



Inventory Management and Financial Performance of Listed Manufacturing Companies in Nigeria

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Abstract

Inadequate inventory management has caused majority of Nigerian manufacturing companies to go out of business. When the right kind of inventory is employed during production, waste may be decreased while there can be increase in efficiency, thereby improving the company's performance. The study examined inventory management and financial performance of listed manufacturing companies. Ex-post facto research was utilised by the study. Secondary data was derived from the financial statements of 10 selected listed manufacturing companies from 2014-2023. Descriptive statistics, correlation and regression analysis were used at 0.05 significant level. It was found that inventory collection period has no effect on return on asset, inventory turnover significantly affects return on asset, and inventory to asset ratio has significant effect on return on asset. It was concluded that inventory turnover and inventory asset ratio as measurements of inventory management are good predictors of return on asset of listed manufacturing companies in Nigeria, while stakeholders cannot rely on inventory conversion period in forecasting return on asset. As a result of the findings, it was suggested that officers in charge of inventories should focus more on methods for cutting down inventory days and quickly collecting accounts receivable, so as to improve their inventory conversion period.

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1. INTRODUCTION

Company performance is now a crucial concern in the world where operational capital is scarce and resources are few. Working capital management, which aims to maintain a suitable balance between each of the working capital components (cash, receivables, inventories, and payables) is a primary source of competitive advantage in business and an important component of the company's overall value creation strategy (Deloof, 2013). Vipulesh (2015) reported that technology utilised in processing a product as well as its components and inputs determines its

quality. The premise behind this is that when materials that are not up to standard are handled using inferior technology, or when inputs of outstanding quality are treated with inferior technology, the results will not be as good as required. Due to this, the materials and inventory used in the production process become a crucial component of current assets and are necessary to meet organisational goals regarding quality delivery. Because of the nature of their operations, manufacturing and trading organisations—especially conglomerates—also incur the highest costs when it comes to materials and inventory (Vipulesh, 2015). As a result, it is crucial for businesses to employ controls to guarantee that the proper amount and caliber of products are stored within the company at the most affordable price at the appropriate moment (Gbadamosi, 2016).

The business environment in which a company works frequently affects the application of efficient techniques for controlling inventory to attain a high sustainable financial performance. For example, Timothy et al. (2018) contended that the majority of businesses in developed economies around the world operate in highly competitive business environments that are also structured and more hospitable to business than those in African nations. Developed-world enterprises are able to successfully handle their inventories due to their competitive nature and the organized business environment, which encourages inventory planning and management inside the organisations (Timothy et al., 2018). However, the implementation of inventory management strategies to achieve excellent financial results in Africa, particularly in Nigeria, still leaves much to be desired because problems with ordering and inventory handling units within an organisation, a lack of reliability between organisations and inventory vendors, and weak competition among businesses often taint inventory planning and control (Gbadamosi, 2016). Mwangi and Nyambura (2015) asserted that in order to identify the adequate numbers of inventories at the proper place and time, variety of techniques are used in inventory management. Shardeo (2015) noted that inventories are present resources which consist of substantial amount of assets owned by a business and have the potential to be sold for a profit. Better inventory management will therefore result in the productive release of capital. When inventories are properly managed, it creates chance to meet reported level of demand while averting production surpluses and deficits through strict inventory monitoring and forecasting (Bieniasz & Golas, 2016).

The efficiency of a system of managing inventories significantly affects a company and its manager's performance. For this reason, managers' goals shouldn't always be limited to meeting consumer expectations (Akindipe, 2018). It is critical for business managers to meet client demands and keep inventory costs as low as possible (Lwiki et al., 2018). Karim et al. (2018), however, recommended more research to identify the underlying source of the issue relating to how financial performance is affected by inadequate management of inventories. Companies in the manufacturing sector have been facing declining returns on their investments (profit) as a result of their high manufacturing costs. Profit maximization is the primary goal of every organisation, and implementing efficient cost-cutting measures is one of the most important strategies to achieve this (Folajimi, et al., 2020).

