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Inventory Management Efficiency and Financial Performance of Listed Manufacturing Firms in Nigeria

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Abstract
The study delves into effect of inventory management efficiency on financial performance of manufacturing firms trading listed by Nigerian Exchange Group (NGX). Employing a quantitative research design, data were collected from 37 companies over a five-year period (2021–2025). Key inventory metrics, such as, Inventory Holding Period, Inventory Turnover and Gross Margin Return on Inventory, were analysed in relation to financial performance indicators proxied by Earnings per share. Multiple linear regression analysis was deployed in evaluating the relationships, particularly on influence of inventory metrics on Earnings per share. The findings revealed that Inventory Holding Period and Inventory Turnover did not significantly influence financial performance. However, Gross Margin Return on Inventory had positive significant effect on Earnings per share. This relates inventory profitability is critical in enhancing shareholder value. The study recommends that manufacturing firms prioritize aligning inventory investment with high margin products.

Keywords: Inventory; Efficiency; Financial Performance & Manufacturing Firms

1. Introduction

Recently, inventory management has gained significant attention from academia and industry professionals. It represents a primary source of revenue improvements for companies. Inventory management practices entails controlling the mix of finished goods, work-in-progress and raw materials, to prevent excessiveness or shortage, hence enhancing smooth operation of the company.

Nigeria's economy experienced a growth of 3.4% in 2021 and 2.3% in 2019. The manufacturing sector contributed 5.9% between 2019 and 2021 to this improvement (Salami, 2021). This indicates that manufacturing's share of GDP is important and is also an indication of the industry's potential to contribute to Nigeria's ability to export goods and bring about an inflow of foreign currency.

To ensure sustained business success and growth there is need for comprehensive inventory management strategy as many companies claim to manage their inventory effectively, yet issues like inadequate forecasting and improper stock levels, persist Management plays a significant role in efficient monitoring of organization resources, among which, inventory constitutes a significant portion of the physical assets, especially in manufacturing firms, where it directly influences production continuity, cost efficiency and customer satisfaction.

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Historically, holding large inventories was perceived as a sign of wealth and operational readiness (Masudin, Kamara & Zulfikarijah, 2018). However, modern business practices revealed hidden costs of excess inventory to include storage, depreciation and obsolescence as well as the risks of understocking, including stockouts and lost sales opportunities. This present a bases to further dwell on the need for firms to maintain efficient inventory level at all times.

Nazar and Marwarni (2023) conclude that Return on Assets (ROA), Return on Equity (ROE) and Net Profit Margin (NPM) positively influenced by inventory systems. However, many manufacturing companies in Nigeria still experience inventory-related challenges ranging from supply chain disruptions and poor forecasting to inadequate storage infrastructure and weak inventory tracking systems (Mogbojuri, Olanrewaju, & Ogunleye, 2022). These issues affect operational efficiency and also erode financial performance, making inventory control a critical area for empirical investigation. The concentration on manufacturing companies is relevant as they are inventory-intensive by nature.

Previous empirical studies have evaluated the impact of profitability on corporate organizations both in Nigeria and in other countries. However, most of these studies focused on inventory policy, liquidity, solvency and operating efficiency in determining financial performance while evaluating inventory management and profitability of firms. Past studies often fail to take into consideration inventory turnover, gross margins return on inventory. Hence, this study seeks to examine

effect of control practices on inventory management on financial performance of manufacturing firms listed by NGX. By focusing on inventory holding periods, Inventory turnover ratios and gross margin returns on inventory, the focus of the study is on provision of actionable insights most especially to managers and policymakers towards achieving improved operational and financial performance of operating firms. The study seeks to;

1. assess the effect of inventory holding period on financial performance of manufacturing firms in Nigeria.
2. evaluate the effect of inventory turnover on financial performance of manufacturing firms in Nigeria.
3. examine the effect of gross margin return on inventory on financial performance of manufacturing firms in Nigeria.

