INVENTORY MANAGEMENT AND FIRM PERFORMANCE NEXUS IN LISTED MANUFACTURING COMPANIES

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Abstract

This study aimed to examine the effect of inventory management on firm performance in Nigerian-listed manufacturing companies. It used an ex-post facto research design. This study used descriptive, Pearson correlation coefficient r and linear regression r statistical analysis. The study covered 2014 to 2023; data was from 12 Nigerian listed manufacturing firms that published financial reports. This study used a random sampling technique. The findings show no significant effect of stock turnover rate on gross profit margin ($p=6.21$, $p>0.05$), and there is a significant effect of stock turnover rate on net profit margin ($p=2.34$, $p<0.05$). There is a significant effect of stock turnover rate on return on assets in the listed manufacturing firms in Nigeria ($p=0.65$, $p<0.05$). The gross profit result implies that manufacturing and trading activities resulting in gross profit need immediate attention for improved margins because the stock turnover rate appears low during the period under review. Therefore, this study recommended that management encourages inventory control practices because of their significant influence on firm performance.

Keywords: Firm performance, Inventory Management, Listed Manufacturing Firms, Nigeria

1.0 INTRODUCTION

Financial resources management shapes many outcomes that matter to manufacturing companies, including the effectiveness of customer loyalty, employee job satisfaction, shareholders' wealth creation, investor attraction, market growth sustainability and overall business going concern. Kioko et al., (2010) explain that financial performance is essential in any business endeavour. Furthermore, this study connects financial performance to the role of inventory management because inventory management is a crucial area of business management that can help achieve financial performance. Henceforth, the decision to undertake inventory stocking has implications for a firm's financial performance in pursuing routine business activities, among many others. However, managing financial resources is crucial and requires more attention in accounting scholarship. Hence, this study focuses on the inventory management aspect of financial resources.

A few of the issues manufacturing businesses deal with include low product rotation, excess inventory, obsolete inventory, difficulty monitoring stock, poor service quality, and difficulty identifying wants (Sonko & Akinlabi, 2020). According to Okpara and Ifurueze (2020), by expressing correlations between the statement of financial position items and the income statement items, financial performance reveals both a firm's financial strongholds and less-performing regions. To minimise problems like financial holdups, losses, and stock outs of inventory, an inventory management must determine the proper amount of inventory to maintain and the best time to restock those stocks. It is crucial that managers remember that their goals should be to meet customer needs and minimize inventory expenses. In a similar vein, Ngugi, et al. (2019) proposed that inventory management strategies are essential for cutting expenses and optimizing earnings. Financial managers are responsible for meeting consumer demand and ensuring that the proper amount, quality, and location of stock are available at all times.

However, accounting scholars know how and why inventory management matters. Because digging into its connection with firm performance requires further escalation, as done in this study aside from some noteworthy scholarship such as Asiyah et al. (2024), Lin et al. (2024), Mahajan et al. (2024), Sano and Yamada (2021) studies on traditional concerns of accounting concepts and conventions, Firms such as the listed manufacturing companies need to realise the contributions of inventory management to business development internally and externally and especially in the emerging economies like Nigeria. Financial resources performance aids in the actualisation of business endeavour goals. For instance, financial performance could fail if inventory management fails, as it will affect sources of financial performance such as sales from an income angle and tax administration, procurement, and staffing.

According to Rodrigo et al. (2020), inventories are current assets that make up a sizable portion of a company's assets and have a resale value that generates profit for the company after cost charges. When a firm sells its inventory to customers and generates income, the cost of the inventory is considered an expense. As a result, effective inventory management will highlight both financially sound and underperforming financial activities. Everywhere in the globe, industrial products firms face difficulties in their day-to-day operations. This has been especially apparent in industries where businesses frequently deal with inventory or tangible goods. A few factors contributing to the downturn in the performance of industrial products companies include inadequate or inappropriate inventory management practices by businesses. Numerous issues have emerged, all of which are endangering the productivity of numerous industrial products companies.

Furthermore, studies on inventory management are rarely obtained in mainstream scholastic developing economies outlets. To some extent, some management accounting specialists relegate

the organisational implications of inventory management to the periphery. Therefore, the tendencies have fostered a need to fill the intellectual gap shortage through a study like this. This study, originating from Nigeria, has the potential to significantly impact the field of inventory management in developing economies. The effort contributes to solving financial performance issues of inventory management regarding stock-turnover-rate as they have implications on the profit-margin and return on assets of manufacturing companies where inventory utilisation is enormous. Inventory Management is a recognized strategy used by businesses worldwide to accurately calculate the appropriate quantity of an inventory item at the appropriate time and location.

Some scholars argue that several businesses have failed due to poor inventory management (Ajayi et al., 2021; & Torky, 2020). They argue that inadequate inventory control might affect financial performance as it results in a negligible rise in profit. Financial managers need to predict the amount of inventory required for future production and keep a close eye on stocks. Any organization's lifeblood and heartbeat is managing its stock, which is essential to its proper operation. Strong stock control strategies provide businesses a competitive edge over competitive businesses (Ngugi et al., 2019; Osadchy et al., 2018; & Torky, 2020). For example, a company's profitability may rise through better inventory management if sales are increased and cost of products sold is decreased.

Stock management is essential to a company's growth and survival since improper inventory management may lead to lost customers and decreased sales. Businesses should exercise caution in managing their resources to avoid waste, theft, and depreciation while guaranteeing that they are accessible when needed (Adebola et al., 2019; Efuntade & Akinola, 2020).