When the right kind of inventory is employed during production, waste may be decreased and efficiency and profitability can be increased, all of which can help to improve a declining financial performance. Acquiring sufficient inventory in a timely manner lowers the negative effect that arises as a result of unavailability of materials and obsolete materials, which lowers

expenses and raises profitability. Numerous indigenous industries in Nigeria are suffering from unfavorable operating conditions, including high bank loan interest rates and limited funding availability, among other things that continue to stifle the sector's expansion (Salawu & Alao, 2015). Lawal et al. (2019) affirm that inadequate inventory management has caused the majority of Nigerian manufacturing firms to go out of business. The majority of firms were unable to pay dividends because of liquidity issues. This shows that the body of knowledge about inventory management that has a greater impact on the financial performance of industrial firms listed in Nigeria is still lacking. In light of this, the study's goal is to evaluate how management of inventories affects financial performance of Nigerian listed manufacturing companies.

The main objective of the research is to examine how financial performance of listed manufacturing companies in Nigeria is being affected by inventory management, with specific focus on inventory conversion period, inventory asset ratio, inventory turnover and return on asset. This study draws the attention of management of manufacturing businesses to the need for proper management and control of inventories so as to eliminate failure and its negative consequence on performance of their respective firms.

2. LITERATURE REVIEW

2.1 Conceptual Review

Financial Performance

Financial performance refers to how well a firm makes use of its resources (assets) to manage its operations to create a profit. It examines a firm's complete financial strength at a specific period and may be employed to assess how well a company performs within the same sector or across industries as a whole (Ajirole, 2019). The financial statements, a byproduct of accounting, serve as the key area that provides information for evaluating performance of a firm. They provide information on changes in wealth of owners; sources and applications of cash over a certain period; and records sales, expenses, and profits for a given period (Ndukwe, 2018).

According to Folajimi et al. (2020), financial performance may be computed or analyzed using a variety of measures, but each one focuses on a distinct component of the performance. It indicates the overall financial health of a business over a specific period of time. However, analysis of financial performance is the process of interpreting financial statements to ascertain an organisation's operational and financial features; in this research, return on assets is utilized as a stand-in for financial success.

Ratio analysis is a useful tool for measuring financial performance. It may be used to determine an entity's profitability, solvency, liquidity, and financial efficiency ratios as well as its ability to repay debts within a specified time frame. (Aduda et al., 2017). For example, return on equity and return on asset were employed by Abudlazeed et al. (2018) to gauge company performance in their analysis of inventory management and performance of Nigerian listed conglomerate businesses. Conversely, Oladipupo and Okafor (2017) measured financial performance using the Tobin Q ratio and return on assets. However, return on assets was employed in this study to proxy financial performance, as it is one of the most affected measure when inventory is mismanaged.

Return on Asset (ROA)

This ratio illustrates how well a business uses the resources at its disposal to make profit. It determines how much profit a business makes as a percentage of its total assets. Better performance is indicated by a higher ROA number (Akinola, 2017). ROA accounts for the assets needed to support company's activities, it is therefore seen to be a more accurate indicator of company's financial performance (Oyugi, 2019). It shows how well management of a firm create profits with the use of the firm's assets. The quantity of earnings from the capital assets that have been invested is proxy by ROA ratio. With the help of ROA, users may comprehend how the systems support, safeguard, and keep an eye on how well the management uses resources to turn a profit (Ijaz & Naqui, 2016).

Inventory Management

Sharma and Kumar (2018) viewed inventory as an entire goods, commodities, or additional assets which are not being used at any one moment. As per the previously provided description, inventories consist of both the company's own goods and the basic components, individual components, supplies, and finished assemblies that are procured from external sources. To put it plainly, a company's inventory is its stocks. However, inventory management is the process of keeping all of the company's production input materials at a level that prevents interruptions in production and minimizing operating costs without compromising operational effectiveness (Eneje et al., 2017). The tasks of inventory management include organizing, directing, managing, and planning. The goal of all these concerted efforts is to guarantee that the company's operations are as efficient as possible. These operations include, among others, stocking, transportation and procurement (Akindipe, 2018).

Every company must deal with inventory management as it evolves from the start of its existence to the end. Stanger et al. (2017) suggest that an organisation can enhance its inventory performance by incorporating six practical insights: recruiting personnel with relevant experience, understanding desired stock levels and order patterns, monitoring remaining shelf life, maintaining inventory transparency, and streamlining procedures to the greatest extent feasible. The report goes on to say that an organisation's success is correlated with the management of perishable inventory. A corporation may boost its return rate and as well reduce the risk associated with liquidity and losses by making the best possible inventory investment. Minimizing inventory and expenses while increasing profitability are two consequences of effective inventory management. Inventory conversion time, inventory turnover, and inventory to asset ratio were employed as metrics for measuring inventory management in this study (Kontus, 2018).