1.1 Research Questions

The study is further guided by the following carefully raised questions in other to understand better the relationship that exists between inventory management and financial performance of firms basically operating within the manufacturing sector and listed by the NGX;

1. To what extent does the inventory holding period affect the financial performance of manufacturing firms in Nigeria?
2. How does inventory turnover affect the financial performance of manufacturing firms in Nigeria?
3. What effect does gross margin return on inventory have on the financial performance of manufacturing firms in Nigeria?

1.2 Research Hypotheses

Hypotheses for the study were also formulated in null forms as thus:

Ho1: The inventory holding period does not significantly affect the financial performance of manufacturing firms in Nigeria

Ho2: Inventory turnover does not significantly affect the financial performance of manufacturing firms in Nigeria.

Ho3: Gross margins return on inventory does not significantly affect the financial performance of manufacturing firms in Nigeria

2. Review of Relevant Literature

Ubabudu Ozoemena and Anam, (2024) defines Inventory management as the process of strategically handling materials in their raw form to the work-in-progress phase and final conversion phase to finished product so as to ensure availability and cost-effectiveness. Effective inventory management enables firms to balance supply and demand, reduce holding costs and improve cash flow. The three key metrics of inventory management include, Inventory Holding Period (IHP), Inventory Turnover (IT), and Gross Margin Return on Inventory (GMROI).

Inventory Holding Period (IHP)

IHP implies the average number of periods basically in form of days that it will take an inventory to remain in the store before being trade off. Palominos etal (2026) concluded that holding inventory for too long affect productivity negatively in the manufacturing sector.

Inventory Turnover (IT)

Rekik etal. (2026) explains IT as the process of measuring how fast it will take a firm to sell and replace its inventory within a specified period.

Gross Margin Return on Inventory (GMROI)

GMROI is an indication of how effectively a company converts its inventory into gross profit. It is measured by comparing the gross margin earned to the average inventory investment. A higher GMROI suggests that inventory is being used efficiently to generate revenue (Uduehe, 2025).

Inventory Management and Financial Performance

Khan, Deng and Khan (2016) find out that efficient inventory management is linked to a firm's financial performance. Stockouts may arise if inventory is not adequately managed. Overstocking and increased holding costs negatively impact financial performance indicators such as EPS (Akinleye & Adesina, 2024).

2.1 Empirical Review

Gara (2026) explored management of inventory and firm profitability strength with concentration on listed goods firm listed by NGX between 2020 and 2024 using Return on Asset as the dependent variable upon which profitability was measured. A negative and insignificant relationship was discovered regarding the relationship of Inventory turnover and ROA. This suggests that high turnover may not be a sufficient criterion absolutely in assuring better firm performance.

In contrast, Essam and Mohamed (2025) explored the determinants of improved financial performance of listed firms in Egyptian context. The study focused on role of inventory turnover, growth in sales and operating cash flow. The study finds out that ITR has a positive significant effect on ROA. This underscores the importance of operational efficiency and internal liquidity management as drivers of profitability.

Also, the study of Abubakar and Madawaki (2023) which was grounded on resource based theory explore the practice of inventory management and financial performance of firms operating within the manufacturing sector in Nigeria. The study resolved that IT positively influence ROA. This suggested that, efficient inventory enhances financial performance.

Mao (2023) verified in his study the relationship between companies EPS to gross profit magin ratio, the study finds Gross profit margin to have a significant impact on stock price. Yun (2023) studied "relationship of inventory turnover and gross margin return on

