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# Examine the Effect of Inventory Management on Financial Performance of Listed Consumer Goods Companies in Nigeria

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**Abstract:** *Inventory management has been of main issue for many years to business organizations globally. Inventory management performs a principal role in enhancing effectiveness and efficiency in handling inventory of consumer goods companies. Consumer goods companies have been continually seeking for sources of sustainable competitive advantage of their operations. Therefore, there is need for consumer goods companies to embrace effective inventory management practices with a view to strengthen their competitiveness. This study will employ ex-post facto and causal research design. Causal research determines the cause-effect relationship among variables while Ex-post facto seeks to find out the factors that are associated with certain occurrence, conditions, events or behavior by analyzing post events or already existing data for possible casual factors. The study is expected to examine the effect of inventory management on financial performance of listed consumer goods companies Nigeria. The consumer goods companies' factory managers will be expected to benefit immensely from the findings of this study as it may challenge them to embrace inventory management to enhance financial performance of consumer goods factories they manage thus increasing their competitive advantage in ever-changing business environment. Descriptive and inferential analysis would be used to test the hypothesis. Recommendations will be made based on the findings.*

**Key words:** *Effect, Inventory, Management, Financial Performance, Listed Consumer Goods*

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## Introduction

Inventory management has been of main issue for many years to business organizations globally. Inventory management performs a principal role in enhancing effectiveness and efficiency in handling inventory of consumer goods companies. Consumer goods companies have been continually seeking for sources of sustainable competitive advantage of their operations. Therefore, there is need for consumer goods companies to embrace effective inventory management practices with a view to strengthen their competitiveness. Oniwon (2000) submits that in consumer goods industry, a high proportion of operational expenditure is expended on inventory. However, such reasonable investment that determines profitability is often overlooked by organisations hence organisations require considerable inventory management so as to minimize waste which invariably affects the profitability and survival of organisations.

Lee and Dobler (1977) support this view by postulating that inventory is the lifeblood and heart of any manufacturing system. Consequently, there is the need to ascertain the impact of

inventory management on the financial performance of consumer goods industry, adopt better methods of managing inventory, reduce inventory cost and eliminate any wastage in the production process to enhance profitability.

The reviewed studies shows that inventory management has a great effect of impact on all business functions and that an effective and efficient inventory management system ensure profit maximization and survival of a business which is the main purpose of carrying out a business. Studies on inventory management and financial performance were mostly carried out outside Nigeria, studies like Deloof (2003); Raheman & Nasr (2007), Capkun, Hameri & Weiss (209), Sahari, Tinggi & Kadri (2012), Panigrahi (2013), Wanyoike & Richu (2014); Folina & Shen (2014), Prempeh (2015), Kwadwo (2015), Edwin & Florence (2015), Abdullahi, Rahman & Abbas (2016). However, studies carried out in Nigeria are few, such studies like Falope & Ajilore (2009), Eneje et al. (2012), Lyndon & paymaster (2016), Amahala, Nweze & Obi (2017). Ffalope and Ajilore (2009) measured inventory management with inventory turnover, Eneje et al (2012) proxy inventory management with raw materials, Lyndon and Paymaster (2016) measured inventory management with raw materials, work-in progress and finished goods, Sunday and Joseph (2017) employed primary data and centered on SMEs in Nigeria. The data used is susceptible to manipulation and bias while Amahalu et al. (2017) proxy inventory management with inventory turnover.

The gap identified in this study is that no study in Nigeria has measured inventory management with raw materials, work-in progress, finished goods and inventory turnover all together. This study filled this gap by examining the effect of raw materials, work-in progress, finished goods and inventory turnover all together as proxies for inventory management for inventory management on financial performance of listed consumer goods in Nigeria for a period of five (5) years covering 2015 to 2019.

### **Objectives of the Study**

The main objective of the study was to Examine the effect of inventory management on financial performance of listed consumer goods companies in Nigeria. The specific objectives are to:

- i. Assess the effect of raw material on return on asset of listed consumer goods companies in Nigeria;
- ii. Assess the effect of work-in-progress on return on asset of listed consumer goods companies in Nigeria;
- iii. Investigate the effect of finished goods on return on asset of listed consumer goods companies in Nigeria;
- iv. Examine the effect of inventory turnover on return on asset of listed consumer goods companies in Nigeria.