Studying the effect of Inventory Management on Firm performance is significant for companies, staff, managers, investors, researchers, and regulatory bodies alike. It will help optimize operations, enhance financial performance, and contribute to the overall efficiency and sustainability of organizations. It will help the company in optimizing inventory management strategies, minimizing stock outs, reducing excess inventory costs, and improving overall operational efficiency. Companies could enhance their bottom line and maintain a competitive edge in the market with this study. This study is desirable as it fills the shortage gap in similar studies in emerging economy such as Nigeria. Hence, this study focuses on the effect of Inventory Management on Firm performance, a case study of listed manufacturing firms in Nigeria.

Inventory management systems have been included into the operations of organisations all around the world. Nevertheless, the performance of Nigerian manufacturing companies might be enhanced even if stocktaking is receiving more attention in the academic and practical domains. The key to solving the challenge of low performance lies in the implementation of an effective stock management and control system. This system would address difficulties in determining the average stock necessary to satisfy production requirements, unnecessary idle funds, loss of funds due to pilferage, spoilage and obsolescence of stock and wastage.

However, ineffective inventory management not only affects the firm's performance but also has a ripple effect on the consumers and the Nigerian economy, particularly concerning economic indices like unemployment. Given the importance of stock-taking in efficient management, avoidance of work stoppage (downtime), and profitability of organizations, this study is of paramount importance. It fills a significant gap in similar studies in emerging economies such as Nigeria and offers a unique methodology for future reference.

This study aims at examining the effect of Inventory Management on Firm performance in listed manufacturing firms in Nigeria. This study expands the coverage horizon by focusing on three specific objectives which are to:

i. examine the effect of stock turnover rate on gross profit margin in the listed manufacturing firms in Nigeria.

ii. investigate the effect of stock turnover rate on net profit margin in the listed manufacturing firms in Nigeria.

iii. examine the effect of stock turnover rate on return on assets in the listed manufacturing firms in Nigeria.

Therefore, the motives for studying inventory management lies in the fact that investors could gain more insight into the need to develop emerging economies through local and direct investments as this study serves as a decision-making opportunity to serve investors' appetite for profit. This section addresses introduction, the rest of the paper is outlined as follows, section 2 will be literature review, section 3 will be on methodology, section 4 will be data presentation and discussion of findings while section 5 will be conclusion and recommendations.

2.0 LITERATURE REVIEW

Conceptual Review

Inventory

Inventories are tangible reserves of items that a manufacturing service has on hand to ensure the smooth operation of its workplace or manufacturing activity. They include raw materials, component components, tools, spares, suppliers, and completed items (Mohopadkar & Patil, 2017). Inventory is an important asset for many firms since it provides a source of future returns through item sales and is typically a big asset on financial statements (Gokhale & Kaloji, 2018). Inventory refers to a physical stock of finished items, work in progress, and material in stock that is maintained to satisfy predicted demand as it arises. It is critical to maintain physical stock in the system since material shortages can cause delays in manufacturing or service delivery (George, 2019). Inventory is the monetary worth of physical assets that are integrated directly or indirectly in manufactured items in the production system and are held for future use or with the goal of selling (Sekeroglu & Altan, 2014).

Inventory Management

Ali (2011) defined inventory management as "an ongoing procedure involving the planning, organization, and control of inventory". According to Mohammed (2024), Inventory management is pivotal for business performance and profitability. Efficient inventory management ensures that the right products are available at the right time, preventing stockouts and overstocking (Lee et al, 1997 & Mohammed, 2024) Inventory management tracks stock trends, ensuring timely ordering and customer order fulfilment while preventing shortages (Mohammed, 2024).

Components of Stock Taking/Inventory

Raw materials, work in progress, finished goods, and Maintenance, Repair and Operations (MRO) are the four primary forms of inventory. A few individuals, on the other hand, only recognize three types of inventories, ignoring MRO.

Raw Materials: This is the initial source for a company's manufacturing method. It might literally be "raw" materials that need extensive reworking before becoming a product. Raw materials are the resources that a firm uses to create and finish its goods. When the procedure is completed, the raw materials are typically unrecognizable from their original condition (Jenkins, 2020). These are items that have not yet been committed to manufacture in a manufacturing facility. They may be made up of basic raw ingredients or completed components.

Work in Progress (WIP): It refers to the raw materials used in various stages of the manufacturing schedule. The degree of completion may vary between modules. The term "work-in-progress" refers to partially created items. The value of work-in-process comprises raw material costs, direct labour and expenses incurred, and any overheads. This is the term used to describe raw materials as they are transformed into finished commodities during the manufacturing process. This might range from a modest cost if the production method is rapid to a significant sum if the product is produced over a period of months.

Finished Goods: Items that are ready for sale are referred to as completed goods. They have been created from raw materials or purchased from a supplier and are ready for sale to clients. Manufacturer's regard finished items that have been acquired and are ready to market as merchandise. These are finished items ready for sale. They are the end result of a manufacturing

company's production process. Wholesalers and retailers commonly refer to it as merchandise inventory.

Maintenance, Repair and Operations: MRO inventory consists of commodities that help a manufacturing firm function efficiently. MRO inventory includes staff uniforms, machine tools, cleaning supplies, safety equipment, and any other components required to fix or manage manufacturing equipment (Tunney, 2019).

Opening Inventory: The amount of inventory that a company has on hand at the start of an accounting period, such as a new fiscal year or quarter, is known as opening inventory. This inventory is expected to be the first lot sold during the current accounting year.

Closing Inventory: The amount of stock that an organization has at the end of a fiscal period is referred to as closing inventory. It includes raw materials, work in progress (WIP), and completed goods.

Average Inventory: Average inventory is an indication of the amount or worth of inventory a company has over a certain amount of time.