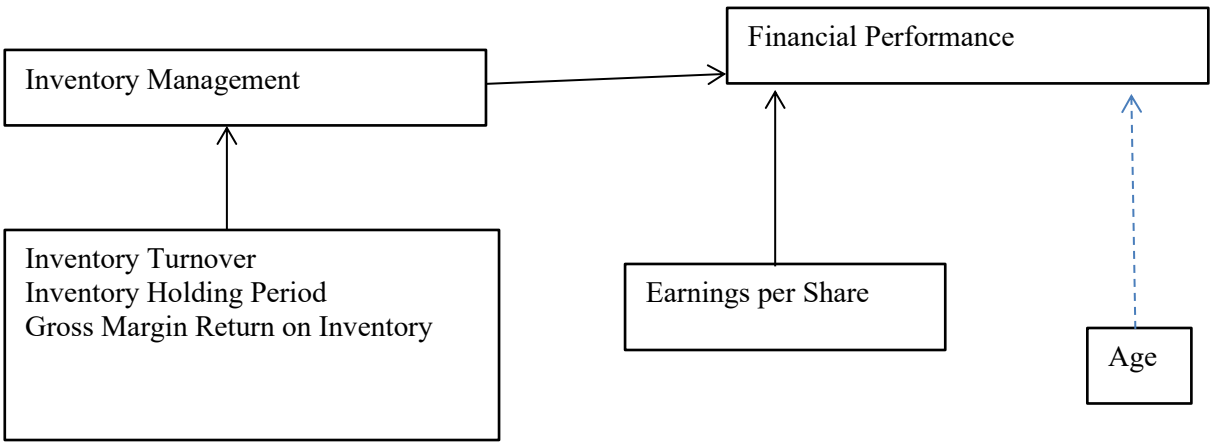


Figure 1: Inventory Management and Financial Performance (Conceptual Model)
Source: Authors conceptualization

inventory investment of manufacturing in Malaysia public listed companies". A mixed relationship between GMROI and firm performance across considered sectors was arrived at. Hence, *the* reaction of GMROI varies across sectors regarding to their financial performance Jahan and Sivadasan (2025) research was based on whether analysts gross margin forcasts influence managers decisions to recognize inventory losses. The study concluded that Gross profit margin is not associated with efficiency on firm's performance and inventory loss recognition.

Egbunike (2023) sampled 8 pharmaceutical and health care firms quoted NGX. Findings from the study revealed that inventory holding period significantly influence firms profitability. Akinleye and Adesina (2024) also explore inventory management and financial performance of quoted manufacturing firms in Nigeria. Their study showed that inventory holding period and its influence on firms profitability varies significantly across sectors. The study reflects a strong dependency on efficient inventory conversion and debt level was prominent among consumer goods and industrial goods firms for profitability.

3. Methodology

A quantitative approach was adopted in evaluating influence of the independent variables on the dependent variables in Nigerian environment. A period of 5 years ranging from 2021 to 2025 was considered. Data were extracted from published financial statements and annual reports of firms which were specifically selected due to the availability of needed information on their website. The population of the study includes all the 51 manufacturing firms listed by NGX as of 31 January 2026.To maintain consistency and to ensure availability of data across the study duration, a criterion for firms selection was considered and applied. Only firms that had been listed prior to 2019 were considered, ensuring a minimum of five years of market presence. Second, firms were required to have reported inventory data for each of the years, which was essential for the financial performance analysis. Following the application of these criteria, 37 firms constituted the final sample. Given the manageable size of this filtered group, a census approach was adopted, whereby all qualifying firms were included in the study. correlation and regression analyses was conducted to examine the relationships between inventory management metrics, such as inventory holding period, inventory turnover, gross margin return on inventory and financial performance indicators.

3.1 Model Specification

For the study a multivariate model is specified and estimated. The functional specification is shown thus:

$$EPS_{it} = \beta_0 + \beta_1 IHP_{it} + \beta_2 IT_{it} + \beta_3 GMROI_t + \beta_4 Size_i + \epsilon$$

where:
EPS_{it} denotes Earnings per share
IHP_{it} denotes Inventory Holding Period
IT_{it} denotes Inventory Turnover
$GMROI_{it}$ denotes Gross Margin Return on Inventory
ϵ is the error term
β_0 is the intercept
β_1 to β_4 are coefficients.

4. Results and Discussions

The data collected were analysed using descriptive measures to ascertain the data characteristics as presented Table 1.

Table 2 above presents details for the variables considered in this study, with focus of 185 firm observations. The results reveal notable variation in both inventory management metrics and financial performance indicators across the sampled manufacturing companies.

