



INVESTIGATING THE RELATIONSHIP BETWEEN INVENTORY MANAGEMENT PRACTICE AND FINANCIAL PERFORMANCE OF MANUFACTURING INDUSTRY IN NIGERIA: AN EMPIRICAL EVIDENCE

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Abstract: This study evaluates the relationship between inventory management practice and financial performance in Paint manufacturing companies in Nigeria. Inventory management practice remains a vital part of a manufacturing concern to be more competitive, hence its efficient management cannot be over emphasized. Relevant theories were reviewed by the study to provide good theoretical foundation. The study population consists of 09 listed manufacturing companies in Lagos state of Nigeria registered with LCCI and NSE as at 2019 for a period of 12 years (2008-2019). Data was collected through primary and secondary sources which was subjected to diagnostic tests. Both descriptive and inferential statistics were used to analyze the panel data through OLS regression method. Both descriptive and inferential statistical analysis using data collected through cross sectional survey method from primary and secondary sources were employed by the study. Panel data was collected through cross sectional survey method. The results indicated that there is a positive relationship between inventory management practice and financial performance (ROCE & ROE) but a negative relationship with (ROS) of the listed Paint companies in Nigeria. The study recommends that the concerned managers should endeavor to design and monitor procedures for inventory control, improve communications across board, maintain good suppliers' chain management of the inventory with adequate security while government need to stabilize foreign exchange market to enhance inventory management and enhance sustainable economic growth for the country.

KEY WORDS: Inventory management, Financial performance, Simulation, Electronic-inventory

1.0 Introduction

Inventory management practice, researches and studies with its influence on the industrial performance of various economies in the world, have brought series of controversy for some time, hence attracting the attention of more researchers, professional accountants and practitioners,

both in the developed and developing countries in Africa like Nigeria. Inventory could be described as the goods that are stocked that have a resale value in order to gain some profit, and that the profitability of a firm is directly or indirectly affected by the inventory management (Shardeo, 2015). According to literature, inventory management



involves the recording and monitoring of stock levels, forecasting future demand and deciding on when and how to order or what ordering process to follow (Adeyemi & Salami 2010; Nsikan, 2015).

The main goal of inventory management is to have adequate quantities of high quality items available to serve customer needs, while minimizing the costs of carrying inventory (Brigham & Ehrhard, 2005). According to Adeyemi et. al., (2010), inventory constitute the most significant part of current assets of majority of the Nigerian manufacturing companies. It thus becomes essential to deploy cutting edge techniques to manage inventories efficiently so as to avoid loss of sales, cost of changing production rates, overtime cost, sub- contracting, unnecessary cost of sales and back order penalties during periods of peak demands (Chen, Murray, & Owen, 2005). Assessing the firms' financial performance holistically is a subjective measure of how well a firm can use assets from its primary mode of business operation to generate revenues. The term can also be used as a general measure of a firm's overall financial health over a given period of time that can be used to compare similar firms across the same industry or compare industries or sectors in aggregation to each other (Ajala, 2021). Financial performance in a broader sense refers to the degree to which financial objective has been accomplished and it is an important aspect of finance risk management. It is the process of measuring the results of a firm's policies and operations in monetary terms. Firms' performances could be measured by a number of ways in which we have turnover, earnings and profits. In conclusion, Prempeh (2016) stated that the need to understand the cost measures associated with inventory management to maximize profit remains unabated to the manufacturing industry in Ghana. The economic importance of Paint manufacturing sector of the Nigerian economy cannot be underestimated since it contributes maximally to the economy: employment

generation, value creation and increased Gross Domestic Product (GDP), (Ajala, 2021). This study is examining the relationship between inventory management and financial performance of listed Paints manufacturing companies in Lagos State-Nigeria which harbors highest Paints Manufacturing companies in Nigeria.

