that inventories are kept to a minimum, as well as make sure the proper checks are maintained to make sure only needed inventories are in the store. As well as to keep track of the movement of goods, in order to avoid unnecessary delay of finished and work in progress (WIP) goods in the store and warehouse.

***Keywords*—**Finished goods, work in progress, financial performance, inventory.

I. Introduction

INVENTORIES are assets held for sale in the ordinary course of business; in the process of production for such sale; or in the form of materials or supplies to be consumed in the production process or in the rendering of services (IAS 2). Several decades ago inventories of raw materials, WIP components and finished goods were kept as high as possible against the possibility of running out of materials in stock [1]. However, keeping large inventories tied down resources and generates hidden costs [1]. Likewise, too much inventory consumes physical space, creates a financial burden, and increases the possibility of damage, spoilage and loss [2]. On the other hand, too little inventory often disrupts business operations [3]. The objective of material management is to maximize the use of firms' resources by ensuring adequate supply of material for production process and also minimizing the cost of holding excessive inventories [4]. Inventories are significant portions of current assets to any business enterprise [5]. It played a vital role in keeping organizational activities running effectively. No operation can take place without proper and adequate inventory on the ground.

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Managing inventory is a crucial aspect of working capital management. Organizations need materials to produce finished goods, as such efficient managing of inventory will affect the financial performance of the organization. The organization needs to keep adequate resources to cater for working capital needs, especially inventory.

Inventory control is the supply of goods and services at the right time with the right quality and quantity [6]. Inventory management has been a problem to many business organizations in Nigeria [6]. Inventories provide a significant link between production and sales of a product, and constitute a large percentage of the cost of production. It is one of the most expensive and important assets of many manufacturing companies representing a considerable percentage of the total invested capital [6]. As such, proper care and effective management must be a concern of top management in planning phase. Efficient allocation and monitoring is the answer to inventory management. A better inventory management enhances the financial performance of a company.

Several studies were conducted by different researchers, but there is no con-census on the outcome. Some found that there is positive and significant relationship between the variables [7]-[10], [3], while others assume otherwise [11], [12]. Almost all the studies conducted in Nigeria, none was conducted on the conglomerate company. This research intends to breach the gap of academic research by using a panel data of conglomerate companies quoted on the Nigerian Stock Exchange for five years in other to validate or invalidate the existing findings, and also to give a wider coverage of time, as well as covering the whole population of the study.

II. Literature Review

Inventory management is the effective and efficient use of material and stock in the organization to maximize performance. Effective inventory management is essential in the operation of any business [13].

Reference [14] asserts that inventory control is the supervision of the storage, supply and accessibility of items to ensure an adequate supply without excessive oversupply. Inventory control means availability of materials whenever and wherever required by stocking an adequate number and kind of stocks [6]. The sum total of those connected activities fundamental for the procurement, storage, sales, discarding or use of material can be referred to as inventory management [6]. They have to meet the set budget and decide upon what to

order, how to order and when to order, so that stock is available on time and at the optimum cost [15]. Hence, Inventory management involves planning organizing and controlling the flow of materials from their initial purchase unit through internal operations to the service point through distribution [16]. Inventory constitutes one of the largest and most tangible investments of any retailer or manufacturing organization. Smart inventory management strategies can not only help increase profit but they can mean the difference between a business prosperous or barely surviving [6]. According to [17] holding inventories at the lowest possible cost and giving the objectives to ensure endless supplies for unending operations is the aim of inventory management.

When making decisions on inventory, management has to find a compromise between the different cost component, such as the cost of supplying inventory, inventory holding cost and cost resulting from sufficient inventories [18]. According to [14], inventory control is the activity which organizes the availability of an item to the customers. It coordinates the purchasing, manufacturing and distribution functions to meet the marketing needs.

Changes in inventory levels affect return on asset (ROA), which is an important financial parameter from an internal and external perspective. Reducing inventory usually improves ROA and vice-versa, if inventory goes up without offsetting in revenue [19]. Therefore, it is essential to take efficient management of inventory movement to maintain high profitability. As we know, the management of inventory is one of the most difficult tasks for working capital managers, on the decision on how to reduce the inventory to the extent that will possibly shorten the C2C cycle and reduce cost. The danger of reducing an inventory downwards to a stage close to zero is that it increases the chance of running out of resources required in the production or running short of finished goods at some point in period of high demand [20]

Studies on the relationship between inventory management and profitability are limited, especially in regard to developing nations. Among the early research studies are the works of six, which addressed effective inventory control systems, to reveal that to achieve high profit a flexible inventory service needs to be fixed; meaning that, if the inventory is low the profitability is high. Also, some study found a positive relationship between inventory and financial performance [7]-[10], [20], [12], [3]. Other study includes that of [20], [12] which found no significant relationship between inventory management and profitability. This indicates another opinion that in some cases, inventory does not affect the level of profitability in a company.