### **Literature Review**

#### **Concept of Inventory Management**

Sharma (2003) defines inventory as the quantity of goods, raw materials or other resources that are idle at any given point of time. From the definition above, inventories consist of raw materials, component parts, supplies or finished assemblies etc which are purchased from an

outside source and goods manufactured in the enterprise itself. In simple words, inventory refers to stocks held by a firm. Inventory management is a management of inventory in any company on different department which includes raw material (RM), work in progress (WIP) and finished goods (FG). Inventory management is a science primarily about specifying the shape and percentage of stocked goods (Kwadwo, 2016).

Inventory management refers to keeping or maintaining the firm's stocks at a level that a firm will only incur the least cost consistent with other management's set objectives or targets (Kwadwo, 2016). Inventory management is about ensuring that all input materials of production available to the firm are maintained at a level where production is not interrupted as well as ensuring that operational cost is kept at a minimal level without affecting operation efficiency (Eneje et al. 2012). Inventory management entails planning, organizing, controlling and directing. All these coordinated efforts are meant to ensure achievement of efficiency in all operations of the firm. Such operations may include procurement, stocking and transportation (Akindipe, 2014). Mismanagement of inventories may lead to significant financial problems for a firm (Muhayimana, 2015).

Inventory management is of importance to financial performance. This is because excess or shortage of this may bring danger to the company (Duru, Oleka & Okpe, 2014). The objective of inventory management is to maintain a system that minimizes total cost, while specifically, it establishes that the amount of stock to be ordered is optimal as well as the period between orders (Anene, 2014). Excess inventory consumes a lot of space, can increase possibility of spoilage, leads to a financial burden and loss while insufficient inventory has the potential of interrupting business operations (Swaleh & Were, 2014).

Inventory management is vital and needed in various areas within the firm especially in a supply network so as to protect production against any management and other stakeholders, debt holders and the government as it is an outcome which has been achieved by an individual or a group of individuals in an organisation related to its authority and responsibility in achieving the goal legally not against the law and conforming to the morale and ethics (Iswatia & Anshoria, 2007).

Financial performance which assesses the fulfillment of a firm's economic goals has long been an issue of interest in managerial researches. Firm financial performance relates to the various subjective measures of how well a firm can use its given assets from primary mode of operation to generate profit. The concept of firm performance implies measuring the results of a firm's policies and operations in monetary terms. These results are reflected in the firm's return on investment, return on assets and net profit after tax etc. Performance differences in firms are often the subject of academic research and government analysis (Verreynne, Meyer, 2008).

Kothari (2001) defined the value of a firm as the present value of the expected future cash flows after adjusting for risk at an appropriate rate of return. According to Eyenubo (2013), it is the success in meeting pre-defined objectives, targets and goal within a specified time target.

Firm performance is studied and measured by different researchers (Shah et al., 2011; Matolesy & Wright, 2011; Yasser, Entebang & Mansor, 2011) using different measures. Matolesy and Wright (2011) measure firm performance by ROA (Return on Assets = EBIT/Average total assets in book value), ROE (Return on Equity = net profit/equity – in book value). ROE refers to the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. Each insurance firm's ROE has been obtained for its annual reports. ROE is expressed as a percentage and calculated as: Net Income Shareholder's Equity multiplied by 100, net income is for the full fiscal year before any dividend are paid to common stockholders but after dividends are paid to preferred stock.

Shareholder's equity does not include preferred shares. Change in market value of equity, change in market value of equity, adjusted for dividends and risk. Yasser et al (2011) used return on equity (ROE), ROE refers to the amount of net income returned as a percentage of shareholders equity. Return on equity measures a corporation's profitability by revealing how much profit a company generates with the money shareholders have invested. Each insurance firm's ROE has been obtained for its annual reports. ROE is expressed as a percentage and calculated as Net Income/Shareholder's Equity x 100 Net income is for the full fiscal year before any dividends are paid to common stockholders but after dividends are paid to preferred stock.

## **Empirical Review**

### **Raw Material and Financial Performance**

Capkun et al. (2009) studied the relationship between inventory management and financial performance in manufacturing companies. They studied 52,254 businesses for a period of 25 years between 1980 and 2005. The study used multiple regressions to determine the correlation between financial performance and various inventory management practices. The study measured financial performance using gross profits and operating profit results and inventory levels in regard to raw materials, partially manufactured products and finished products. The results revealed a positive correlation between a company's raw material and its financial performance. The study also noted that degrees of correlation vary depending on the type of inventory and the financial performance reference. The study was done in another country while the current study is carried out in Nigeria; also the study used gross profit to measure financial performance while this current study used ROA to measure financial performance.