1.2 Statement of the Problem

Inventory management has been a subject of debate among management accountants, researchers in accounting, practitioners and players in commerce as well as business investors. However, most inventory management studies are concentrated in developed economies. Few that exist in developing economies like Nigeria did not focus particularly on manufacturing companies especially Paint industry, that have been of great contribution to economic growth of Nigeria as evident from the literature. This sub sector of the economy has experienced declining contribution to GDP and employment generation. Suffice it to say that, its contribution to total Gross Domestic Products, remained low at 0.03 percent according to the Nigerian Stock Exchange Report, (2017). In another vein, Kaumanakos (2008) reported that managing assets of various kinds connotes inventory problems, since it is the same principle for cash and fixed assets. Thus, inventory management is important to a firm's success and performance. The relationship between inventory management variables and firms' financial performance is worthy of exploration in the Nigerian context.

The extant empirical evidence in inventory management-performance relationship produced mixed results and thus cofounding. Specifically, Deloof (2003), documented a significant negative relation between inventory management and gross operating income of non-financial Belgian firms. Also, Prempeh (2016), reported that there is a significant positive relationship between inventory management and profitability in the Ghanaian industry. Blazenko and Vandezande (2003), also found out the



significant positive coefficient relationship between inventory management and gross margin regressed as a determinant of finished goods inventories. Similarly, Demeter (2003) reported that inventory turnover did not affect return on sales and level of sales respectively. Mwangi (2016) and Fosu (2016); also documented that there is direct relationship between inventory management and profitability. In contrary, (Sitienei & Memba (2015) study's showed a negative relationship between the variables.

The research methodology employed by most studies and empirical evidence are not the same with some either using qualitative or quantitative research for different environments. Some used descriptive while others used inferential statistics to explain the relationship between inventory management practice (Mwangi & Nyambura, 2016; Bawa, Asamoah & Kissi 2018; Fosu, 2016), while (Prempeh, 2016) used profitability to determine firms' performance. Mwangi and Nyambura (2016), documented the use of explanatory variables: management efficiency, profitability, cash flow, firm size and growth levels respectively thus arriving at a similar finding by indicating the significant positive relationship of firms' performance in their studies. This study is therefore expanding the empirical horizon with evidence on evaluation of the relationship between inventory management practice and financial performance of listed Paint companies in Nigeria.

1.3 Research Objective

The general objective of the research is to investigate the relationship between inventory management practice and financial performance of listed paint manufacturing companies in Nigeria.

1.4 Research Hypothesis

The study hypothesis was stated in its null form:

There is no significant relationship between inventory management practice and financial performance of listed paint manufacturing companies in Nigeria.

1.5 Scope and Significance of the Study

Since it is practically impossible for the study to discuss inventory management of all companies, this current study is based on the appraisal of inventory management practice for the listed Paint manufacturing companies in Nigeria located in Lagos state as case study for the period covered. The study is expected to contribute to the literature of management accounting in the area of inventory management by providing empirical evidence on the relationship between inventory management practice and financial performance in the Nigerian Paint manufacturing companies.

2.0 Literature Review

2.1 Conceptual Review

The study conceptualizes relationship between dependent variables and independent variables. The inventory management variables are independent variables expected to cause financial performance to grow as depicted in the following literature:

2.1.1 Global Perspective of Inventory Management and Practices

Inventory management has been described as an important aspect of cost control and reduction schemes and as such needs be approached with great attention. According to Nsikan (2015) inventories represent those items which are either accumulated for sale or they are in the process of manufacturing or in the form of materials which are yet to be utilized. Miller and Modigliani (1961) submitted that inventory control as the activity is where we organize the availability of item to the customers. Chen et.al., (2005) observes the necessity to deploy cutting edge techniques to manage inventories efficiently so as to avoid lost sales, costs of changing production rates, overtime cost, subcontracting, unnecessary cost of sales and back order penalties during periods of peak demand.