Inventory Conversion Period

The number of days from the day material is bought to the date the items are sold to the ultimate customer is known as the inventory conversion time (Tobiloba, 2016). The raw material conversion time, work-in-progress period, and finished goods period add up to the inventory conversion period. As a result, the efficacy and efficiency of the production and selling processes have a significant impact on the inventory conversion duration (Harrison et al., 2019). A company can reduce the expenses linked to maintaining substantial inventory by using effective stock control systems, such the just-in-time system. The cost of obsolescence, the opportunity cost of having extra working capital connected to excess inventory, and the cost of stock holding are all decreased when inventory is reduced to the ideal level (Harrison et al., 2019).

Inventory Turnover

Winston (2017) reported that inventory turnover of a business represents the speed at which products enter and exit the company's storage facility. Businesses who deal with perishable goods, like food or in-demand retail products, are the ones who use it the most. It is straightforward to compute in principle, but not always straightforward to comprehend. Balle (2016) stated that turnover is a measure of how rapidly the business is bringing in product sales when talking about inventory. Organisations must closely monitor the movement of brought-in components and the ones taken out of the firm in order to calculate inventory turnover. Organisations that examine inventory data will find that a crucial component in assessing the health of their company is the inventory rate.

2.1.2 Conceptual Framework

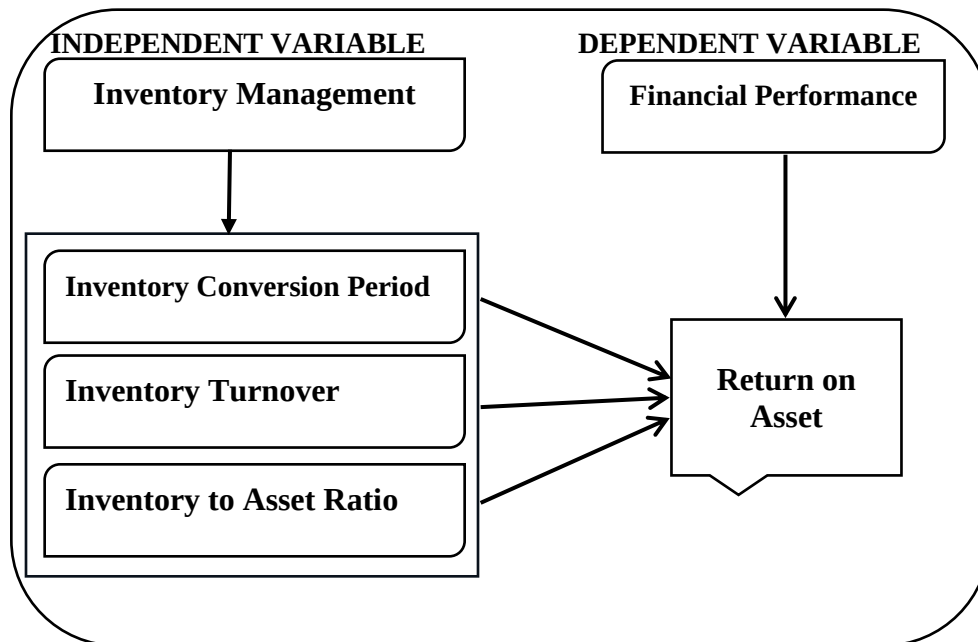


Figure 1. Conceptual Model

Source: Researchers (2024)

The Figure 1 above shows the diagrammatical representation of the variables and proxies employed by the study. From the figure below, inventory management is the independent variable measured with by inventory conversion period, inventory turnover and inventory asset ratio, while financial performance which serves as the dependent variable was quantified using return on asset.

2.2 Theoretical Framework

Theory of Lean Inventory

Henry Ford propounded the theory in 1450 as a result of his ideas regarding linked manufacturing processes. As a continuation of just-in-time, lean inventory theory, a theory of inventory control, stresses that companies should maintain the smallest quantity of inventory required to satisfy the requirements of their manufacturing procedures (Edwin & Florence, 2015). Womack (1990) asserted that lean inventory theory was predicated on the idea of keeping inventories in organisations at a minimum. Because lower inventory carrying costs translate into higher corporate profitability, there is a case can be made for decreased or lean inventory systems. Egbunike (2017) explained that lean inventory theory aims at ensuring that costs associated with inventory systems in a business is adequately reduced by focusing on warehousing, supply chain and manufacturing.