Stock Turnover Ratio

According to Fernando (2024), stock turnover ratio is a financial ratio showing how many times a company turned over its inventory in a given period. Peter (2023) maintained that "stock turnover measures how well a business manages its inventory to meet demand. It can help improve decision-making regarding pricing, manufacturing, marketing and purchasing." Micah (2024) stated that "a low turnover rate can indicate that sales are slow or that you've

overstocked. Stock turn, stock turnover, and inventory turns are other common names for inventory turnover ratio." STR is calculated as cost of goods sold/average inventory.

Firm performance

Kimani and Kinyau (2025) stated that "firm performance perspectives are best understood from its measurements and the respective areas where it is needed such as accounting, management, operational and economic". Firm performance refers to "a firm's ability to efficiently use its resources in order to produce operational and financial results" (Taouab & Issor, 2019). According to Farah and Nina, (2016). profitability is one of a firm financial performance measurement. Profit and profitability are two different ideas, even though they are closely related and frequently used interchangeably. Profit is a relative concept, but profit has a distinct meaning (Tulsian, 2014). Since profitability gauges a company's success, it is an essential part of financial reporting (Odusanya, et al, 2018).

According to Dioha et al. (2018), profitability is a wide evaluation of an establishment's financial health over time and may be defined as an estimate of how well a company uses its assets from its key business operations to earn revenue. Profitable companies benefit the economy as a whole by paying taxes, creating jobs, adding value, and being more creative and socially conscious (Odusanya et al., 2018). According to Nwulu and Nwokah (2018), profitability is the extent to which a company or activity generates earnings. A business's capacity to turn a profit. Put simply, a business's profitability or profit is the amount of money left over after all costs directly associated with generating that revenue have been paid (Orga & Mbah, 2017).

Investors are drawn to profitable businesses, and they are more likely to last for a long time (Farah & Nina, 2016). Many businesses aim to raise their profitability, and they do spend endless hours in meetings attempting to figure out how to lower operating expenses and boost sales. For many businesses, one of the primary components of financial reporting is profitability (Farah & Nina, 2016). The management of the company, the owners, and other stakeholders are all dependent on profitability since it provides a clear picture of how well the business is doing. Returns on assets, net profit margin, and gross profit margin are the proxies of organisational profitability or firms performance employed in this study.

Gross Profit Margin

Louise (2024) affirmed that Gross profit margin is "the percentage ratio of revenue you keep for each sale after all costs are deducted." Bloomenthal (2024), stated that Gross profit margin is "a financial metric analysts use to assess a company's financial health. It is the profit remaining after subtracting the cost of goods sold (COGS)". To calculate it, you first need to calculate gross profit. Once you have your gross profit figure, you can use the following formula to calculate your gross profit margin.

Gross Profit Margin = Gross Profit / Revenue x 100%, where Gross Profit is Revenue – Cost of Sales

Net Profit Margin

According to Cheeseman (2024), a net profit margin is "a crucial financial metric that shows the percentage of revenue remaining after all expenses are deducted. It is great for helping you understand how efficiently your business is converting sales into actual profit." DiLallo (2024) asserted that net profit margin, also known as net income margin or net margin, is "the ratio of profit a company or business unit earns to the total amount of revenue (net sales) the company or business unit generates". Net profit margin is expressed as a percentage.

Net Profit Margin = Net Profit / Revenue x 100%, where Net Profit Margin = Gross Profit less Operating Expenses

Return on Assets

Marshall (2024) defined Return on assets (ROA) as "a financial ratio that indicates how profitable a company is relative to its total assets". Md. Kamruzzaman (2019) stated that "Return on assets (ROA) is used to measure the performance and utilization of assets and it's also used as a baseline to measure the return contribution from new investment in assets."

Return on Assets = Net Income / Total Assets x 100%, where Net Profit Margin = Gross Profit less Operating Expenses

Theoretical Framework

Theory of Constraints

In his book "The Goal," Goldratt (1984) established the Theory of Constraints (TOC), a management concept designed to assist organisations in consistently achieving their objectives. The Theory of Constraints makes it easier to analyse the presumptions that underlie conventional industrial laws, regulations, and practices (Stein, 1997). It focusses on the few crucial limitations that prevent the system from succeeding (Gary, 2014). Additionally, it prevents suboptimisation by guaranteeing that complex problem solutions work at the corporate level. By concentrating on a limitation that stood in the way of attaining a better level of performance, it sought to launch and execute breakthrough improvement (Nwangangi et al., 2015). According to this theory, an organisation is a system, and all systems have at least one limitation that prevents them from reaching their objective of increasing their revenue. These limitations need to be recognised (explained) and remedied (a prescription) in order to enhance the system's performance. Finding the limitations makes it easier to direct the few resources available to the system's weakest area for improvement.

The global system methodology offered by the Theory of Constraints facilitates the attainment of the organization's objective of increasing revenue in the present and the future (Lakshmii & Ramakrishna, 2012). According to Cyplik et al. (2009), a single firm might be guided to focus on resource exploitation based on varying logistical costs along the supply-chain by using the theory of constraints approach. Inventory is a constraint that can be the focus of this study in order to improve the system. To guarantee proper inventory levels, the method makes use of specific criteria. These criteria include: a) keeping inventory as close to the source and demand

as feasible to guarantee prompt delivery of goods. b) Buffer inventory is used to maintain upper limits of stock. c) Orders should be placed promptly whenever inventory levels drop. d) Buffer inventory should always be modified to account for variations in demand rates. Successful inventory management is hampered by a number of factors, including production pricing, lead times, and unpredictable demand (Gunus & Guneri, 2007), as quoted by Akinlabi (2021). The premise of this study is that inventory management in Nigerian listed manufacturing companies faces a number of difficulties, including rising inventory costs, undertrained staff, imprecise record keeping, and fluctuating demand.