Nsikan (2015), identified inventory management best practices to include just in time, vendor managed



inventory, collaborative planning, forecasting and replenishment, automatic replenishment, agile system, and material requirement planning. Ogbadu (2009) stated that for a reduction in depreciation, pilferage and wastages in inventory, sensible and wise management of inventory key while ensuring availability of the materials as at when required. According to Tungo (2014), firms that efficiently apply inventory management practices have reported excellent financial performance as regards increase in profitability and operating cash flow leading to higher firm performance in the industry.

2.1.2 Inventory Management and Control Techniques

Shardeo (2015) opined that firms should attempt to determine the optimum level of inventory in order to achieve the objectives of good and optimal inventory management and control. However, this cannot be possible without the application of sound techniques as highlighted and discussed below:

(i) **Economic Order Quantity:** According to Piasecki (2009), the optimal quality or economic lot size for a

particular item of inventory is to be determined in consideration of the forecasted usage, ordering cost and carrying cost. At minimum cost inventory –carrying cost equals ordering cost. Certain assumptions are made in deriving the EOQ (Economic Order Quantity)

- i. Demand for the item is assumed to be uniform throughout the year.
- ii. The entire Order Quality is received in a single lot (at the same item)
- iii. Bulk Quality Discounts are not available

The model to drive EOQ is $Q = \frac{2CO D}{C_c}$

Where: A =Annual consumption or requirement of inventory in Naira

O =Ordering cost per order in Naira

C =Inventory carrying cost

Q = quantity per order in Naira

D = Annual demand

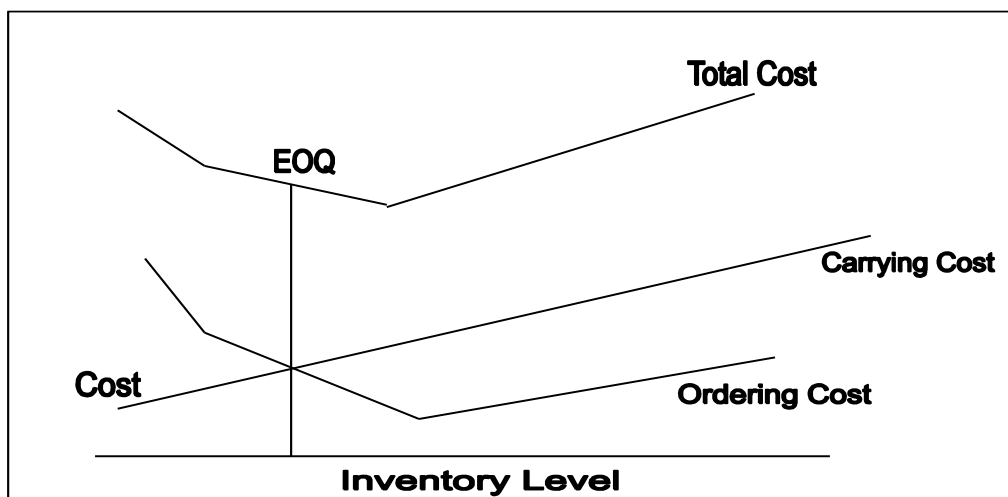


Figure 2.1 Presentation of EOQ graphically



Source: Lucey T. 1992. Quantitative Techniques, 4th Edition.

(ii) ABC Analysis Technique: This inventory control approach is based on the doctrine that a small portion of the items might characteristically represent the bulk of the value of money of the total inventory utilized in the process of production, whilst a comparative number of items can be from a small fraction of the financial value of stores (Monks, 1996). Pandey (1979), listed some steps that are involved in implementing the ABC analysis by classifying the item of inventories; determining the total value of each item; ranking the items; computing the ratios (percentage) of number of units; combining items on the basis of their relative value to form three categories A, B and C.

(iii) Just in Time Techniques (JIT): This concept was established by manufacturing businesses in Japan in which inventories are acquired only when demanded in a business for the purpose of production and this focused on enhancing the return on investment of a firm Schonsleben, (2000). The goal of JIT techniques is zero inventories with 100 percent quality. It does not mean that the firm shifts inventory tasks to the supplier, rather it calls for synchronization between supplier and customer production schedules so that it becomes unnecessary to keep buffer stock. The Just in Time is an inventory management practice with the objective of maintaining just sufficient material at the right place and at the right time in order to make first the right quantities of inventories (Carlson, 2002). Just in time inventory management system helps in reducing inventory costs by avoiding carriage of excess inventories and mishandling of raw materials.