Njeru (2016) claims that a key component of the Lean theory is the Economic Order Quantity (EOQ) theory, which determines how much inventory to order at any particular time in order to optimize the number of stocks. The notion emphasizes the possibilities of flexibility in production, how the operating system is utilized to maintain inventory levels, and unique inventory items that may necessitate ways other than those discussed earlier. The theory helps firms gain a competitive edge, capture larger market shares, and boost profitability since excess inventory has a negative effect on an organisation's net cash flow (Lydia, 2016).

The study's topic was theoretically justified using lean inventory theory. The adoption of this theory is bolstered by the need to research how inventory management affects organisational performance, which calls for careful inventory level control measures. By reducing the quantity of inventory held and the associated holding costs, it also helps businesses improve their investment return (Steven, 2017).

Conservative Plan Theory of Working Capital

Brigham and Gapenski initially formulated the theory in 1987. As per the concept, the expense incurred in Working capital is funded at the expense of the long-term fund, which is calculated by multiplying the average yearly loan amount by the long-term rate of interest. Horne and Wachowitz (2016) opined that in order to finance investments that are fixed in nature, as well as a fraction in current asset, it is adequate to make use of long-term funds. This is because long-term funds are costly and less-riskier. Efficiency in working capital is crucial since it affects a company's liquidity and profitability, especially for companies that produce current assets. This method mainly incorporates the plays it safe mindset. By providing appropriate long-term finance, the proposal hopes to cover all anticipated eventualities.

The conservative approach states that there should be a low-assets to turnover ratio, a reasonably substantial current asset to revenue ratio, and a proportionally big investment in current assets relative to sales. This approach may result in higher long-term costs as interest is still incurred and payable even if the funds at hand aren't utilized to their fullest extent at particular periods, and it also eliminates short-term borrowing. Raheman and Bluementhal (2015) posit that even in situations where their profitability is favorable, businesses still need to use precise working capital metrics.

2.3 Empirical Review

Ryan (2017) investigated, using a sample size of 368 organisations, the effect of materials management on the profitability of Nigerian brewing enterprises. Data for the study were gathered orally in interviews and through questionnaires. According to the report, brewing firms' profitability is significantly impacted by the acquisition and storage of their supplies. The research further discovered that interdepartmental teamwork and materials inventory both greatly increased the profitability of brewing operations. It was suggested that brewing companies need to have efficient materials management in order to turn a profit.

Alrjoub and Ahmad (2017) investigated inventory control and company performance. From 2010 to 2016, 48 firms were used in the study. Correlation and the generalized method of moments (GMM) panel were used. The study demonstrated how inventory management, taking into account its many forms, affects a company's long-term profitability. Additionally, they discovered that the association between inventory management and company performance is moderated by the cost of capital. Ndukwe (2018) examined the connection between financial performance and inventory management of listed manufacturing businesses in Nigeria. Longitudinal research approach was made use of. A period from 2011-2015 was covered. A sample of twenty-three firms was chosen. In this study, regression estimation is performed utilizing both OLS and GLS. Raw material costs, finished goods, inventory conversion length, and inventory turnover were all found to have positive effect on performance and are statistically significant at 5% significant threshold, while work-in-progress costs are found not be significant.

Yakubu, et al. (2019) looked at the association between financial performance of a few Nigerian listed firms and inventory management. Using a purposive selection process, ten (10) of these firms were selected as samples during a period of seven (7) years, from 2012 to 2018. The study employed multiple regressions as an analytical method. The study found that a subgroup of Nigerian listed enterprises had considerably better financial performance when their inventory turnover ratio was higher. Folajimi, et al. (2020) evaluate how listed conglomerate companies in Nigeria performed financially in relation to their inventory. Both field and empirical survey research method were made use of. The study's population consists of the six (6) conglomerates that were identified as of December 31, 2018. The target group is made up of 108 workers from the store and finance departments, 72 of whom were selected to deliver the structural questionnaire using quota sampling techniques. Descriptive and inferential statistics were employed. It was found that for security control, usage control procurement control of inventories significantly influences financial performance, while inventory turnover had a minor positive effect on performance.