Nigerian listed manufacturing companies may benefit from the Theory of Constraints theory in terms of inventory management. Logistics was studied from a holistic perspective using the theory of constraints methodology; in other words, it was described as a collection of interdependent parts, and as a result, the performance of logistics was reliant on inventory management efforts. According to Bowersox et al. (2010), every system must have had at least one constraint because the system's performance would have been limitless if there had been no limitations. Theory of Constraints was therefore useful in assessing the effect of inventory management on firm performance which concerns stock constraints implications on profitability.

Gaps in the Literature

This study is motivated by the conceptual, data currency and geographical location gaps in the literature. For example, many of the existing similar studies do not cover Nigeria an emerging economy like this current study, many used old data compared to the publication year. For example, Asiyah et al. (2024) covers Coal companies in Indonesia using Shariah Stock exchange

data for 2018 to 2020. It delved on net profit and ignores gross profit whereas it is gross profit that connects with inventory directly in the trading account of an organisation and should not be downplay in inventory management scholarship. Gaur & Kesavan (2015), limits financial performance to sales growth, It covers US retailers for 1985 to 2003, twelve years difference in study coverage and publication date, which are serious gaps of data currency and conceptual framework. Similarly, Kolias et al., (2011) used Greek retail firms for the period 2000 to 2011 and Sano & Yamada (2021) covered 1997 to 2014.

Furthermore, Lin et al. (2024) covered firms operating cycle in COVID-19 pandemic period. Their study established that firms experienced increases in operating cycle during the period but there was a drop in profitability. However, the study did not differentiate profitability in terms of gross profit and net profit as done in this current study which is a conceptual gap. Although, Nebo et al (2020), covered food and beverages in Nigeria but not a mixture of different manufacturing companies as done in this current study. Overall, many of the study from Nigeria rarely focus on financial performance such as (Appah & Duoduo, 2024) and (Nduka et al, 2024).

There is also diverse methodological approach. For instance, most studies used secondary data whereas Akinlabi (2021) used primary data. Many studies concentrate on IM practices and operations such as customers satisfaction but the current study covers cogent accounting profitability measures for competitive advantage and investors encouragement. Moreso, the findings are diverse, Akinlabi (2021) finds that inventory shrinkage has negative significant relationship with operational performance. Rodrigo et al. (2020) investigated listed manufacturing companies in Sri Lanka. Findings show that inventory conversion period has a

significant negative relationship on return on assets, cash flow from operations and market value added of a firm. Abdullah and Muhammad (2020) examined the effects of inventory management on the profitability of the small businesses in the Bangladesh. A total of 112 participants formed the study sample. The results show that there is positive and significant relationship between inventory management of small businesses and the profitability of small businesses. Thus, the scholarly arguments continue necessitating this current study.

Overall, scholarship generally observed that inventory management is a major failure area for financial managerial decisions because spending on stocking goods may not be returned to service business growth and development sustainability.

Conceptual Model

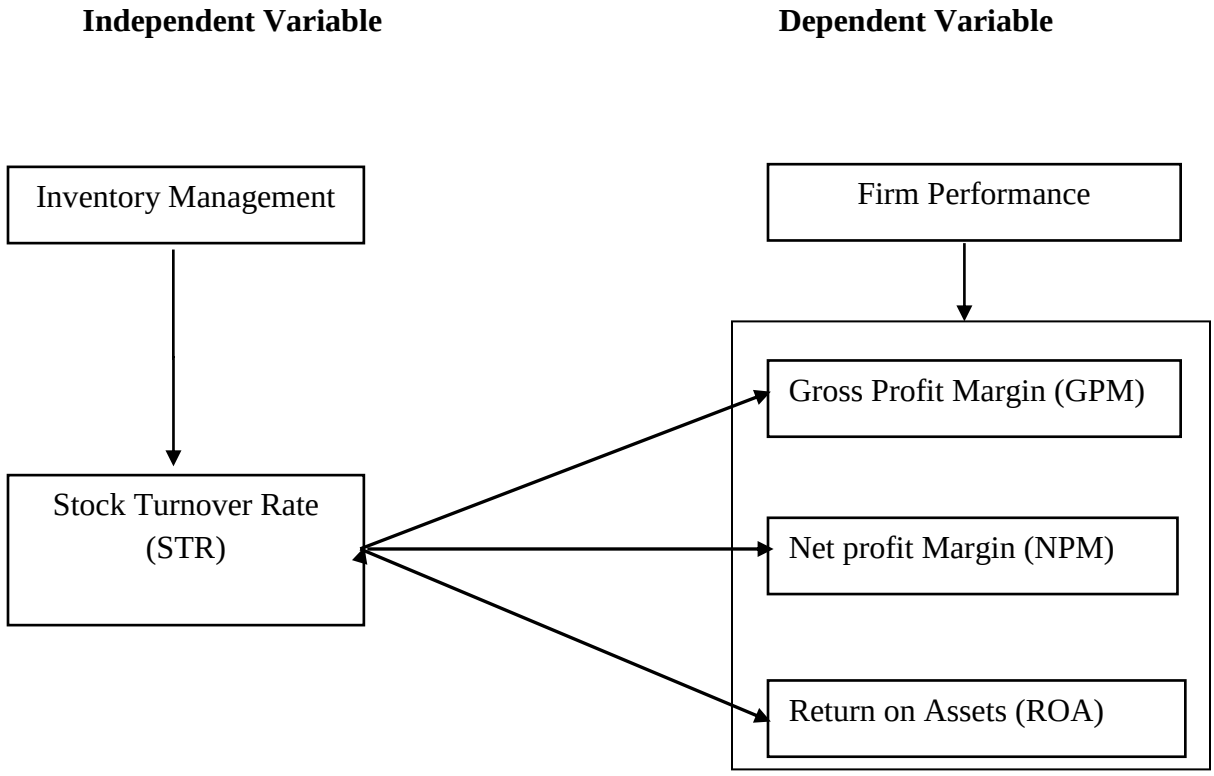

Figure 2.1: Conceptual model for studying the effect of Inventory Management on Manufacturing Firm performance.