(iv) Vendor Managed Inventory (VMI): Management of inventory supply determines the way an organization will propel itself to high performance effectiveness and competence. Many firms have resulted to VMI systems which assist the provider to monitor clientele' inventory

usage. Through the VMI system customers can avoid stock outs since the supplier will already have replenished the stocks. Also, there will be no costs related to handling of inventory since the supplier will know the quantity that is needed and which product will be put on the shelves. The input phase here is communication which should be of good intention from the beginning of business and should bring about a positive relation between the supplier and the customer by Thogori and Gathenya (2014).

(v) Bar-coding: Bar-coding is the most popularly used method of tracking a product for purposes of understanding the level of inventory, reorder and deliveries or sales; this enables firms to avoid issues of stock outages or overstocking. Bar-coding helps to track a particular item at any specific time. Once items leave the store, they are instantly recorded in the system thus making it possible to understand which stock is running low and the items to be placed.

(vi) Simulation: The function of simulation in inventory management usually occur for purpose of responding and having a proper decision making process that would take into consideration the complexities and variances within the environment of a system. Majority of simulation researches regarding inventory systems endeavored to establish the most appropriate arrangement for the inventory system in order to attain the predetermined goals. A small number of simulation models were established to address the inventory system optimization. An empirical evidence from Mukopi and Iravo (2015), established a simulation-based decision-support system for controlling and managing of one product inventory model and by taking into consideration, the impact of changes in demand, the point of reordering, the control of the stock level, period between the reviews, as well as the lead time.

2.4 Financial Performance

Tungo (2014), reported that financial performance is an objective measure of how well a firm can use assets from



its primary mode of business operation and generates revenue. The term is also used as a general measure of a firm's over all financial health over a given period of time, and can be used to compare industries or sectors in aggregation to each other (Ajala, 2021). There are many different ways to measure financial performance but all measures should be taken in aggregation. The firm's operational performance is calculated in opposition to standard or prescribed indicators of effectiveness, efficiency and environmental responsibility, such as cycle time, productivity, waste reduction, and regulatory compliance as submitted by Adeyemi et.al., (2010). In order to improve operational efficiency, an organization need to measure both the input and the output side of the inventory management which may lead to higher financial performance (Abdel-Maksoud, Asada & Nakagawa, 2008). The extant literature emphasized that the most popular measure of financial performance is:

(i) Return on Equity (ROE): The ROE measures accounting earnings for a period per dollar of shareholder's equity invested. ROE is so popular because it is in a real sense a summary of information on the income statement both sides of the balance sheet. It provides an "accounting" measure of the "returns" to shareholder's investment. The three determinants of ROE are:

Profit margin = Net Income or Sales

Assets Turnover = Sales or Assets

Financial leverage = Assets or Shareholder's Equity

The amount of net income returned as a percentage of shareholder's equity. Return on equity measures a corporation's profitability by revealing how much profit accompanies or generates with the money shareholders have invested.

ROE is expressed as a percentage and calculated as:

$ROE = \text{Net Income or Shareholder's Equity}$

Net Income is for the full fiscal year (before dividends paid to common stock holders but after dividends to preferred stock.) Shareholder's equity does not include preferred shares.

(ii) Return on Sales (ROS): A ratio widely used to evaluate a company's operational efficiency is ROS which is also known as a firm's "operating profit margin". Return on Sales (ROS) is a ratio widely used to evaluate an entity's operating performance. It is also known as "operating profit margin" or "operating margin". The ratio varies widely by industry but is useful for comparing different companies in the same business. As with many ratios, it is best to compare a company's ROS over time to look for trends, and compare it to other companies in the industry. An increasing ROS indicates the company is becoming more efficient, while a decreasing ratio could signal looming financial troubles. Though, in some instances, a low return on sales can be offset by increased sales. Calculations of ROS commonly use operating profit before deducting interest and tax (EBIT); using income after-tax is less common.

