Effects Of Inventory Control On The Performance Of Nestle Nigeria Plc.

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Abstract

This study examined the effects of inventory control on performance of Nestle Nigeria Plc, a conglomerate which is into the manufacturing, marketing and distribution of food products in Nigeria. The study adopted the use of secondary data. Purposive sampling technique was employed in the selection of the sample size for the study which comprises of the latest ten (10) years of being listed on the Nigerian Stock Exchange (2004-2013). Quantitative data on inventories holdings, investment income and profit after tax were gathered from the annual reports of Nestle Nigeria Plc for 2004-2013. The collected secondary data were subjected to regression analysis using the SPSS. The study found out that inventories holdings do not have significant effect on the profit after tax of Nestle Nigeria Plc (R2 = 6.5%, p-value = 0.478) and that inventories holdings do not have a significant effect on the investment income of Nestle Nigeria Plc. (R2 = 0.3%, p-value = 0.879). Based on the findings the study concluded that inventories are not effectively managed in the organization and recommended

therefore that employees of the organization should be well trained on management of inventory, and the management of Nestle Nigeria Plc should be conscious of the level of inventory it holds so that this will not affect its profit margin.
Key words: inventory control, inventory management, performance, inventories holdings, investment income, profit after tax.

Introduction

Inventory control is the supply of goods and services at the right time with right quality and quantity. It is a reliable means in which businesses are been managed to ensure customers are satisfied and organization remains in operations via minimization of losses. Inventory management has been a problem to many business organizations in Nigeria. Inventories provide a significant link between production and sales of 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. At any level of a firm, inventory is among the largest investment made and therefore logically deserves to be treated as a major policy variable, highly responsive to the plans and style of top management. However, to date in most organization, both analysts and managers have been relatively unsuccessful in convincing top management to give this area the due consideration that it logically deserves (Ogbo, 2011).

Inventory control typically represents all expenses for business, is needed to ensure that the business has the right goods on hand to avoid stock-outs, to prevent shrinkage, and to provide proper accounting. Many businesses have too much of their limited resource (capital), tied up in their major asset (inventory). Boyd and Gupta (2011), opined that inventory may be old, worn out, shopworn, obsolete, or the wrong sizes or colors, or there may be an imbalance among different product lines that reduces the customer appeal of the total operation. The ideal inventory and proper merchandise turnover will vary from one market to another. Average industry figures serve as a guide for comparison as too large in inventory may not be justified because the turnover does not warrant investment. On the other hand, because products are not available to meet demand, too small an inventory may minimize sales and profits as customers go somewhere else to buy what they want where it is immediately available. Minimum inventories based on reordering time need to become important aspects of buying activity other expenses are carrying costs, material purchases, and storage costs are expensive, however, stock outs are expensive also. All of those costs can be minimized by efficient inventory policies. Thus the extent to which inventories used by manufacturing organizations determines the extent of organization performance. Organizational performance provides the basis for assess organization on how well it

is progressing towards its predetermined objectives. Performance of manufacturing firms is a combination of practices; hence several performance measures can be used efficiently. Vastag and Whybark, (2005) opined that most typical measures of manufacturing performance are rejects and scrap, reworking, labour and machine productivity, product quality, inventory levels and turnover, unit manufacturing cost, manufacturing cycle time, delivery speed and reliability. Much literature suggest that inventory control systems effectiveness and efficiency as measures of procurement performance which map onto performance of the organization in terms of competitive advantage, level of profitability, providing error-free goods and service, cost efficiency and increased level of output.

Statement of Problem

Inventory management has been a problem to many business organizations in particularly in Nigeria this is because inventory of a business can go a long way in determining the success or the failure of the business (Abdulraheem, Yahaya, Isiaka, and Aliu, 2011). Ineffective inventory management can lead to loss of customer and goodwill, which will make the profit of the business decrease and result in ultimate collapse of the organization.