Eneje et al. (2012) investigated the effects of raw materials inventory management on the profitability of brewery firms in Nigeria using a cross-sectional data from 1989 to 2008 which was gathered for the analysis from the annual reports of the sampled brewery firms. Measures of profitability were examined and related to proxies for raw materials inventory management by brewers. The OLS stated in the form of a multiple regression model was applied in the analysis. The study revealed that raw materials inventory management designed to capture the effect of efficient management of raw materials inventory by a company on its

profitability is significantly strong and positive and influences the profitability of the brewery firms in Nigeria. The study concluded that efficient management of raw material inventory is a major factor to be contained with by Nigerian brewers in enhancing or boosting their profitability. This study deviate from the study by looking at consumer goods companies which this current study looked at.

### **Work-in-Progress and Financial Performance**

Lyndon and paymaster (2016) examined the effect of inventory cost management on the profitability of listed brewery companies in Nigeria. Inventory cost management proxy by raw material cost, work-in progress cost and finished goods cost was regressed against profitability proxy by gross profit margin. Secondary time series data was collected from the annual reports and accounts of selected brewery companies from the NSE from 2005 to 2014. A multiple regression technique was used to analyse the data obtained from NSE. The study revealed that work-in-progress has positive influence on the profitability of brewery companies in Nigeria. This current study deviate from the study by looking at consumer goods companies which is more encompassing than brewery firms. The study is characterised with limited empirical review, it did not take inventory turnover as one its independent variable which this current study looked at.

Alrjoub and Ahmad (2017) examined the moderating effect of cost of capital on the relationship between inventory types and firm performance in Jordan. The data of 48 firms for the period 2010 – 2016 which formed 279 firm year observations were used in this study. With the use of Pearson Correlation and Panel Generalized Method of Moments (GMM) estimation, the findings show that work-in-progress has positive significant effect on firm performance in the long-term. In addition, it is also found that cost of capital moderates the relationship between inventory management and firm performance. However, the interaction between cost of capital and inventory types has different implications.

### **Finished Goods and Financial Performance**

Capkun et. al. (2009) studied the relationship between inventory and financial performance in manufacturing companies. The researchers studied 52.254 businesses for a period of 25 years between 1980 and 2005; the study used multiple regressions to determine the correlation between financial performance and various inventory levels. The study measured financial performance using gross profits and operating profit results and inventory levels in regard to raw materials, partially manufactured products and finished products. The results revealed a positive correlation between a company's finished goods and its financial performance. The study also noted that degrees of correlation vary depending on the type of inventory and the financial performance reference. The study was done in another while the current study is carried out in Nigeria, also the study used gross profit to measure financial performance while this current study used ROA to measure financial performance.

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### **Inventory Turnover and Financial Performance**

Deloof (2003) studied the relationship between inventory conversion period and corporate profitability using a sample of 1,009 large Belgian non-financial firms for a period of 1992 – 1996. The study employed correlation and regression analysis techniques to obtain data and found a significant negative relationship between gross operating income and inventory turnover days of Belgian firms. The study was carried out in Belgium while the current study scope covered 2013 – 2017. This current study is updated to 2017.

Raheman and Nasr (2007) studied the effects of inventory turnover in days and current ratio of the net operating profit of Pakistani firms. They selected a sample of 94 Pakistani firms listed on the Karachi Stock Exchange for a period of six years from 1999 – 2004 and found a strong negative relationship between inventory conversion period and profitability of the firms. The study was carried out in Pakistan while the current study is in Nigeria, also the scope of the work was 1999 – 2004 while the current study scope covered 2006 – 2017. This current study is updated to 2017. In a similar manner, Falope and Ajilore (2009) used a sample of 50 Nigerian quoted non-financial firms for the period of 1996 – 2005. The study utilized panel data econometrics in a pooled regression where time series and cross-sectional observation were combined and estimated. The study found a significant negative relationship between operating profit and the inventory turnover in days for a sample of 50 Nigerian firms listed in the NSE. The study is an old study, there is need to determine the current impact of inventory management on financial performance, also the study did not measure raw material, WIP and finished goods as one of its independent variable.

Panigrahi (2013) examined the relationship between inventory conversion period and the profitability of cement companies in India for the period 2001 to 2010. The study adopted gross operating profit as the dependent variable and proxy for profitability and inventory conversion period as the independent variable. In addition, current ratio, size of the firm and financial debt ratio were used as control variables. The study found significant negative linear relationship between inventory management and profitability. The study was carried out in India while the current study is in Nigeria also, the study did not measure raw material, WIUP and finished goods as one of its independent variable.