Return on sales (operating margin) = EBIT or Revenue

(iii) Inventory Costs through Procurement Process: Inventory management is necessary because sufficient amount of inventory is needed to minimize the rate of stock outs in a firm.

(iv) Purchase costs: The purchase cost of an item is the purchase price from an external source including transportation and freight costs.

(v) Holding Costs: are costs incurred in carrying inventory for current and future demand. These costs include taxes, theft, interest on funds financing, insurance, handling, opportunity cost and obsolescence (Lwiki,2013).

(vi) Unavailability Cost: According to Laugero (2002), the unavailability cost is incurred when a desired material is not available at the desired time. In manufacturing



industries, this cost is often called the stock- out or depletion cost.

(vii) Electronic Inventory (*E-Inventory*): This is electronic means of controlling inventories or stock to generate automatic updating and reports for users. Dramatically improved productivity, e-inventory helps in computerizing each and every process of managing the assets like record new assets, discard assets, print barcode and distributing assets. With e-inventory assets management, it is easier to maintain, compared to manual paper filing system. It has the abilities to update quantity at hand in the inventory, maintains all vendor's information, keep complete history of purchase orders with supplier and cost information, keep track of maintaining history and service due for equipment, greatly reduces the amount of paper work involved. Computerized Inventory Control System is the modern technique used for controlling the inventories with tracking and automation system of counting, recording withdrawals and deliveries.

2.5 Theoretical Review

The following theories are considered relevant for the study so as to provide theoretical foundation for achieving the stated research objective.

(i) Resource – Based View Theory: Penrose (1959) using the resource-based view (RBV) theory described a firm as an administrative organization and a collection of productive resources, both physical or material and human that provide a firm variety of services. Thus, it is observed that a tight relationship between the knowledge detained by the human resources and the services provided by the same human resources shows that firms are a true reservoir of knowledge. As stated by Penrose, (1959) and Barney, (1995), the RBV of the firm places focus on the inside of the firm, its resources and capabilities, to explain the profit and value of the firm. In this sense, this theory is applicable in this study for it has helped to learn the required resources needed both material and human resource.

(ii) Contingency Theory: The contingency theory, developed by Joan Woodward in the 1950s, is a class of behavioural theory which claims that there is no best way to organize an organization, to lead a company or to make decisions. Instead, the optimal course of action is contingent upon the internal and external situations. Several contingency approaches were developed concurrently in the late 1960s. The authors of these theories argued that Marx Weber's bureaucracy and Fredrick Taylor's scientific management theories had failed as they neglected environmental influences and that there is not one best way to manage enterprises. The contingency approach to management finds its foundation in the contingency theory of leadership effectiveness developed by management psychologist Fred Fielder. As argued by Dervitsiotis (1981), the contingency theory is about the need to achieve a fit between what the organization is and what it wants to become. It is all about the organization's strategy, culture, goals, technology, staff and external environment, and what it does; how it is structured and the processes, procedures and practices it puts into effect; therefore, this research will be anchored on dynamic theory of profit.

2.6 Related Empirical Literature

The effect of inventory management on firm's financial performance has been a focus of research with findings. However less of such studies have been observed in developing countries like Nigeria especially in the Paint industry. More of such studies are concentrated in the developed countries.

For the Greece economy, Koumanakos (2009) studied the effect of inventory management on firm performance in manufacturing firms operating using three industrial sectors in Greece, food textiles and chemicals covering 2013-2017 period. The hypothesis that leans inventory management leads to an improvement in a firm's financial performance was tested. The findings suggested that the



higher the level of inventories preserved (departing from lean operations) by a firm, the lower the rate of return. In conclusion, most of the studies reviewed concentrated on conventional firm level variables such as inventory levels, demand and lead time.