Source: Researchers' design, 2025.

3.0 METHODOLOGY

Research Design

The study adopted *ex-post facto* research design using secondary data. Secondary data was employed because of its robustness since the study had no chance to alter or control the variables because the data for this study already existed.

Population of the Study

The population of the study is 34 which is the composition of listed consumer goods and industrial goods companies in Nigeria.

Sample Size and Sampling Technique

Using Taro Yamane (1967) formular for population size of 34.

$n = N/(1+N(e)^2$

Where n = sample size

N = Number of Population

e = level of significance

$n = N/(1+N(e)^2$

$n = 34/(1+34(0.05)^2$

$n = 34/(1+34(0.0025)$

$n = 34/(1+0.085)$

$n = 34/(1.085)$

$n = 12$

However, the sample size of this studied population was twelve (12) listed manufacturing companies because of completeness of data which were selected through random sampling technique.

Source of data and data collection instrument

Secondary data that spanned 2014 to 2023 was sourced from the target population listed manufacturing firms in Nigeria annual reports. The period covered was chosen to investigate the study using the most recent data. Annual Reports for the study were available on various websites of the selected listed manufacturing companies and on www.africanfinancials.com. The secondary data collection variable for the determination of Stock Turnover Rate (STR), Gross Profit Margin (GPM), Net Profit Margin (NPM), and Return on Assets (ROA).

Measurement of Variables

This study covers two variables measured with four constructs; the two variables are Inventory Management (IM) which is the independent variable. The dependent variable is Firm performance (FP).

Independent variable: Inventory Management (IM) proxy is:

Stock turnover rate (STR).

The proxy is selected based on earlier studies on such as Ajayi et al. (2021), Rodrigo et al. (2020).

Dependent variable: Firm performance (FP) proxies are:

Gross Profit Margin (GPM), Net Profit Margin (NPM), and Return on Assets (ROA).

The proxies emanate from earlier studies such as Babatunde et al. (2022), Efuntade and Akinola (2020).

Model Specification

It is a proven way to determine effects and interpret the results scientifically. It is represented by a straight-line equation $Y = a + bX$ (Babatunde, 2022).

Where X is the independent variable and Y is the dependent variable. The slope of the line is b, and a is the intercept. Hence, the Stock turnover rate (STR) is the independent variable while the dependent variables are Gross Profit Margin (GPM), Net Profit Margin (NPM), and Return on Assets (ROA) as follows:

GPM = f (STR)

NPM = f (STR)

ROA = f (STR)

Where:

STR = Stock Turnover Rate

GPM = Gross Profit Margin

NPM = Net Profit Margin

ROA = Return on Assets

μ = Error term

The model is specified of its stochastic form:

$GPM = \alpha_0 + \alpha_1 STR + \mu$…….. (1)

$NPM = \alpha_0 + \alpha_1 STR + \mu$…….. (2)

$ROA = \alpha_0 + \alpha_1 STR + \mu$…….. (3)

Method of Data Analysis

The study's goal would be accomplished by utilizing a variety of statistical analytical techniques which are descriptive statistics, such as mean, standard deviation, skewness and kurtosis. correlation coefficient r and linear regression r statistical analysis are the inferential statistics used. Spearman's correlation was applied due of its effectiveness in determining the correlations and effects between variables and linear regression r statistical analysis was due to its power of

prediction which is the essence of this study (Babatunde & Dandago, 2014). The statistical package was STATA version 15.0 was used to aid the analysis.

FLOWCHART

The flowchart in figure 3.1 shows how the study was conducted on inventory management and financial performance using listed manufacturing companies in Nigeria.

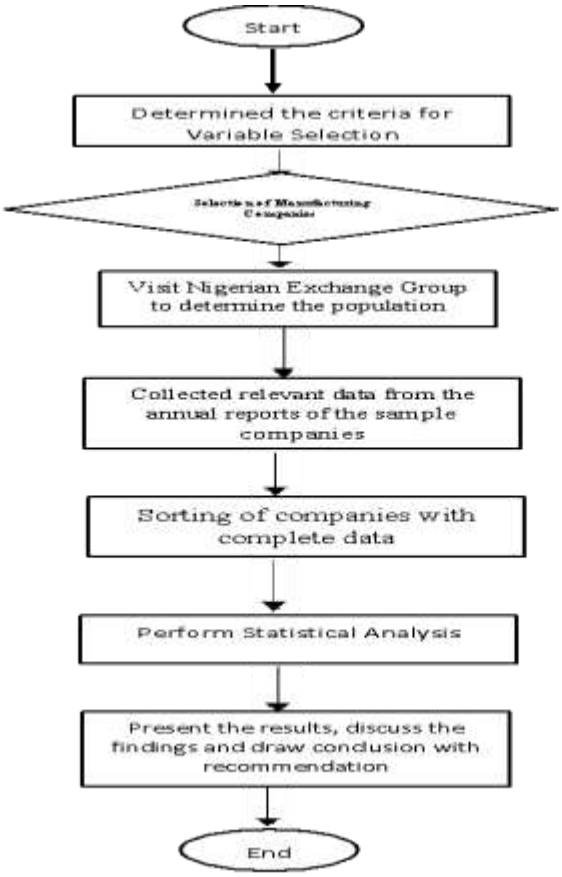

Figure 3.1: Flowchart for studying the effect of Inventory Management on Manufacturing Firm performance.