Various studies have taken different positions on relationship between inventory control and performance, suggesting a positive relationship between inventory management and performance (Eroglu & Hofer, 2011; Lucey 1990; Keth & Muhlemon 1994). The study carried out by Eroglu & Hofer, (2011) focused on US manufacturing firms covering the period of 2003-2009. They used empirical leanness indicator as a measurement for inventory management. Contrary to the present study, their study focused on assessing the relationship between inventory performance and overall firm performance. In Nigeria, Abdulraheem, Yahaya, Isiaka, and Aliu, (2011) carried out a study on Inventory Management in Small Business Finance in Kwara State, Nigeria, they observed a strong positive relationship between inventory and profitability of small businesses in Kwara State and concluded that small businesses are likely to generate higher profit if an effective inventory management is put in place.

It is observed that previous studies have been one sided because majority of them only focused on the relationship between inventory control and performance in small businesses without considering the strength or magnitude of these relationships. These studies did not evaluate the effect of inventory control on performance, hence this study.

This study intends to fill this gap in knowledge by examining the effects of inventory control on the profit after tax and investment income of Nestle Nigeria Plc, a multinational organization.

Objectives of the Study

The broad objective of this study is to examine effect of inventory control on performance of manufacturing firms, while specific objectives include;

1. To examine the effect of inventories holdings on the profit after tax recorded by Nestle Nigeria Plc.
2. To evaluate the effect of inventories holdings on the investment income of Nestle Nigeria Plc.

Research Questions

1. Do inventories holdings have significant effect on the profit after tax recorded by Nestle Nigeria Plc?
2. Do inventories holdings have a significant effect on the investment income of Nestle Nigeria Plc?

Research Hypotheses

The following research hypotheses were stated for the study

Hypothesis one: Inventories holdings do not have significant effect on the profit after tax of Nestle Nigeria Plc.

Hypothesis two: Inventories holdings do not have a significant effect on the investment income of Nestle Nigeria Plc.

Theoretical Framework

The theory on inventory management suggests that inventory decision making involves managing the basic trade-offs among costs, customer service-level objectives and various other constraints. Studies have shown that firms hold inventories for three reasons: the production smoothing reason, stock out avoidance and according to the (S-s) model of inventory investment. This means that inventory management decisions are multi-faceted and one has to examine all the facets to arrive at the profit-maximizing level of investment in inventories. With the major focus being on costs, inefficiencies in managing inventories have always been experienced. This is because, there are other factors which influence how much inventories to be held at any given instance.

A huge investment in inventories has associated opportunity costs which arise as a result of the firm forgoing other productive investments (Banos-Caballero et al., 2010). Different theories have been employed to help bring clarity to the study of the effects of inventory control on performance of manufacturing firms. The study borrowed from the theory of contingency theory and lean theory to build the critical concerns on effects of inventory control systems on operational performance manufacturing firms hereunder.

* **Theory of Constraints**

The theory of constraints is a management philosophy that seeks to increase manufacturing, efficiency or system performance measured by sales through the identification of those processes that are constraining the manufacturing system (Goldratt, 2004). Kazim, (2008), argues that theory of constraints is based on the principle that a chain is only as strong as the weakest link or constraint and to elevate and manage the constraint as necessary. The difficulties in the theory of constraints are: very long lead times, large number of unfulfilled orders or they are with much extra effort (overtimes), high level of unnecessary inventories or lack of relevant inventories, wrong materials order, large number of emergency orders and expedition levels, high levels of devolution, lack of key customers engagement, frequent changes or absence of control related to priority orders, which implies on schedule conflicts of the resources (Goldratt, 2004). Theory of constraints emphasizes focus on effectively managing the capacity and capability of these constraints if they are to improve the operational performance of their organization. Under Theory of Constraints, performance measurements are based on the principles of throughput, inventory dollar days and operating expenses (Umble, & Murakaini, 2006). The proof of effectiveness for any inventory control system is the degree to which it improves operational performance of business firms.