Etale and Sawyer (2020) investigated the connection between GlaxoSmithKline Nigeria Plc's financial performance and inventory management. The ex-post facto method of research was applied. Return on assets, a gauge of financial performance, was the response variable in the study, while inflation and the inventory asset ratio were used as predicting variables. The GSK annual reports and CBN Statistical Bulletin from 2011-2018 provided the secondary data for the study. Descriptive statistics and regression were used to analyze the data. The results showed that all predictive indicators and return on assets had a positive link at the 5% level, while only the inventory to asset ratio was significant. Over a ten-year period, from 2009 to 2019, Emmanuel et al. (2021) investigated the association between performance of specific consumer goods

corporations listed on the Nigerian exchange and effective inventory management practices. This study employed panel data from 2009 to 2019 that was sourced from annual reports, and accounts of listed consumer products firms. The data were analyzed using correlation and OLS technique. The findings demonstrated a substantial positive relationship at the 5% significant level between return on capital employed, firm growth, and effective inventory management practices in addition to a positive and non-significant association between return on investment and inventory management practices.

Tarurhor et al. (2022) analyzed the performance of listed manufacturing businesses in Nigeria in relation to inventory management. Longitudinal research method was applied. 40 manufacturing firms listed between 2010 and 2020 on the Nigerian exchange constitutes the study's sample. After excluding companies with insufficient data, 33 firms were deemed suitable for this investigation, yielding 363 observations. The dataset that was used came from Talk Data Associates' compilation of the Machame Ratio database. Panel ordinary least square regression in a structural equation model was applied for analysis. It was found that inventory management had little impact on performance of manufacturing enterprises, as determined by the inventory turnover ratio and inventory conversion period. Additionally, there is little evidence of a moderating link between inventory management and performance of Nigerian manufacturing businesses, despite the large and beneficial effect of cost of capital on firms' performance.

Fatie and Ali (2022) examined how consumer goods businesses in Nigeria performed financially in relation to inventory management. Ex-post facto and causal research designs were applied. Findings indicate that inventory management frequently enhances financial performance of consumer goods businesses. Effect of inventory management on performance of industrial businesses listed in Nigeria was studied by Alhassan and Muhammad (2022). The study included both survey and ex-post facto research designs. Data gathering for the study was done with the use of primary and secondary techniques. The study's population consists of Nigerian listed manufacturing businesses during a ten-year span, from 2011 to 2020. 200 employees from the financial and commercial units made up the intended group for the structured questionnaire administration, and the enumeration technique was employed to acquire secondary data. Data were derived from the yearly financial statements of the chosen firms. Inferential statistics were employed for data analysis. It was discovered that Nigerian listed industrial businesses' financial performance is significantly improved by inventory control.

Jonah, et al. (2023) examined the connection between inventory management and performance of listed industrial products businesses in Nigeria. Ex post facto research approach was applied. The study's referents for the criterion variables were net profit margin and return on assets, whereas proxies for the predictor variables were inventory conversion length and inventory turnover. The study employed secondary data, gathered from 10 Nigerian listed industrial products businesses for the 2018–2020 fiscal year. Regression analysis, correlation and descriptive statistics were the statistical methods employed. A strong positive correlation between listed industrial products businesses in Nigeria's net profit margin, inventory turnover, and inventory conversion duration was discovered.

Ikechi, et al. (2023) examines the impact of inventory control on the financial performance of particular Nigerian manufacturing enterprises. The study employed the ex-post facto design. 56 manufacturing companies that are listed on the Nigerian Stock Exchange made up the research

population. Eleven (11) companies were selected via the use of purposeful sampling. The study's assumptions were tested using the multiple ordinary least squares regression approach, more precisely the panel regression model. First, the research discovered that Nigerian listed manufacturing businesses' return on assets is considerably lower due to the cash conversion cycle. It was also discovered that turnover of accounts receivable and account payable turnover had considerable beneficial influence on ROA of manufacturing businesses.

From the outcomes of the above empirical review, there is no consensus with regards to inventory management and financial performance of listed manufacturing companies in Nigeria. Hence, this research contributed to the existing literature through testing of the following null hypotheses:

- H₀₁:** Inventory conversion period has no significant effect on return on asset of listed manufacturing companies in Nigeria.
- H₀₂:** Inventory turnover does not significantly affect return on asset of listed manufacturing companies in Nigeria.
- H₀₃:** Inventory asset ratio does not significantly affect return on asset of listed manufacturing companies in Nigeria.