Source: Researchers' Flowchart, 2025.

4.0 DATA PRESENTATION AND DISCUSSION OF FINDINGS

Data Presentation

The descriptive statistics come first, explaining how to estimate common statistics like the mean, median, standard deviation, skewness and Kurtosis for the model's supplied variables. The statistics are summarised in table 1

Table 1: Statistical results

Descriptive statistic

Variable	Obs	Mean	Std. Dev.	Min	Max	Skew	Kurt
STR	112	5.1857	0.6767	0.7108	14.0895	0.94	7.4334
GPM	112	0.2323	0.3487	-3.0668	0.5483	-0.71	73.0888
NPM	112	0.1852	0.9640	-4.8868	11.3125	0.83	44.2186
ROA	112	0.5026	0.9560	-65.6213	52.5073	-0.95	26.7914

Source: STATA 15.0 Version output (2025)

From the table 1, the means of STR, GPM, NPM and ROA are 5.1857, 0.2323,0.1852 and 0.5026respectively while the standard deviation are 0.6767, 0.3487, 0.9640 and 0.9560 respectively. The skewness of STR, GPM, NPM and ROA are 0.94, -0.71, 0.83 and -0.95 respectively while the Kurtosis results are 7.4334, 73.0888, 44.2186 and 26.7914. The standard deviations for all the variables are low because of high stock turnover rate from 2014 to 2023.The result indicates that the constructs are appropriate proxies for the variables, and that listed manufacturing firms' performance is consistent over the years covered with acceptable

deviation of below 1 for GPM, NPM and ROA. Also, since the results of skewness is between the range of -1 and +1, it can be described that the data is normally distributed while the results of Kurtosis indicated that the data used were highly peaked.

Table 2: Correlation Matrix

	STR	**GPM**	**NPM**	**ROA**
STR	1.0000			
GPM	0.2312	1.0000		
NPM	-0.1443	0.0845	1.0000	
ROA	0.0766	0.0293	0.0093	1.0000

Source: STATA 15.0 Version output (2025)

The table 2 shows the various association among STR, GPM, NPM and ROA. The correlation between STR and GPM is 0.2312, which shows a positive and weak relationship, STR and NPM is -0. 1443 which is negative and weak, STR and ROA is 0.0766 which is positive and very weak, GPM and NPM is 0.0845 which positive but very weak and GPM and ROA is 0.0293 which positive and very weak and finally the correlation between NPM and ROA is 0.0093 which is positive and very weak. Since all none of the association results are zero and they fall between -1 and +1, then the data can be used to test the hypotheses.

Test of Hypotheses

Test of Hypothesis 1

H_{01}: There is no significant influence of stock turnover rate on gross profit margin in listed manufacturing firms in Nigeria.

Table 3

Regression result between gross profit margin and stock turnover rate.

Source	SS	Df	MS	**Number of obs**	=	**112**
				F (1, 110)	=	**6.21**
Model	**0.712326**	**1**	**0.712326**	**Prob > F**	=	**0.0142**
Residual	**12.77939**	**110**	**0.116126**	**R-squared**	=	**0.0535**
				Adj R-squared	=	**0.0448**
Total	**13.495219**	**111**	**0.121578**	**Root MSE**	=	**0.3408**

GPM	Coef.	Std. Err.	T	P>| t |	[95% Conf.	Interval]
STR	**0.03882**	**0.01556**	**2.49**	**0.014**	**0.00795**	**0.06968**
_cons	**0.03102**	**0.08695**	**0.36**	**0.722**	**-0.14130**	**0.20330**

Source: STATA 15.0 Version output (2025)

In table 3, the R Squared result is 5.35 percent of variation in gross profit margin of firm performance can be explained by the model that uses stock turnover rate as regressors. 4.48% is the adjusted R-squared. The Adjusted R-squared rises only if a significant regressor is added to

the regression. Also from table 3 above, the 0.0142 is the p-value for the F test of overall significance, (F (1,110) = 6.21 since p<.05 which is .0142, then, the study rejects the null hypothesis, which state that there is no significant influence of stock turnover rate on gross profit margin in listed manufacturing firms in Nigeria, but accepts that the alternate hypothesis which states that there is significant influence of stock turnover rate on gross profit margin in listed manufacturing firms in Nigeria. The result therefore is expressed as:

$GPM = 0.03882 + 0.03102(STR) + \varepsilon i$ ..... (i)

Test of Hypothesis 2

H_{02}: There is no significant influence of stock turnover rate on net profit margin in listed manufacturing firms in Nigeria.

Table 4

Regression result between net profit margin and stock turnover rate.