Gupta & Boyd (2008) in their research on 'theory of constraints can serve as a general theory in operations' revealed that theory of constraints provides approaches to operations that avoid pitfalls of local optimization by reaching a cross functional boundaries in organizations. They also noted that while the theory appears to meet the criteria of a good theory, it has not been empirically tested for the most part. Criticism that has been leveled against theory of constraints includes its sub optimality. Trietsch, (2005), argues that the theory is inferior to competing approach. The theory to establishing an optimal product mix that is likely not to yield optimum results Linhares (2009).But this optimal result advocated by both scholars is not stated.

* ***Lean Theory***

Lean theory is an extension of ideas of just in time (Kros, Falasca, & Nadler, 2006), elaborate just in time as a pull-based system designed to align the production and business processes throughout the supply chain. (Green & Iniman, 2005), assessed the impact of lean theory on financial performance. They say that the theory may eliminate buffer stock and minimize waste in production process. (Eroglu & Hofer, 2011), found that leanness positively affects profitability of a business firm. They argue that inventory leanness is the best inventory control tool. The theory elaborates on how manufacturers' flexibility in their ordering decisions reduces the stocks of inventory

held on site and eliminates inventory carrying costs. Feinberg & Keane, (2006), discuss their findings of reducing inventories at firm level.

They go on saying that at the aggregate level, the empirical strength of the learn explanation lies both in the timing and the magnitude of the adoption. However in the theory, inventory constrains a firm's ability to respond to fluctuations in demand (Feinberg & Keane, 2006). 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 and market share (Wailer, Tangari, & Williáns, 2008).

Review of Literatures

Robert (1998) defined inventory as the aggregate of those items of tangible personal asset of a firm which are: held for sale in the day to day activities of the business .i.e. finish goods; in the process of production for sale i.e. work in progress; are to be currently consumed in the production of goods and services. While Lucey (2002) says that, after each issue or receipt of the physical balance of stock is calculated, the total balances represent stock in hand (closing stock). Inventory in many organization are held in form of raw material, spare part, work in progress and finish goods. In addition inventory management is of importance to any organization so as to help to: maintain a smooth flow of production; meet the requirement of various customers; sustain its method of production, which gives rise to inventory level. Lucey (2010) identified the following point as reasons of holding inventories in organization: to absorb variation in demand and production; to ensure that sufficient goods are available to meet anticipated demand; to meet possible shortage in future; to take advantage of bulk purchasing discount; stocks are also held as a necessary part of producing process. Pandy (2005) identified three major reasons for holding inventories which are transactionary motives; precautionary motives and speculative motives. The transactionary motive talks about the need to maintain inventory to facilitate the smooth production or sales operation of day to day transaction. The precautionary motive necessitates inventory holding to guard against the risk of unpredictable change in demand and supply forces and other factor. The speculative motive influences the decision to increase or decrease inventory level to take advantage of price fluctuation.

Rosenblatt (1977) noted that the cost of maintaining inventory is included in the final price paid by the consumers. As such, goods in inventory represents a cost to their owner because, the manufacturer has paid for materials and labour. Morris (1995) also stressed that inventory management in its broadest perspective is to keep

the most economical amount of one kind of asset in order to facilitate an increase in the total value of all assets of the organization such as human and material resources. Thus, the overall goal of inventory management is minimization of stock-out.

Inventory control

Proper inventory control system in any organization in developing countries like Nigeria is of paramount necessity. Inventory management is defined as a science based art of ensuring that just enough inventory stock is held by an organization to meet demand (Coleman, 2000; Jay & Barry, 2006). Inventory is the availability of any stock or resources used in an organization. An inventory system is the set of policies that controls and monitors inventory level and determine what level should be maintained, how large orders should be made and when stock should be replenished. Inventory control is the supervision of the storage, supply and accessibility of items to ensure an adequate supply without excessive over (Miller, 2010). Inventory control means availability of materials whenever and wherever required by stocking adequate number and kind of stocks. The sum total of those related activities essential for the procurement, storage, sales, disposal or use of material can be referred to as inventory management. Inventory managers have to stock-up when required and utilize available storage space resourcefully, so that available storage space is not exceeded. Maintaining accountability of inventory assets is there responsibility. 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 (Benedict and Margeridis,1999). 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 (Smaros, et al., 2003). Inventory constitutes one of the largest and most tangible investments of any retailer or manufacturing organization. Intelligent inventory management strategies can not only help boost profit but they can mean the difference between a business thriving or barely surviving. Holding inventories at the lowest possible cost and giving the objectives to ensure uninterrupted supplies for on-going operations is the aim of inventory management.