The IHP with an observed mean value of 95 days approximately, indicating that, on average, firms hold inventory for just over three months before it is sold. The minimum value of 31 days and a maximum of 649 days reflect a wide disparity in inventory practices, while the standard deviation of 88 revealed substantial

Table 1: Operationalisation and Measurement of Variables

Variable	Type	Measurement	Source
Earnings per share (EPS)	DV	PAT/ No of ordinary shares	Sari (2021)
Inventory Holding Period (IHP)	IV	(Average Inventory / Cost of Goods Sold) x 365	Mbathi, Mwambia & Makena (2020).
Inventory Turnover	IV	Cost of Goods Sold / Average Inventory	Kwak (2019)
Gross Margin Return on Inventory	IV	Gross Profit / Average Inventory	Wibowo (2025)
Size	CV	Age of the business	Hashmi (2020)

Table 2: Descriptive statistics

	Min	Max	Mean	Std. Dev.
IHP	31.658	649.071	94.555	87.906
IT	0.56	326.033	7.616	24.610
GMROI	-3.329	11.286	2.148	2.317
EPS	-207.650	360.685	5.918	37.119
Age	6	100	49.070	19.645
Valid N (listwise)	185			

Source: Author's compilation from SPSS (2025)

variability among considered firms for the study. This variation may be attributed to differences in operational efficiency, industry type, or inventory control policies.

The Inventory Turnover ratio average 7.6, suggesting that inventory is cycled nearly eight times per year. The minimum turnover rate of 0.56 and a maximum of 326.03 indicate that while some firms experience sluggish inventory movement, others may have exceptionally high turnover, possibly due to fast-moving consumer goods or lean inventory strategies. The high standard deviation of 24.61 further highlights the heterogeneity in inventory turnover across the sample.

The Gross Margin Return on Inventory (GMROI) has a mean of 2.15, implying that firms earn ₦2.15 in gross margin for every ₦1 invested in inventory. This reflects moderate profitability from inventory investments. However, the negative minimum value of -3.33 and a standard deviation of 2.32 suggest that some firms may be incurring losses or facing challenges in converting inventory into profitable sales.

The EPS has a mean value of ₦5.92, but the wide range, from a minimum of -207.65 to a maximum of 360.69, a high standard deviation of 37.12 highlight substantial differences in profitability among firms. Negative EPS values suggest that some companies are operating at a loss during the observed periods, which may be linked to poor inventory management or broader financial inefficiencies.

Lastly, the Age of the Company averages 49 years, this includes inclusion of firms that have been in operation for a minimum of 6 years and maximally affirm that has also been in operation for over 100 years forms part of the firms considered for the study. This confirms that the sample size includes both relatively young and long-established firms. The standard deviation of 19.65 years reflects a diverse mix of company maturity levels.

4.1 Test of Hypotheses

The results obtained from the regression analysis are summarised in Table 3.

The regression analysis output from table 3 above relates a modest relationship between the independent variables and EPS. The R Square of 0.078 (7.8%) of the EPS variation is explained by the model, which is relatively low. The Adjusted R Square of 0.0575 suggests a slight reduction in explanatory power when the number of predictors is accounted for.

ANOVA value as shown by the F-statistic of 3.81 with a p-value of 0.005, shows that the overall model is statistically significant at 5% level. This further indicates that, the independent variables (Inventory Holding Period, Inventory Turnover, and GMROI) have a meaningful impact on EPS.

Hypothesis One

***H_1**: The inventory holding period does not significantly affect the financial performance of listed manufacturing firms in Nigeria*

Regression analysis results for the EPS models indicate that the inventory holding period (IHP) does not significantly impact financial performance. The p-value of 0.959 is well above the 0.05 threshold for significance. This shows that changes in inventory holding period do not meaningfully influence EPS. Therefore, the study fails to reject Hypothesis 1, confirming that IHP does not significantly affect the financial performance of listed manufacturing firms in Nigeria.