Folinas and Shen (2014) inventory turnover on firm performance in the United Kingdom agricultural machinery industry. Specific performance measures such as Earnings before Interest and tax to Sales Ratio, Gross Profit to Sales Ratio and Return on Assets are examined by conducting statistical analyses to determine the correlations between inventory and

financial performance in agricultural machinery industry. The analysis of Inventory Turnover with financial performance measures does not indicate any links between these variables.

Moridipour and Mousavi (2014) evaluate the effect of inventory turnover on gross profit margin and sales stocks in listed companies in Tehran Stock Exchange. The study estimates the research model by dependent and independent variables using panel regression technique of data analysis. To test the hypothesis, cumulative data of 79 companies listed in Tehran Stock Exchange for the year 1986 – 1991. The results indicate that there is a significant inverse turnover. The results also indicate no significant relationship between variables of sales shocks and inventory turnover. The study was carried out in Iran while the current study is in Nigeria, also the study did not measure raw material, WIP and finished goods as one of its independent variable. In a related study, Sitienei and Memba (2015) using similar analysis techniques examined the effect of inventory management on the profitability of cement manufacturing companies in Kenya. The study findings revealed that inventory turnover, inventory conversion period and inventory storage costs were negatively related to profitability. The study was carried out in Kenya while the current study is in Nigeria, also the study did not measure raw material, WIP and finished goods as one of its independent variable.

Edwin and Florence (2015) assessed the effect of inventory management on profitability of cement manufacturing companies in Kenya: A case study of listed 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. The 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, inventory conversion period, inventory levels, storage cost, size of firm, gross profit margin, return on assets and growth of the firm. The results provide a negative relationship between inventory turnover, inventory conversion period and storage cost with the profitability of the company. In addition, inventory level was found to be directly related to firm's size and storage cost. The study was carried out in Kenya and the results emanated from the study cannot be used in Nigeria as a result of differences in environment. Also, the study did not measure raw material. WIP and finished goods as one of its independent variable.

Amahalu, Nweze and Obi (2017) determined the effect of backflush accounting on financial performance with particular reference to food and beverage firms. The study therefore examines the effect of backflush accounting on financial performance of food and beverage firms quoted on NSE from 2010 to 31<sup>st</sup> December, 2015. The research design employed in this study is the ex-post facto research. Only secondary data were used in this study. Three hypotheses were formulated and tested in the course of this study. The statistical tools used to test the hypothesis were coefficient of correlation and ordinary least square regression. The study revealed that backflush accounting has a positive and statistically significant effect on ROA, ROE and EPS of food and beverage firms quoted on the floor of Nigerian Stock Exchange. The study area was on food and beverage firms while this current story is on consumer goods companies in Nigeria, the study did not measure raw material, WIP and

finished goods as one of its independent variable.

Sunday and Joseph (2017) examined the effect of inventory management on profitability of SMEs in Nigeria. The study used a descriptive research design. The population consists of all SMEs operating in Delta State. The study used stratified random sampling. 10 SMEs were randomly selected from eh stratum making a total of 30 firms for the study. Data for the study were obtained through the administration of a self-designed questionnaire to mangers or accountants of the sampled firms. The questionnaire was structure to elicit information about the trading and financial activities for the last two accounting years. A multiple regression analysis was conducted to test the model established for the study. Findings of the study reveal that inventory turnover has a significant positive relationship with financial pe4rformance of SMEs. The study also reveals that there is negative relationship between inventory conversion period and profitability and no significant positive relationship between inventory, leanness and profitability.

## **Theoretical Framework**

### **Theory of Constraints**

Theory of Constraints was propounded by Eli Goldratt in 1990. The theory advocates strongly exclusions of any capacity costs from products. Three factors which are throughput, operating expense and inventory, play important roles. TOC measure profit = throughput + operating expenses. Also throughput measures the difference between revenues and cost of raw materials. In the TOC, capacity cost should be used to create customer value. If all the company resources are not matched with the throughput, the company creates inefficient use of the capacity in various business processes can mean low or non-existent profit. In that meaning, TOC may target its profit as added value. TOC is a methodology for identifying the most important limiting factor, that is, constraints; that stands in the way of achieving a goal and then systematically improving that constraint until it is no longer the limiting factor.