The cost of maintaining inventory is included in the final price paid by the customer. Good in inventory represent a cost to their owner; the manufacturer has the expense of materials and labour. The wholesaler also has funds tied up." Therefore, the basic goal of the manufacturers is to maintain a level of inventory that will provide optimum stock at lowest cost.

Ogbo (2011) posits that the major objective of inventory management and control is to inform managers how much of a good to re-order, when to re-order the good, how frequently orders should be placed and what the appropriate safety stock is,

for minimizing stock-outs. Thus, the overall goal on inventory is to have what is needed, and to minimize the number of times one is out of stock.

Inventory control and performance

Loukis et al (2009) in Greece did a research and their objective was to prove the hypothesis that inventory investment makes no contribution to business performance. Chase et al., (2009), explained the concept of inventory brings in the total systems approach to managing the entire flow of information, materials and services from raw materials suppliers through factories and warehouses to the end user/customer. The study further confirmed that a firm's success depends on how they manage their materials effectively. They indicate that it is important to monitor inventory at each stage because it ties up resources.

The Reasons for Stocking Inventory

A firm would hold more inventory than is currently necessary to ensure the firms operations. Reasons for maintaining inventories:

- **Demand**

A retailer stays in business when he has the product the customer wants on hand when the customer wants them. If not, the retailer will have to back order the product. If the customer can get the good from some other source, he or she many chose to do so rather than wait than wait in order to allow the original customer to meet demand later (through back-order). Hence, in some instances a sale is lost forever if goods are not in stock. In line with this factor the firm ensures availability of goods to their customers on demand using their distribution channel from Otta.

- **Running Operations**

In order to manufacture a product a manufacturer must have certain purchased items (raw materials component or subassemblies). Completing the production of finished goods can be prevented when a manufacturer is running out of only one item. Inventory between successive dependant operations also serves to decouple the dependency of the operations. A work-centre often depends upon the previous operation to provide it with parts to work on: If work stops at a work-centre, all subsequent centre's will shut down for lack of work. Each machine can maintain its operation for a limit time, hopefully until operations resume at the original centre if a supply of work-in-progress inventory is kept between each work-centre. In order to forestall break down of production process the firm run shift for staff and make PHCN stand by instead of power Generator plant that performs composite functions. Though the firm experiences break down arising from lead time.

- **Lead Time**

Lead time is the time that elapses between when order is placed (either a production order issued to the factory floor or a purchase order) and actual time goods ordered are received. If an external firm or an internal department or plant (supplier) cannot supply the required goods on demand, then the client firm must keep an inventory of needed goods. The larger the quantity of goods the firm must carry in inventory depends on the longer the lead time. In this case the firm source its raw materials abroad and locally in order to forestall lead time which is some cases experienced as a result of the bottle neck at the port.

- **Hedge**

Inventory can also be used as a 'hedge against price increases and inflation. Before a price increase goes into effect, salesmen routinely call purchasing agents. This gives the buyer a chance to purchase material in excess of current need at a price that is lower than it would be if the buyer waited until after the price increase occurs. The firm is the of the opinion that it operates in competitive market and its sure of their source of raw materials, as result still use price as a synergy.

- **Quantity Discount**

Purchase of large quantities of goods often times attracts a price discount to the firms. This also frequently results in inventory in excess of what is currently needed to meet demand. However, the decision to buy in large quantities is justifiable if the discount is sufficient to offset the extra holding cost incurred as a result of the excess inventory. The firm in retaining its customers gives trade and other sales promotional activities.