Hypothesis Two

***H_2**: Inventory turnover does not significantly influence the financial performance of listed manufacturing firms in Nigeria.*

Inventory turnover also shows no significant relationship with financial performance in either

Table 3: Regression Statistics

Multiple R	0.27929665
R Square	0.07800662
Adjusted R Square	0.05751787
Standard Error	36.1337101
Observations	185

Source: Author's computation from SPSS (2025)

Table 4: ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	4	19883.88541	4970.971	3.807292	0.005366721
Residual	180	235016.1005	1305.645		
Total	184	254899.9859			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	11.542	9.044	1.276	0.204	-6.304	29.387
IHP	0.002	0.034	0.051	0.959	-0.065	0.069
IT	-0.041	0.111	-0.370	0.712	-0.260	0.178
GMROI	3.559	1.170	3.041	0.003	1.250	5.868
Age	-0.270	0.136	-1.982	0.049	-0.539	-0.001

Source: Author's computation from SPSS (2025)

model. The p-value for IT is 0.712 indicating a lack of statistical significance. These results imply that variations in inventory turnover do not have a measurable effect on EPS.

Consequently, the study failed to reject Hypothesis 2, supporting the notion that inventory turnover does not significantly influence the financial performance of manufacturing firms in Nigeria.

Hypothesis Three

H₃: *Gross margins return on inventory does not significantly impact the financial performance of listed manufacturing firms in Nigeria*

Impact of GMROI on financial performance has a p-value of 0.003, reflecting a strong positive significant effect. This means that the study rejects Hypothesis 3, concluding that GMROI significantly impacts the financial performance of listed manufacturing firms when measured using EPS.

4.2 Discussion of Findings

The study began with descriptive statistics and preliminary tests including normality, cointegration, and correlation analyses to assess the relationships among variables. The considered variables were found to be constant at levels, justifying the use of the OLS regression method.

Output from the regression analysis shows that Inventory Holding Period (IHP) does not significantly affect the financial performance of listed manufacturing firms in Nigeria, as indicated by high p-values in the model. This finding aligns with the study by Akinleye and Adesina (2024), which found that the significance of inventory metrics like IHP varies across sectors and may not universally impact profitability.

Similarly, Inventory Turnover (IT) shows no significant influence on financial performance. A p-values of well above the 0.05 threshold in both models reflected this. The findings is in consistent with that of the study of Gara (2026), who observed that IT ratios did not significantly correlate with profitability metrics across Korean manufacturing firms, suggesting that IT alone may not be a reliable indicator of financial success.

In contrast, Gross Margin Return on Inventory (GMROI) demonstrates positive significant effect on firm financial performance when measured by EPS. This supports the analysis by Mao (2023), which emphasized GMROI as a strategic metric for evaluating inventory profitability and its direct impact on earnings and investment decisions.

Moreover, the overall regression model for EPS was statistically significant, indicating that inventory management practices collectively influence firms financial performance. Although the explanatory power ($R^2 = 7.8\%$) is relatively low, this is not uncommon in financial models where multiple external factors contribute to performance.

5. Conclusion and Recommendations

Effort was made by the study to explore "impact of inventory management practices on the financial performance of manufacturing firms listed by NGX". Using a quantitative approach and analysing data from

37 firms over a five-year period (2021–2025), the study focused on three key inventory metrics: IHP, IT, and GMROI. The findings revealed that while IHP and IT did not significantly influence financial performance, GMROI had a statistically significant positive effect on EPS. This suggests that profitability derived from inventory investments plays a more critical role in enhancing shareholder value than the speed or duration of inventory turnover.

The study concluded that inventory management have a distinctly impact on the financial performance of manufacturing firms. GMROI, proved a key driver of EPS. Thus, highlights the importance of strategic inventory investment decisions over mere operational efficiency. As deducted from the findings, the study recommends that more preference should be giving to improving GMROI this can be made possible if inventory investments is aligned with high-margin products. Although IHP was not statistically significant, firms should still aim to reduce unnecessary holding costs through better forecasting and inventory planning and while IT did not show a significant impact, maintaining a healthy turnover rate can still contribute to operational efficiency and reduce risks of obsolescence.

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