Studies on inventory management and financial performance were conducted in many countries, among them, [21] conducted a study in Kenya on the effects of inventory management on the profitability of cement manufacturing firms. Cross sectional data from 1999 to 2014 was gathered for the analysis. The ordinary least squares (OLS) method, stated in the form of a multiple regression model, was applied in the data analysis to establish the relationship between inventory management and the firm's profitability. The results showed a negative relationship between inventory turnover, the inventory conversion period and storage cost with the profitability of the company. In addition, the inventory level was found to be directly related to the firm's size and storage cost. Also, [22] examined the role of inventory management on the performance of food processing companies in Kenya. This study used descriptive research design. The survey method was employed; where the researcher selected 110 respondents to take part the study. The study revealed an inverse relationship, a unit increases in maintaining production will lead to an increase in the scores of the performance and vice versa.

Reference [23] applied descriptive and inferential statistic to assess inventory management practices and its effect on the financial performance of SMEs in the Northern Region of Ghana. The target population was 1,000 owner/managers of SMEs. The stratified random sampling technique was used to obtain a sample of 300 SMEs comprising of 164 trading, 26 manufacturing, 10 hairstyling, 62 dressmaking, and 38 carpentry enterprises. The study revealed that SME financial performance was positively related to efficiency of inventory management (EIM) at 1 percent significance level.

In another angle, [24] conducted a study on working capital and firm's profitability of Dutch companies using a sample of 70 firms between the periods of 2006 to 2010. Pooled and fixed effect regression were used and found out that C2C circle positively correlate with profitability, also the inventory conversion cycle is positive and significant to the profitability of the companies. Meanwhile, [25] investigated the effect of company characteristics and working capital management of Swedish companies, where 40 companies were selected as sample. Regression analysis was applied and revealed a positive and significant relationship between the number of inventory days and profitability.

Reference [26] also conducted a study about the relationship between working capital management and profitability on manufacturing firms on the Karachi Stock Exchange. It was found a positive relationship between inventory days as one of the components of working capital and profitability. In contrast, [27] studied working capital management of Iranian companies within the time frame of 2001-2006, using a sample of 1,063 out of the population of 2,628 companies. Multiple regression analysis was used and revealed a negative significant relationship between inventory turnover days and profitability.

From the foregoing empirical studies, it can be concluded that, this topic of the study has a mixed result, revealed by the previous authors. Thus, exists an opening for a contribution from different angle to fill the gap, either to validate or invalidate the existing literatures.

Several practices exist in the present world to manage inventory. Most of developing nations are not acquainting to those practice, among them are:

III. Just in Time

The implementation of the JIT system is a mechanism for reducing non-value added cost and long-run costs. It is a

system whose objective is to produce or procure products/components as they are needed or required for inventory. The JIT system was developed in Japan and is considered as one of the main contributions to Japanese manufacturing success. It involves continuous commitment to the pursuit of excellence in all phases of manufacturing system design and operations.

The aim of the JIT system is to produce the required items, of high quality, exactly at the time they are required and in the required quantities. Among the goals of JIT, are zero inventory, elimination of non-value added activities, zero defects, and 100% on time delivery.

A. Lean Production

Lead production is a philosophy and a way of working involving eliminating all forms of waste (where waste is defined as anything that does not add value in the production process and supply chain). JIT is a key element of a lean production system.

B. Material Requirement Planning (MRP)

MRP is a computerized information, planning and control system which has the objective of maintaining a smooth production flow. It is concerned with maximizing efficiency in the timing of orders for raw materials or part that are placed with external suppliers and efficiency scheduling of the manufacture and assembly of the final product.

C. Activity-Based Costing (ABC) Analysis

ABC is a costing technique that assigns cost based on it is cost driver. Each overahead activity will be match with it is cost driver in order to know how to allocate cost. It identifies a causal relationalship between incurance and activities and established cost pools which can be used to alocated overhead. This system come in to being to replace the traditional absorption costing method, whereby, each overhead must be absorbed, based on the cost activities and it is pool.