3. METHODOLOGY

This study applied ex-post facto research method since the essential information was already available. The study's sample size was based on ten listed manufacturing firms from the consumer goods sector, industrial goods sector and healthcare sector. This selection was therefore determined through purposive sampling. The selected companies are: Nestle Nig. Plc., Nigerian Breweries Plc., Unilever Nig. Plc., Cadbury Nig. Plc., Neimeth Plc., Fidson Healthcare Plc., May and Baker Plc., Dangote Cement Plc., Lafarge Africa Plc., and Berger Paints Nigeria Plc. This research gathered its data with the use of secondary source through the yearly financial statements of the chosen manufacturing businesses listed on the Nigerian Exchange as at 31st December, 2023. The data that was extracted and examined was for a 10-year period, ranging from 2014 to 2023. To ascertain whether or not the data were normally distributed, preliminary analysis was conducted using Komolgorov Smirnov test. Descriptive statistics, correlation and regression were used for data analysis.

Model Specification

The cumulative effect of inventory management proxies on the selected enterprises' financial performance are estimated using a model. Inventory conversion time, inventory turnover, and inventory to asset ratio—as specified in the study—are calculated as a function of financial performance, which is represented by return on asset. The association was estimated using an ordinary least square (OLS) regression, which looks like this:

$$ROA = \alpha + \beta_1 ICP + \beta_2 INVT + \beta_3 INVA + \beta_4 FS + \mu$$

Dependent variable:

ROA = Return on Asset

Independent variables:

ICP = Inventory Conversion Period

INVT = Inventory Turnover

INVA = Inventory to Asset Ratio

FS = Firm Size (Control variable)

$\beta_1, \beta_2, \beta_3, \beta_4$ = Coefficient of Regression

μ = error term

Definition and Measurement of Proxies

Table 1. Measurement of variables

S/N	VARIABLES	MEASUREMENT	DESCRIPTION
1.	Financial Performance (Dependent Variable)	Return on Asset	It shows how well a company generates profit using the resources at its disposal. It is determined, as follows: $\text{ROA} = \frac{\text{Profit for the year}}{\text{Total Assets}}$
2.	Inventory Management (Independent Variable)	i. Inventory Collection Period	It is referred to as the number of days that elapse between the date of material acquisition and the date on which the goods are sold to the final consumer. It is derived, thus: $\frac{\text{Inventories}}{\text{Sales}} \times 365 \text{days}$
		ii. Inventory Turnover	It determines the yearly pace at which inventory is turned into revenue. It can be determined, thus: $\frac{\text{Cost of Sales}}{\text{Average Inventory}}$
		iii. Inventory to Asset Ratio	It shows the proportion of assets kept in inventory. It's common to view a smaller ratio as ideal. It is determined thus: $\text{Average Inventory} / \text{Total Assets}$
3.	Firm Size (Control Variable)	Logarithm of total assets	It represents the total of all assets' net book values that is owned and controlled by an individual or business organisation.

Source: Researchers' Compilation (2024)

4. RESULTS

Demographic Analysis

Table 2. Descriptive results

Descriptive Statistics							
	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
ROA	100	-.30	.28	.0673	.08089	-.564	.241
ICP	100	1.57	3.00	2.0639	.25358	1.108	.241
INVT	100	.36	9.76	3.6249	1.75833	.789	.241
INVA	100	.03	.35	.1483	.08394	.561	.241
FS	100	5.98	8.90	7.5139	.85480	.041	.241

Source: SPSS 20 (2024)

The minimum values of the variables were observed from Table 2as -0.30, 1.57, 0.36, 0.03 and 5.98 for ROA, ICP, INVT, INVA and FS respectively, while the maximum values were shown as 0.28, 3.00, 9.76, 0.35 and 8.90 respectively. The average values for the variables were also shown as 2.0639, 3.6249, 0.1483 and 7.5139. It was observed that INVT has the maximum average value among others. This implies that INVT is a good predictor of ROA. Moreover, skewness statistics were shown as -0.564, 1.108, 0.789, 0.561 and 0.04 respectively. From this, it can be interpreted that data collected for ROA, INVT, INVA and FS are normally distributed, as the values falls between -1 and +1, while data collected for ICP deviated from normality assumption, as the value (1.108) does not fall between -1 and +1.