Prempeh (2016) evaluate the impact of efficient inventory management on the profitability of manufacturing firms in Ghana. A cross sectional data from 2004 to 2014 was gathered for the analysis from the annual reports of four manufacturing firms listed on the Ghana Stock Exchange. Measures of profitability were examined and related to proxies for efficient inventory management by manufacturers. The Ordinary Least Squares (OLS) stated in the form of a multiple regression model was applied in the analysis. The study revealed that the main variable raw materials inventory management designed to capture the effect of efficient management of raw material inventory by a company on profitability had significant and positive impact on the profitability of the manufacturing firms in Ghana. Whether the findings from Prempeh (2016) would be held from the perspectives of Nigerian Paints firms is the thrust of the current study that also used secondary data of listed Paint firms to explain the relationship between inventory management and firm's performance.

In another clime, Lwika, (2013), investigated the impact of inventory management practices on financial performance of the listed Sugar Manufacturing Firms in Kenya and used descriptive research design and correlation analysis methodology. The findings suggested that there is generally more than average positive correlation between inventory management practices and financial performance of sugar companies. It was concluded that there are varied growth pattern for every firms, implied that whereas the sugar firms applied the same inventory management premphehpractices as determinants of their performance levels, the implementation of the practices responded too different specifically unique environment of

each firm. There is generally positive correlation between each inventory management practices, specific performance indicator has been proven to depend on the level of inventory management practices.

3.0 Research Methodology

3.1 Research Design

A research design is the determination and statement of the general research approach or strategy adopted for a particular project. This study adopted a survey research design to explore inventory management practices in the Nigerian Paint industry. A descriptive survey was considered for this study because it is non-experimental and it studies the relationship between non-manipulated variables in a natural setting ((Mugenda & Mugenda 2003; Maxwell, 2012).

3.2 Study Population

The study area was Lagos state as the location of the sampled Paint manufacturing companies and as an industrial hub where imported and local raw materials can be easily accessed for Paint industry. The population of the study was the fourteen (14) registered Paint manufacturing companies registered with Lagos Chamber of Commerce and Industry as obtained from the Nigerian Stock Exchange, Lagos record (2019).

3.3 Sample Size and Sampling Technique

Samples for the study were nine (9) out of the fourteen (14) selected Paint manufacturing companies in Lagos State metropolis. The study adapted purposive sampling technique. This was done based on their locations, year of establishment and readiness of updated financial statements as at the time of the study. The data for the measure of the variables was collected from annual financial statement of the sampled companies. Thus, non-quoted companies were excluded due to non-availability and non-disclosure of their financial reports respective.

3.4 Method of Data Collection



Mixed research method was employed in the course of this study. Primary data were collected through structured questionnaire, 200 questionnaires were distributed to nine (9) sampled firms and 160 was returned constructed on a Likert scale points on the view of professional accountants working in the sampled firms. The secondary data were the financial record and books of account of the selected companies to obtained information about the performance of the company between 2008 and 2019 from the Nigerian Stock Exchange. For reliability and validity of the instrument, the study used the Cronbach alpha at levels between 0.7-0.8 (the rule of thumb) to measure the reliability of the instrument, Cronbach, (1951). Normal diagnostic tests were conducted on the data to avoid spuriousness and multicollinearity. The study used F Statistic to determine the validity of the regression model adopted. The study conducted the estimation of Panel Data Models to confirm whether the specific effects estimated was random or fixed, there is the need to carry out the Hausman test which was duly carried out for this study.

3.5 Method of Data Analysis

Data collected were sorted, collated and analyzed for the stated objective with the corresponding hypothesis. OLS was used to achieve the objective: Assessing the relationship between Inventory management practice and financial performance in Paint industry. The inventory management variables were represented by identified independent variables like cost of material, maintenance cost, cost of technology, training cost etc. As observed in the literature Adeyemi et.al., (2010), Akinlabi (2017). Financial performance (dependent variable) was proxy as ROE, ROA and ROS of the selected firms.