Source	SS	Df	MS	**Number of obs**	=	**112**
				F (1, 110)	=	**2.34**
Model	**5.654719**	**1**	**5.654719**	**Prob > F**	=	**0.1290**
Residual	**265.844**	**110**	**2.416768**	**R-squared**	=	**0.0208**
				Adj R-squared	=	**0.0119**
Total	**271.4992**	**111**	**2.445938**	**Root MSE**	=	**1.5546**

NPM	Coef.	Std. Err.	T	P>| t |	[95% Conf.	Interval]
STR	**-0.10869**	**0.071053**	**-1.53**	**0.129**	**-0.249496**	**0.03212**
_cons	**0.74888**	**0.396659**	**1.89**	**0.062**	**-0.037203**	**1.53497**

Source: STATA 15.0 Version output (2025)

In table 4, the R Squared result is 2.08 percent of variation in net profit margin of firm performance can be explained by the model that uses stock turnover rate as regressors. 1.19% is the adjusted R-squared. The Adjusted R-squared rises only if a significant regressor is added to the regression. Also, from table 4 above, the 0.1290 is the p-value for the F test of overall significance (F (1,110) = 2.34 since p>.05 which is .1290, then, the study accepts the null hypothesis, which state that there is no significant influence of stock turnover rate on net profit margin of listed manufacturing firms in Nigeria, but rejects the alternate hypothesis which states that there is significant influence in stock turnover rate on net profit margin of listed manufacturing firms in Nigeria. The result can be expressed in linear form as:

NPM = -0.10869 + 0.74888 (STR) + εi ..... (i)

Test of Hypothesis 3

H_{03}: There is no significant effect of stock turnover rate on return on assets of listed manufacturing firms in Nigeria.

Table 5

Regression result between returns on assets and stock turnover rate.

Source	SS	Df	MS	**Number of obs**	=	**112**
				F (1, 110)	=	**0.65**
Model	**68.44836**	**1**	**68.44836**	**Prob > F**	=	**0.4223**
Residual	**11607.22**	**110**	**105.52020**	**R-squared**	=	**0.0559**
				Adj R-squared	=	**0.0499**
Total	**11675.6706**	**111**	**105.18622**	**Root MSE**	=	**10.272**

ROA	Coef.	Std. Err.	T	P>| t |	[95% Conf.	Interval]
STR	**0.378135**	**0.46949**	**0.81**	**0.422**	**-0.55230**	**1.30857**
_cons	**-1.45826**	**2.62101**	**-0.56**	**0.579**	**-6.65249**	**3.73596**

Source: STATA 15.0 Version output (2025)

In table 5, the R Squared result is 5.59 percent of variation in returns on assets of firm performance can be explained by the model that uses stock turnover rate as regressors. 4.99% is the adjusted R-squared. The Adjusted R-squared rises only if a significant regressor is added to

the regression. Also, from table 5 above, the 0.4223 is the p-value for the F test of overall significance, (F (1,110) = 0.65 since p>.05 which is 0.4223, then, the study accepts the null hypothesis, which state that there is no significant effect of stock turnover rate on returns on assets of listed manufacturing firms in Nigeria, but rejects the alternate hypothesis which states that there is significant effect of stock turnover rate on returns on assets of listed manufacturing firms in Nigeria. The results therefore is expressed as:

$$ROA = 0.3781 - 1.4583(STR) + \varepsilon i \quad \text{..... (i)}$$

Discussion of Findings

This study examined the effect of inventory management—measured through stock turnover rate—on firm performance indicators such as gross profit margin, net profit margin, and return on assets among listed manufacturing firms in Nigeria.

The findings revealed a significant positive influence of stock turnover rate on gross profit margin ($F(1,110) = 6.21$, $p = 0.0142$, $p < 0.05$). This implies that firms that manage their inventory efficiently tend to experience improved gross profitability, likely because efficient stock movement minimizes holding costs, obsolescence, and stock-out situations, thereby enhancing cost-effectiveness in production and sales. This result aligns with the Theory of Constraints (TOC), which posits that organizations can improve overall performance by identifying and managing key constraints within their operations (Goldratt & Cox, 1984). In this context, inventory can be viewed as a potential constraint; thus, optimizing stock turnover reduces production and delivery bottlenecks, improving profitability. This finding corroborates

the empirical evidence of Adebola, Adesola, and Babatunde (2019) and Akinola, Wahab, and Dare (2024), who also reported that effective inventory control enhances profitability in Nigerian manufacturing firms. Similarly, Joseph et al. (2023) found that higher inventory turnover is associated with better profit margins due to improved liquidity and operational efficiency.

However, the second hypothesis revealed that stock turnover rate does not significantly influence net profit margin ($F(1,110) = 2.34$, $p = 0.1290$, $p > 0.05$). This suggests that while efficient inventory management enhances gross profitability, its direct impact on net profit may be diminished by other factors such as administrative overheads, financing costs, and tax obligations. This outcome reflects the argument of Alhassan and Muhammad (2022) and Olaide and Omodero (2023), who found that inventory efficiency may not translate directly into net profitability when firms face high operating expenses or volatile input costs. Within the TOC perspective, this result can be interpreted as evidence that other organizational constraints—beyond inventory management—may limit the translation of operational efficiency into overall profitability.

Lastly, the study found no significant effect of stock turnover rate on return on assets (ROA) ($F(1,110) = 0.65$, $p = 0.4223$, $p > 0.05$). This indicates that inventory management alone may not substantially enhance asset utilization or overall financial performance. The result aligns with findings by Rodrigo, Rathnayake, and Pathirawasam (2020) and Abdullah and Muhammad (2020), who reported weak relationships between inventory turnover and ROA in manufacturing contexts. From the TOC standpoint, this could mean that inventory efficiency, while important, may not be the primary constraint affecting asset productivity in Nigerian manufacturing firms; factors such as production capacity, technological limitations, or market demand may constitute more binding constraints.

Overall, these findings suggest that while inventory management contributes meaningfully to operational profitability (gross profit margin), its influence on broader financial outcomes such as net profit and ROA is limited by other organizational and environmental factors. In line with the Theory of Constraints, firms should not only focus on inventory turnover but also identify and address other bottlenecks—such as production inefficiencies, high-cost structures, and weak demand management—that constrain overall performance.