Classification of inventories

According to Lucy (2004), inventories are classified in manufacturing companies as follows:-

- **Raw Materials**

This is defined as an unprocessed natural product used in manufacturing processes. Horngren (2007) defined raw materials as direct materials in stock awaiting use in the manufacturing process. Finished goods of one industry might be the raw materials of another. Pandey (2007) defines raw materials as these basic inputs that are converted into finished products through the manufacturing process. This usually consists of the essential item needed to create or make a finished product.

- **Work In Progress**

This can be defined as an incomplete ongoing piece of work. It also refers to items that are partially completed but are not yet finished products. It also refers to the stock of all materials in which processing has commenced but it is not yet completed.

Such materials are usually found between raw materials and finished goods. Malomo (1999) defined work-in-progress as partly finished goods and material subassemblies between manufacturing stages.

- **Finished Goods**

These are the products that are completed and that are ready to be purchased by consumers. Pandey (2002) defined finished goods as those products that are completed and are ready for sale. Stock of raw materials and work-in-progress facilitates production while stock of finished goods is required for the smooth marketing operations.

Research Methods

Explanatory research design was adopted for this study. Nestle Nigeria Plc, a conglomerate which is into the manufacturing, marketing and distribution of food products in Nigeria was listed on the Nigerian Stock Exchange on the 20th of April 1979. The entire 36 years of being listed on the Nigerian Stock Exchange is the population of the study. Purposive sampling technique was employed in the selection of the sample size for the study which comprises of the latest ten (10) years of being listed on the Nigerian Stock Exchange (2014-2013). Secondary data were collected from the annual reports of the organization covering a period of 10 years. The data were subjected to regression analysis using the SPSS. Regression analysis was used to examine the extent to which inventory control affect profit after tax and investment income of the organization.

Model Specification

The functional relationship between the variables is expressed mathematically as:

P = f (INCON)

Where

P = Performance

INCON = Inventory control

Performance is measured by profit after tax and investment income stated on the profit and loss accounts while inventor control is measured by inventories holding or value on the balance sheets of the organization.

Therefore,

P = PAT, INTINCOME

INCON = INVHOLD

Two linear models were derived based on the measurement of the variables:

Model 1:

$Yi = a1 + \beta 1X + \mu i$ ..... *(Eqn. 1a)*

PAT = a1 + β1 INVHOLD + μi ..... *(Eqn. 1b)*

Model 2:

$Y2 = a2 + \beta 2X + \mu i$ ..... *(Eqn. 2a)*

INTINCOME = a2+ β2 INVHOLD + μi..... *(Eqn. 2b)*

Where

P = Performance
PAT = Profit after Tax
INTINCOME = Investment Income
INCON = Inventory Control
INVHOLD = Inventories Holdings

4.0 DATA PRESENTATION AND ANALYSIS

This section presents and analyses the data collected for the study.

Table 1: Financial Records of Nestle Nigeria Plc (2004-2013)

YEARS	INVENTORIES HOLDINGS (₦ millions)	INVESTMENT INCOME (₦ millions)	PAT (₦ millions)
2004	7025	175	2844
2005	8162	743	4438
2006	8029	820	6898
2007	9272	849	7191
2008	9342	156	16160
2009	7734	545	6242
2010	7925	-	37494
2011	9255	148	9804
2012	8784	909	21137
2013	9853	361	22258