Table 3. Normality Test

Tests of Normality						
	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
ROA	.217	100	.000	.821	100	.000
ICP	.165	100	.000	.927	100	.000
INVT	.073	100	.200*	.957	100	.003
INVA	.077	100	.156	.950	100	.001

Source: SPSS 20 (2024)

From Table 3 above, the probability values for ROA, ICP, INVT and INVA (0.000, 0.000, 0.003 and 0.001), according to the Shapiro-Wilk test, are statistically significant at 0.05 significant threshold. This indicates that the gathered data for the variables mentioned violates normality assumptions, and as such are not normally distributed.

Table 4. Correlation analysis

Correlations						
		ROA	ICP	INVT	INVA	FS
ROA	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	100				
ICP	Pearson Correlation	-.073	1			
	Sig. (2-tailed)	.473				
	N	100	100			
INVT	Pearson Correlation	-.029	-.920**	1		
	Sig. (2-tailed)	.772	.000			
	N	100	100	100		
INVA	Pearson Correlation	-.399**	.555**	-.490**	1	
	Sig. (2-tailed)	.000	.000	.000		
	N	100	100	100	100	
FS	Pearson Correlation	-.344**	-.396**	.387**	-.239*	1
	Sig. (2-tailed)	.000	.000	.000	.017	
	N	100	100	100	100	100

Source: SPSS 20, 2024.

From the results shown in Table 4 above, it was shown that each of the predictors (ICP, INVT, INVA and FS) has a weak negative relationship with the dependent variable (ROA), with correlation coefficients shown as -0.073, -0.029, -0.399 and -0.344 respectively. This outcome implies that percentage increase in each of ICP, INVT and INVA would result to a decrease in the firms' ROA.

Table 5. Regression analysis

Model Summary						
Model	R	R Square	Adjusted R Square		Std. Error of the Estimate	Durbin-Watson
1	.834 ^a	.652	.647		.13252	1.121
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.123	4	.281	15.984	.000 ^b
	Residual	1.668	95	.018		
	Total	2.791	99			
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.654	.381		4.346	.000
	ICP	-.275	.141	-.415	-1.942	.055
	INVT	-.047	.019	-.493	-2.427	.017
	INVA	-1.032	.191	-.516	-5.397	.000
	FS	-.087	.017	-.441	-5.093	.000

Source: SPSS 20 (2024)

From Table 5 above, R-squared statistic of the regression was shown as 0.642 which means that 64.2% of the total changes in ROA can be explained by ICP, INVT, INVA, and FS while the remainder (34.8%) can be explained by some other parameters that are not employed by the study. Nevertheless, the Durbin-Watson statistic result was revealed as 1.121 which implies that auto-correlation is presence as the value is less than 1.5 threshold. This suggests even more that the parameters are not in good condition. The variance analysis of the regression was also shown in the table above, where the key data points are the F-statistic, which was shown as 15.984 with a p-value of 0.000. Given that the p-value is less than the 0.05 threshold, this suggests that the model developed by the study is significant.

The regression model's coefficient that was previously specified is included in the table above, as shown below:

$$ROA = 1.654 - 0.275ICP - 0.047INVT - 1.032INVA - 0.087FS + \mu$$

It is evident from the preceding equation that the dependent variable (ROA) is negatively impacted by each of the predictors (ICP, INVT, INVA, and FS). This also implies that the ROA of the chosen manufacturing companies will decrease by 0.275, 0.047, 1.032, and 0.087, respectively, if each of the variables ICP, INVT, INVA, and FS rises by one unit. Additionally, the predictors' t-test results—1.942, 2.427, 5.397, and 5.093, respectively—were displayed. As can be observed, the t-test value for FS, INVT, and INVA is larger than 2, however the t-test outcome on ICP is less than 2. The associated probability values (p-values) for the variables are also displayed, and they are 0.055, 0.017, 0.000, and 0.000, respectively. Because the value of the probability for ICP is more than the 0.05 level of significance, it may be considered as statistically unimportant; however, because the p-values for INVT, INVA, and FS are less than the 0.05 threshold of significance, they can be read as statistically significant.

Test of Hypotheses

H₀₁: Inventory conversion period has no significant effect on return on asset of listed manufacturing companies in Nigeria.

Inventory collection period p-value was found to be 0.055, which was deemed insignificant since the value was higher than the 0.05 significant level. Therefore, the research affirms that the inventory collecting period does not affect return on asset of listed manufacturing businesses in Nigeria, making the study to refute the null hypothesis mentioned above.