The theory of constraints is a management philosophy that seeks to increase manufacturing throughput 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 is necessary. The theory is founded on the belief that an organisation that maximizes the output of every machine will not perform as well as one that ensures optimization of the flow of materials and value created through its operational performance. 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 organisation. This can be achieved by firms applying appropriate inventory control systems. Companies have struggled to invest in the technology and organisational structures needed to achieve to-date systems synchronization that enable coordinated inventory flows (Fawcett, Ogden, Magnan & Cooper, 2006).

The theory of constraints methodology proposes that operational performance is dependent on the application of inventory control systems in the processing firm. Theory of constraints is a

methodology whose basis is applied to production for the minimization of the inventory. In reality, it is difficult for a firm to forecast with precision the consumption of its specific product at a specific region with sometime prior to production and supply of the same product. Under Theory of Constraints, performance measurements are based on the principles of throughput, inventory dollar days and operating expenses (Umble, Umble & Murakami, 2006).

Theory of constraints measurements are based on a simple relationship that highlights the effect of inventory control system on progress toward the operational performance. The proof of effectiveness for any inventory control system is the degree to which it improves operational performance of the business firms. For processing firms to ensure that the bottlenecks on their operations run smoothly they have to embrace the use of inventory control systems that can facilitate operational efficiency. This may result in the acquisition of additional capacity or new technology of inventory control systems that lift or break the constraints. Improving the performance of the constraints leads to improvement in the operational performance of the entire system. The tea processing firm depends on inventory as a resource in their operations. The theory of constraints contributes a lot to the building of literature in this study.

### **Methodology**

The study will use ex-post facto and content research design because the study relied heavily on secondary data that are quantitative in nature and these data had already been collected by the study population. The use of content research design is to analyse the contents of the Annual reports of selected listed manufacturing companies in Nigeria to analyse the companies' environmental accounting disclosure in their annual report. The content analysis method was adopted because it is one of the most systematic, objective and quantitative method of data analysis technique employed in other prior research studies involving corporate environmental accounting and disclosure practices (Susi, 2005; Daniel & Ambrose, 2013; Adediran & Alade, 2013; Tze, Wei Boon & Sin, 2014; Onipe, 2018).

### **Population, Sample and Sampling Technique**

The population of this study is the 41 listed manufacturing companies on the Nigerian Stock Exchange as at 2021, since they are not too many census sampling technique is used to sample all the 41 listed manufacturing companies as the sample size because the population of the study is not too large.

### **Method of Data Collection**

The study used secondary data collected from the Annual Reports of the listed manufacturing companies in Nigeria and data from the Nigerian Stock Exchange factbook for the period of six (6) years ranging from 2015 to 2021. The use of secondary data in this study was informed by the fact that the study is based on the quantitative research methodology that requires quantitative data to test the research hypothesis. The various data were sourced based on the parameters of the variables and the respective ratios or percentages taken. Financial performance which serves as the dependent variables are measured with ROA, ROE

and NPM while the independent variable is measured with environmental disclosure index.

REGRESSION RESULT

	Unstandardized coefficients		Standardized coefficients	t-test	p-value
	B	Standard error	Beta		
CONSTANT					
RM	0.352	0.135	1.087	2.232	0.041
WIP	0.048	0.42	0.034	0.211	0.88
FG	0.331	0.544	0.127	0.711	0.525

STATISTICAL PACKAGE (SPSS) OUTPUT 2022

The t-test and p-values provide a clue of the impact of each independent variable on the dependent variable. p-value < 0.05 suggests that an independent variable is having a great impact on the criterion or dependent variable. The table shows that raw materials inventory management (Rm) has a significant impact on the performances of firms in Nigeria this is evidenced by RM t = 2.232 > t\* 2. The result is further strengthened with the Rm p-value of 0.041 which is less than 0.05.

**FINDINGS, CONCLUSION AND RECOMMENDATION**

From the above result, it is observed inventory management has significant impact on financial performance of consumer goods companies. Meaning that, a better management of inventory cycle will enhance the profitability of the company. This point can be viewed from the result above. This result is in line with the work of Alipour (2011); Gill, Biger and Mathur (2010); Padachi (2006); Warnes (2013); Soekhoe (2012) relationship between the variables under study, which include among others Alipour (2011); Panigrahi (2013).

It was concluded that, as inventory management played a vital role in financial management decision. It is paramount that a special care should be given to it is management to make sure stock are not kept for long without necessary. With that, capital will not be tied down; as such the money can be used elsewhere to gain interest or better profit.

Based on this, it is recommended that, consumer goods company should and adopt advanced manufacturing modern method of inventory management. Also to keep track of the movement of goods, in order to avoid necessary delay of finished and WIP goods in the store and warehouse

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