Source: Nestle Nigeria Plc Annual Report s 2004-2013

Hypotheses Testing

Hypothesis one

Inventories holdings do not have significant effect on the profit after tax

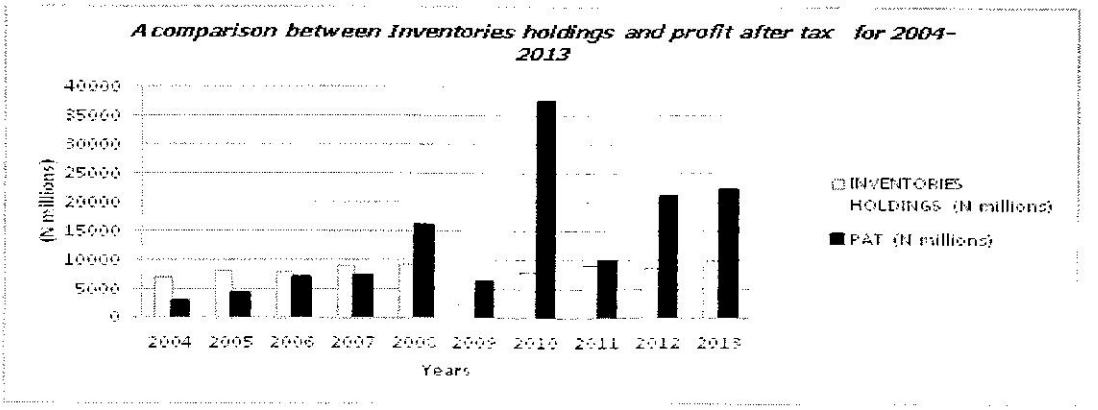

Figure 1

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.255[a]	.065	-.052	11148132.77920

The coefficient of determination (R2) as indicated above means that inventories holdings contribute 6.5% of the variance or success recorded in profit after tax of the organization.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	68878872.495	1	68878872.495	.554	.478[b]
	Residual	994305625.905	8	124288203.238		
	Total	1063184498.400	9			

a. Dependent Variable: PAT

b. Predictors: (Constant), INVHOLD

From the above ANOVA result the calculated F Statistics is 0.554 where the tabulated F value is 5.32, at degree of freedom of 8. Since the calculated F is less than the tabulated F, it is therefore concluded that the model is not statistically significant at 0.05 level of significance. This implies that inventories holdings do not have significant effect on the profit made after tax by Nestle Nigeria Plc.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-12960.061	35646.741		-.364	.726
	INVHOLD	3.093	4.155	.255	.744	.478

a. Dependent Variable: PAT

Model 1:

$YI = a1 + \beta 1X + \mu i$ ..... *(Eqn. 1a)*

PAT = -12960.061 + 3.093 INVHOLD + μi ..... *(Eqn. 1b)*

The P- value of 0.478 in both the ANOVA table and the coefficient table shows that inventories holdings is insignificant to the model. The contribution of inventories holdings to profit after tax is statistically insignificant and is not responsible for the growth or increase experienced in profit made by the organization. This is because the p-value generated by the result (0.478) is greater than the level of significance for the study (0.05).

Hypothesis Two

Inventories holdings do not have a significant effect on the investment income of Nestle Nigeria Plc.