5.0 CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the findings, the result revealed that there is no significant effect of stock turnover rate on gross profit margin in the listed manufacturing firms in Nigeria. This suggests that changes in how quickly inventory is sold and replaced do not necessarily translate to changes in the gross profit margin for the listed manufacturing firms in Nigeria. The results imply that other factors, perhaps including cost management, pricing strategies, and market conditions, play more crucial roles in determining the gross profit margin. The result of the second hypothesis showed that there is significant effect of stock turnover rate on net profit margin in the listed manufacturing firms in Nigeria. This indicates that how quickly inventory is sold and replaced has a notable impact on the net profitability. Higher stock turnover rates can lead to increased sales and better inventory management, which contribute positively to the net profit margin. Conversely, low stock turnover rates may result in increased holding costs and potential obsolescence, negatively affecting the net profit margin. Furthermore, result indicated that there is significant effect of stock turnover rate on return on assets in the listed manufacturing firms in Nigeria. The analysis indicated a significant effect of stock turnover rate on ROA, suggesting that how efficiently the company manages its inventory directly influences its ability to generate returns from its assets. Higher stock turnover rates imply better inventory management and sales performance, which enhance the utilization of assets and lead to higher ROA. Conversely, low stock turnover rates can result in inefficient use of assets, higher holding costs, and reduced profitability, thereby negatively affecting ROA.

Recommendations

Based on the findings, manufacturing organizations should work closely with suppliers to streamline the supply chain to reduce lead times and ensuring a steady flow of inventory, thereby maintaining a higher stock turnover rate and inventory management. Management should implement efficient inventory management systems to minimize stockholding costs and maximize inventory management. Management should utilize sophisticated demand forecasting tools to predict sales trends accurately. This helps in maintaining appropriate inventory levels, thereby increasing stock turnover and improving gross profit margin, net profit margin and ROA. Manufacturing firms should set targets on stock turnover rate focused on improving gross profit margin. Manufacturing firms should provide training programs for staff members on effective inventory management practices and the importance of maintaining high stock turnover rates. Well-trained employees can significantly contribute to better inventory control and asset utilization.

Implications for Practice and Further Research

The findings of this study have several practical implications for managers and policymakers in the manufacturing sector: Since stock turnover rate significantly influences gross profit margin, manufacturing firms should adopt more effective inventory management practices—such as just-in-time (JIT) systems, demand forecasting, and real-time inventory tracking—to optimize stock levels and minimize carrying costs. The insignificant relationship between stock turnover and net profit margin or return on assets suggests that inventory efficiency alone does not guarantee overall financial success. Managers should integrate inventory management with broader cost-

control measures, such as energy efficiency, supply chain optimization, and strategic pricing, to enhance overall profitability.

In line with the Theory of Constraints (TOC), firms should not only optimize inventory but also identify and manage other operational bottlenecks that limit profitability—such as production delays, inefficient resource utilization, or market access constraints. This systemic approach can enhance both operational and financial performance. Policymakers and industry regulators can support manufacturing firms by promoting training programs, digital inventory management tools, and infrastructure improvements that facilitate smoother supply chain operations.

Implications for Further Research

Future studies could incorporate additional financial and non-financial performance indicators—such as cash conversion cycle, customer satisfaction, or productivity ratios—to gain a broader understanding of how inventory management affects firm success. Further research could explore how factors such as firm size, technological adoption, supply chain integration, or economic conditions mediate or moderate the relationship between inventory management and firm performance.

Conducting longitudinal studies across multiple years or comparing results across sectors (e.g., food processing vs. construction materials) could provide deeper insights into how inventory efficiency influences performance over time and across different industrial contexts. Researchers could also test the applicability of the Theory of Constraints beyond inventory management—for instance, in production scheduling, logistics, or quality control—to determine how managing various constraints collectively impacts firm performance.

Contributions to knowledge

This study contributes to knowledge in the following ways:

Filling contextual and data gaps in inventory management literature within emerging economies as it provides current empirical evidence (2014–2023) that reflects the realities of Nigeria's pre- and post-pandemic industrial environment, thus addressing the data currency gap identified in prior literature

Expanding the conceptual model of firm performance to include gross profit margin as a key variable unlike many previous studies that focused mainly on net profit margin or sales growth, this research integrates three profitability indicators—gross profit margin, net profit margin, and return on assets—to provide a more comprehensive measure of firm performance. It also emphasizes gross profit margin as a key link between inventory management and profitability, which many prior studies (e.g., Asiyah et al., 2024; Gaur & Kesavan, 2015) have overlooked

Providing empirical validation of the Theory of Constraints in explaining inventory–profitability relationships. The findings reveal that stock turnover rate significantly influences gross profit margin, but not net profit margin or return on assets. This nuanced outcome adds to existing debates by suggesting that inventory management directly enhances operational profitability but may not translate into overall financial returns without supporting cost management or asset utilization strategies. The study empirically validates the Theory of Constraints in the Nigerian manufacturing context—showing that inventory can indeed be a key limiting factor in firm performance.

Offering methodological advancement through a focused ex-post facto design using longitudinal data as it combines both correlation and linear regression analyses within this framework which

enhances methodological rigor and supports generalizable findings relevant to manufacturing sector performance. Also, the use of stock turnover rate (STR) as the sole proxy for inventory management isolates its direct effect on profitability measures, providing clearer empirical interpretation than multi-variable operational models used in some prior research.

Supplying practical recommendations for management and policy on inventory control as a driver of firm performance. The research provides actionable insights for managers, showing that improving inventory turnover enhances gross profitability and operational efficiency. It also informs policy interventions for Nigeria's manufacturing sector, highlighting the need for training, technological investment, and policy support to strengthen inventory control systems.

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