IV. Methodology

The population of the study comprises of all conglomerate companies quoted on the Nigerian Stock Exchange as at 31st December 2010. Due to the nature of the population, the sample of the study is the working population. The study covers the period of five years from 2010 to 2014. The research design employed in this study is ex-post facto, where annual reports and accounts were used to extract data for the study. The performance measure used for this study is ROA. The techniques used for analysis are descriptive statistics, Pearson coefficient and linear regression.

A. Model Specification

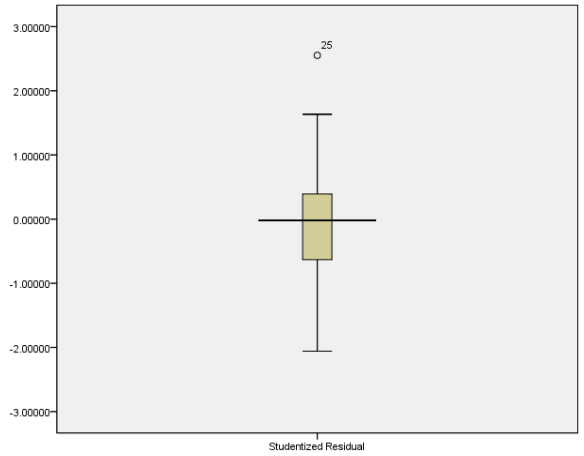
$$ROA_{it} = \beta_0 + \beta_1 INV_{it} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \varepsilon_{it}$$

where: ROA= stand as the measure of performance, INV= RM + WIP + FG, β_0 = stand for fixed intercept element, ε_{it}= Stand for Error term.

V. Result and Discussion

TABLE I
Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Studentized Residual	.160	25	.099	.945	25	.189



Source: SPSS V.16

Table I shows the normality of the variables for the study. It shows that the variables are stationary, and therefore fit for analysis. Other graphical normal tests are shown in the appendix.

TABLE II
Correlations Coefficients of Variables

		inventory in days	ROA	size	leverage
Pearson Correlation	inventory in days	1.000	.742	-.144	.133
	ROA	.742	1.000	-.270	.256
	size	-.144	-.270	1.000	.234
	leverage	.133	.256	.234	1.000

Source: SPSS V.16

Correlation analysis assesses the inter-relationships and association between variables. Table I provides some insights into which of the independent variables are related to the dependent variable. The highest among the correlation is that of inventory and ROA, which shows 74.2%. Means that inventory increase by 74.2%, ROA will also increase by the same percentage. The correlation between inventory and size is negative. This shows that a reduction of the company's assets by 14.4% will increase the ROA by the same percentage. While that of leverage, which shows a rate of 13.3%, entails a correlation between it and ROA.

From Table II, the coefficient of determinations "R-square" shows 56%, indicating that the variables considered in the model accounts for about 56% of the change in the dependent variables, which is ROA, while the remaining 44% can be explained by other variable not addressed in this study. Also looking at the F value, which shows .001, which indicates that there is a significant relationship between the dependent variable and independent variable of the study.

TABLE III
MODEL SUMMARY

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.749[a]	.560	.498	.56218	.560	8.923	3	21	.001

Source: SPSS V.16.

TABLE IV
ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.285	3	.095	9.269	.000[a]
	Residual	.215	21	.010		
	Total	.500	24			

Source: SPSS V.16.

TABLE V
COEFFICIENTS[A]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.665	.310		2.145	.044		
	ROA	.825	.167	.789	4.936	.000	.819	1.221
	size	.089	.158	.090	.564	.578	.829	1.207
	leverage	-.152	.266	-.090	-.570	.575	.835	1.198

Source: SPSS V.16

Table III indicates that ROI is significantly related with inventory, revealing a Sig value of 0.000, which is less than 0.005 significant levels. All the VIF values are less than 10, also the tolerance levels are higher than 0.2, this implies absence of multi-co linearity with ROA. Likewise, the t-value are still higher than 0.2.

VI. Findings, Conclusion and Recommendation

From the above results, it is shown that inventory management of conglomerates companies are positively related to financial performance. This entails that efficient management of inventory will enhance the profitability of a company and vice versa. This result is in line with the work of [24]-[30]. Likewise, some scholars' have found a negative relationship between the variables under study, which include among them [27], [28].

It was concluded that as inventory management played a vital role in financial management decisions, it is paramount that special care should be given to it and for management to make sure stocks are not held for long unnecessarily. With that, capital will not be tide down; as such, the money can be used elsewhere to gain interest or better profit.

Based on the results, it is recommended that companies should tie up toward making proper arrangement with regard to inventory management. Also, the use of JIT will be a better technique to be adapted, in other to clear tide up funds on inventory.

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