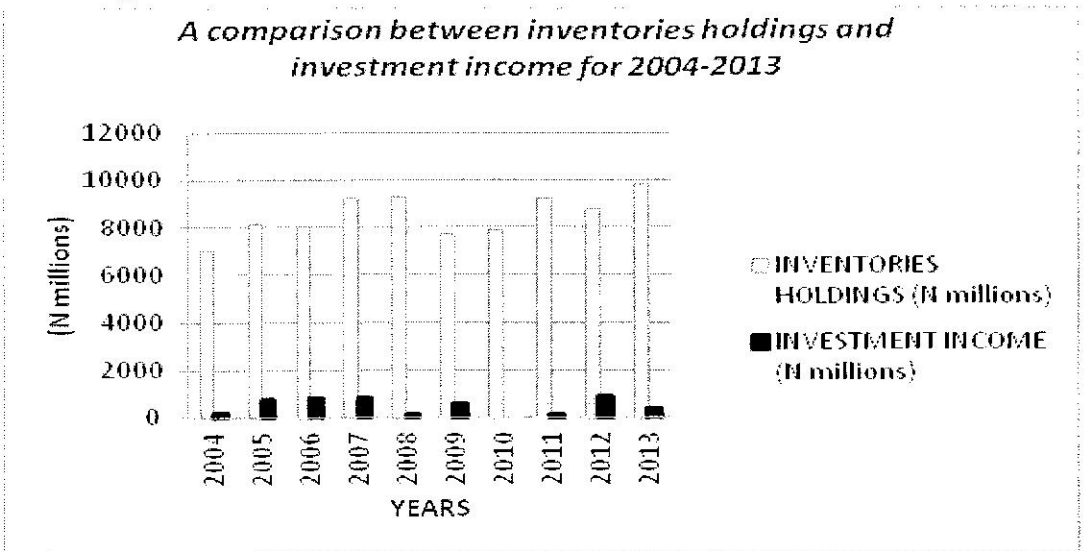

Figure 2

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.055[a]	.003	-.122	363.63674

a. Predictors: (Constant), INVHOLD

The coefficient of determination (R2) as indicated above shows that inventory value account for 0.3% of the variation recorded in the investment income of the organization. This signifies that the remaining 99.7% of the success recorded in investment income is not considered in the study.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3244.996	1	3244.996	.025	.879[b]
	Residual	1057853.404	8	132231.676		
	Total	1061098.400	9			

a. Dependent Variable: INVINCOME

b. Predictors: (Constant), INVHOLD

From the above ANOVA result the calculated F Statistics is 0.025 while the tabulated F value is 5.32, at degree of freedom of 8. Since the calculated F is less than the tabulated F, it is therefore concluded that inventories holdings do not have significant effect on the investment income of Nestle Nigeria Plc at 0.05 level of significance. This implies that inventories holdings do not have significant effect on the investment income of Nestle Nigeria Plc.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	289.350	1162.713		.249	.810
	INVHOLD	.021	.136	.055	.157	.879

a. Dependent Variable: INVINCOME

Model 2:

INTINCOME = a2+ β2 INVHOLD + μi.....*(Eqn. 2a)*

INTINCOME = 289.350 + 0.021 INVHOLD + μi.....*(Eqn. 2a*

The P-value of 0.878 in both the ANOVA table and the coefficient table further prove that inventory value is insignificant to the model. The contribution of inventories holdings is statistically insignificant and is not responsible for the variation in investment income made by the organization. This is because the p-value generated by the result in both ANOVA and coefficient tables (0.878) is greater than the level of significance used for the study (0.05).

CONCLUSION

Inventory management is a pivotal in effective and efficient organization. It is also vital in the control of materials and goods that have to be held (or stored) for later use in the case of production or later exchange activities in the case of services. The principal goal of inventory management involves having to balance the conflicting economics of not wanting to hold too much stock. Thereby having to tie up capital so as to guide against the incurring of costs, such as storage, spoilage, pilferage and obsolescence and, the desire to make items or goods available when and where required (quality and quantity wise) so as to avert the cost of not meeting such requirement. This paper examines the effects of inventory control on the performance of Nestle Nigeria. The data used for this research work were gathered from the annual reports of the organization covering the period 2004-2013. Simple linear regression models were developed and used in analyzing data for the study. It was discovered that, inventories holdings do not have significant effects on both profit after tax and investment income of Nestle Nigeria Plc.

This implies that that inventories are not effectively managed in the organization as the findings shows that inventories holdings does not contribute to the performance of the organization. This is in variance with previous researches on inventory management which indicated a strong positive relationship between inventory and profitability of businesses (Abdulraheem, Yahaya, Isiaka, and Aliu, 2011). Effective inventory management determined how profit of an organization can be maximized because maximization is an efficient concept which requires increasing profit without increasing the resources used (Stephenson, 2005).

RECOMMENDATIONS

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

* Business organizations employees should be well trained on management of inventory by carrying out stock checking and stock records.
* They should improve on advertisement, marketing strategies and attitude towards customers in order to make higher sales and increase profits.
* Managers of businesses must improve services to their customers, by making sure they did not run out of stock, so that the confidence of the customers does not diminish.
* The management of Nestle Nigeria Plc should be conscious of the of the level of inventory it holds so that this will not affect its profit margin

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