H₀₂: Inventory turnover does not significantly affect return on asset of listed manufacturing companies in Nigeria.

The regression analysis also reveals that the inventory turnover (INVT) p-value is 0.017, which is less than the 0.05 significant threshold. This outcome has been regarded as statistically significant. Consequently, the study refutes the second hypothesis mentioned earlier and reiterates that inventory turnover has a major effect on return on asset of Nigerian listed manufacturing companies.

H₀₃: Inventory to asset ratio does not significantly affect return on asset of listed manufacturing companies in Nigeria.

Inventory to asset ratio (INVA) p-value from the regression table is 0.000. This was considered statistically significant because the p-value is likewise below 0.05 significant threshold. Hence, the study reiterates that inventory asset ratio affects return on asset of listed manufacturing businesses in Nigeria, rejecting the third null hypothesis that was previously established.

Discussion

The study examined how inventory management of listed Nigerian manufacturing firms affect financial performance. However, while certain results of earlier empirical investigations that this study analyzed are consistent with its conclusions, some results do not align with its findings. This has been summarized as follows:

At 0.05 level of statistical significance, it was affirmed that the inventory collection period does not affect financial performance of listed manufacturing businesses in Nigeria and fails to refute the null hypothesis. This result however is related to the study conducted by Okoye, et al. (2016), Alrjoub and Ahmad (2017), Ndukwe (2018), Yakubu, et al. (2019), Folajimi, et al. (2020), Fatie and Ali (2022), and Ikechi, et al. (2023), but does not relate with findings of Tarurhor, et al. (2022), Emmanuel, et al. (2021) and Dedunu (2018).

It was also found that the financial performance of Nigerian listed manufacturing companies is significantly impacted by inventory turnover. This corroborates with the outcome of Okoye, et al. (2016), Alrjoub and Ahmad (2017), Ndukwe (2018), Mba (2018), Yakubu, et al. (2019), Yakubu, et al. (2019), Folajimi, et al. (2020), Fatie and Ali (2022), Jonah, et al. (2023), and Ikechi, et al. (2023), but does relate to the study conducted by Falope and Ajilore (2015), Dedunu (2018), Emmanuel, et al. (2021) and Tarurhor, et al. (2022).

Finally, the study found that the inventory to asset ratio has a significant influence on the financial performance of Nigerian publicly traded manufacturing businesses. This result is compatible with that of Okoye et al. (2016), Alrjoub and Ahmad (2017), Ndukwe (2018), Mba (2018), Yakubu et al. (2019), Etale and Sawyer (2020), Folajimi et al. (2020), Fatie and Ali (2022), Jonah et al. (2023), and Ikechi et al. (2023). However, it does not correlate with that of Falope and Ajilore (2015), Dedunu (2018), and Emmanuel et al. (2021).

5. CONCLUSION AND RECOMMENDATIONS

The main objective of this study was to examine the effect of inventory management on financial performance of listed manufacturing companies in Nigeria. It was found that return on asset (ROA) is negatively affected by inventory management, as determined by the inventory collection period (ICP), and as well at 5% significant level, ICP has insignificant effect on ROA of the selected listed firms. It was also observed from the findings that inventory turnover and inventory asset ratio both have significant effect on ROA of the selected manufacturing firms in Nigeria. As a result of these findings, the study concluded that the inventory collecting time may not be a reliable indicator of the return on asset of the chosen firms, while inventory turnover and inventory asset ratio as proxies of inventory management are good predictors of return on asset of the chosen listed firms. The study's findings and conclusion led to the following recommendations being made:

The inventory conversion period is not a reliable indicator of financial performance of Nigerian manufacturing firms, hence Nigerian manufacturing companies shouldn't rely on it. The officers in charge of inventories, however, have to focus more on methods for cutting down inventory days and quickly collecting accounts receivable.

Nigerian listed manufacturing companies' financial performance is significantly impacted by inventory turnover. Manufacturing businesses should raise their inventory turnover ratio because it has been shown to significantly affect their financial performance. Management of the company should also strengthen their strategic relationships with suppliers and ensure that there is sufficient automated security in place to track inventory movements.

This research suggests that managers of manufacturing firms prioritize appropriate, effective inventory control practices and measure efficiency deviations to find inadequacies in the inventory management process. They should also think about investing in contemporary technology, as this will boost productivity and lower inventory costs.

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