3.6 Model Specification

Model specification refers to the determination of which independent variables should be included or excluded from a regression equation. In general, the specification of a

regression model should be based primarily on theoretical considerations rather than empirical or methodological ones. A multiple regression model is, in fact, a theoretical statement about the casual relationship between one or more independent variables and a dependent variable. OLS Regression was employed to analyze the identified factors determining inventory management practice adopted by the sampled Paint firms in Lagos State Nigeria. A typical OLS regression can be expressed as:

$$Y_{it} = \beta_0 + \beta_1 \chi_{1it} + \beta_2 \chi_{2it} + \beta_3 \chi_{3it} + \beta_4 \chi_{4it} + \beta_5 \chi_{5it} + \beta_6 \chi_{6it} + \epsilon_i$$

The subscripts it refers to cross-sectional dimension and time series dimension respectively.

The regression model shall take the form:

$$Y_{it} = \beta_0 + \beta_1 \chi_{1it} + \beta_2 \chi_{2it} + \beta_3 \chi_{3it} + \beta_4 \chi_{4it} + \beta_5 \chi_{5it} + \beta_6 \chi_{6it} + \epsilon_i ; \text{ Where:}$$

Y_{it} = inventory practice adoption in time t
 χ_{1it} are explanatory variables (Inventory management variables), cost of raw materials (CRM), foreign exchange (FREXH), staff cost and human resources (STFC), repair, maintenance and supplies (RPM), storage cost (STRGC) and technology deployment cost (TECH).

β_0 = the intercept (value of EY when X = 0);

$\beta_1 - \beta_n$ = the regression coefficient or change included in Y by each χ_{its}

ϵ_i = error term or stochastic term.

4.0 Results and Discussion

Hypothesis Testing: (Ho) There is no significant relationship between inventory management practice and financial performance in listed Paint Manufacturing Companies in Nigeria

The results from the Pooled Data Regression Model Output was displayed. Pooled Data Regression Model was appropriate model, the study data was Cross Sectional Data, and for a specified extended time series for the periods of (2008-2019).

Table 4.1: Pearson's Correlation Matrix for Model at 0.05 Significant level



	ROCE	CRM	FREXH	STFC	RPM	TECH	STRGC	
ROCE	1.0000							
CRM	0.4648* 0.0000	1.0000						
FREXH	-0.0185 0.8494	0.0569 0.5589	1.0000					
STFC	-0.2877* 0.0025	-0.0440 0.6511	-0.0335 0.7310	1.0000				
RPM	-0.3734* 0.0001	-0.1653 0.0873	-0.0427 0.6607	0.0555 0.5682	1.0000			
TECH	0.2767* 0.0037	0.1346 0.1648	0.0962 0.3220	-0.0642 0.5090	-0.1630 0.0918	1.0000		
STRGC	0.1362 0.1599	0.0816 0.4009	0.0839 0.3882	-0.0741 0.4459	-0.1750 0.0701	-0.0593 0.5423	1.0000	

Source: Researcher’s Computation 2021

Comments and Results Discussion:

(ROCE): The correlation matrix for the variables was displayed in Table 4.1above, in order to examine the correlation that exists among variables. The results showed that there was negative relationship between ROCE and three of the explanatory variables i.e., the three of the measures of inventory management (fluctuation in foreign exchange, staff cost, repair and maintenance) which were -1.85%, -28.77% and -37.34% respectively in which staff cost, repair and maintenance were statistically significant at 5% level (p value of 0.0025 and 0.0001). However, ROCE was positively related and significantly with cost of raw materials, technology and storage cost at 46.48%, 27.67% and 13.62% respectively at 5% level except for storage cost that was not significant. This implies that availability of raw materials, advanced technology and low storage cost enhanced the financial performance of the paint manufacturing firms.

(ROE and ROS): Return on equity (ROE) was negatively related with two of the explanatory variables (staff cost,

repair and maintenance) at a reasonable percentage of 27.15% and -37.04% respectively but both were statistically significant at 5% level. Return on sales (ROS) was negatively related with cost of raw materials, staff cost and storage cost at the percentage of -6.86%, -16.64% and -5.46% respectively but both were not significant at 5% level. This result implies that the cost of raw materials and staff cost had negative relationship with financial performance of Nigerian paint manufacturing firms. ROS had a positive relationship with fluctuation in foreign exchange, repair and maintenance and technology with 18.88%, 34.72% and 6.76% in which fluctuation in foreign exchange was the only variable that was statistically significant at 5% level while other variables were not significant. This implies that fluctuation in foreign exchange, repair and maintenance and technology have a positive relationship with ROS on the financial performance of Paint manufacturing firms in Nigeria. The Cost of raw material was negatively related with two of the other five explanatory variables (staff cost, repair and maintenance) with coefficients of -0.0440 and -0.1653



respectively for the three models, but the remaining of the explanatory variables (fluctuation in foreign exchange, technology and storage cost) were positively related with cost of raw materials. The results also showed that cost of raw material had a positive relationship with the two of financial performance measures (ROCE and ROE), but it had a negative relationship with the third financial performance measure (ROS). This implies that the larger the companies' cost of raw material, the greater ROCE and ROE, but the higher the costs of raw materials, the lower the ROS.

This result indicates that Nigerian Paint manufacturing firms (which were small relative to firms in developed economy) have opportunity to get high return on equity and capital employed if the cost of materials was high because they will sell at higher price. This finding is at variance with Winnie and Ondiek (2014) which reported a negative relationship between return on equity and cost of raw materials. By implication, Nigerian companies need to have a higher return on equity and capital employed when they got higher cost of raw materials. However, it would be very difficult for Nigerian paint manufacturing companies to get high return on sales with high cost of raw materials. It was however important to point out that the descriptive statistics and correlation analysis indicated the associate link between the study variables. They did not necessarily establish a causal relationship even with high coefficients.

5.0 Summary, Conclusion and Recommendation

5.1 Summary

This study examines the effect of inventory management practice on financial performance of listed Paint Manufacturing Companies in Nigeria. The study employed descriptive econometric analytical tools in studying Nine (9) Nigerian quoted Companies with 108 observations for the period 2008 to 2019. The analyses were performed using panel data. Three performance measures were

employed (dependent) namely the return on capital employed (ROCE), the return on equity (ROE) and the return on sales (ROS). Factor Analysis (EFA) was applied to explore the most effective factors or barriers on financial performance of Paint Manufacturing Companies in Nigeria. The significance of all these variables on performance indicated that inventory management practice has great impact on financial performance of Paint Manufacturing Firms in Nigeria.

5.2 Conclusion

This study concluded that Cost of Raw Materials, Fluctuation in Foreign Exchange, Staff Cost, Repair and Maintenance Technology Employed and Storage Cost showed significant relationship for inventory management of listed Paint Manufacturing Firms in Nigeria, thus they were highly correlated. Further, all the inventory management variables have significant effect on the financial performance of Paint Manufacturing Firms in Nigeria. However, price fluctuations as well as pilferage, damages and wastages indicated as major barriers to effective inventory management in the study area.

5.3 Recommendations

Based on the findings and conclusions of this study, it was recommended to the policy makers and the management of Paint firms that:

- Design and monitor procedures for inventory control, improve communication across all hierarchies of the organization/suppliers as well as maintain good suppliers' chain management relationship for the inventory.
- Ensure that adequate security is in place to enforce restrictions on unauthorized access to the inventory.
- Government should help stabilize foreign exchange fluctuation for better inventory management and enhanced economic growth for the country.

5.4 Areas for further studies



Further research efforts could be concentrated by expanding the knowledge horizon of inventory management on the relationship of the variables identified by this study in other sectors of the economy like bottling companies, construction and textile industries where inventory management are operationally important to enhance profitability and national economic growth.

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