Lean Accounting Practices and Financial Performance of Listed Manufacturing Companies in Nigeria

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Abstract

Good financial performance determines the good health, going concern and motivating factor for stakeholders in business organisations. Evidence from literature showed that manufacturing companies listed in Nigeria are suffering from business growth and sustainability because of poor financial performance. Research has shown that manufacturing companies listed in Nigeria have not embraced the practice of lean accounting for business transformation. The study adopted *ex post facto* research design in investigating the relationship between lean accounting practices and financial performance of listed manufacturing companies in Nigeria. The study employed secondary data collected from the financial statements of the companies under investigation for the period of twelve (12) years from 2013 to 2024. The data were analyzed using panel least squares (PLS) regression technique. This was carried out with the aid of the E-view 10.0 software and Excel package. Findings from the study showed that just-in-time costing has a negative and significant relationship with financial performance while inventory turnover ratio has a positive and significant relationship with financial performance of listed manufacturing companies in Nigeria. Thus, the study concluded that just-in-time costing and inventory turnover ratio are good predictors of financial performance in Nigeria. Based on these findings, this study recommended that attempt should be made to conduct a comparative analysis of Nigeria and other countries like America, Asia, Europe, and the UK. Firm are advised to prioritize qualitative implementation and dynamic inventory management to optimize efficiency,

Keywords: Lean accounting practices, Financial performance, Just-in-time costing, Inventory turnover ratio, Firm size, Return on assets.

1. Introduction

Contemporarily, the cost of doing business in Nigeria has been very expensive. This has equally affected cost of raw materials, production costs of manufactured goods as well as costs of service production. This has led to several goods produced in the nation to maintain little patronage from users due to increases in prices of goods and, consequently, becomes spoilt without being sold to customers (Ine-Tonbarapa, 2017). Some companies ultimately utilize substandard materials in making their products so as to decrease production costs and increase profit (Aziz et al., 2017). To a large extent, Nigerians tend to suffer the outcomes of this action due to purchase or consumption of ;these substandard goods and services that have saturated the market. So as to maintain favourable market share in the long-run, listed manufacturing companies need to concentrate, emphasis and implement diverse

organisational cost control, design sound service provision strategies as well as reduction practices, such as programme crashing, budgetary control, performance budgeting, and inventory control techniques.

However financial performance is a crucial metric in evaluating the effectiveness of lean accounting practices within organizations. Financial performance enhances the future economic growth of businesses in Nigeria and helps to fulfill the shareholders' wealth maximisation objective (Lambe et al, 2025).

Flowing from the preceding section, lean accounting system (such as just-in-time costing and inventory turnover ratio) has arisen in response to these constraints and to offers a competitive edge at both the corporate and national levels by identifying inefficiencies and proposing more effective operational methods (Tugce, 2023). Lean accounting is the process of guiding, evaluating, and keeping an eye on methods that reflect lean production and thinking and facilitate thoughtful decision-making by providing precise, understandable, and pertinent data and removing unnecessary steps related to traditional cost control and reduction. By offering criteria and information reporting, this kind of accounting promotes long-term activity optimization. Just-in-time costing minimizes inventory levels, reduces carrying costs and frees up capital that can be reinvested in other areas of the business. Also, inventory turnover ratio is a metric that captures how efficiently a company manages its inventory, indicating the effectiveness of lean practices in reducing excess stock and optimizing supply chain management (Veech, 2023).

Nigerian authors (Adeyemi & Akanbi, 2020; Nwankwo & Umeh, 2021; Ojo & Olanrewaju, 2019; Okafor & Omole, 2022; Onyekachi, 2018) have contributed significantly to understanding how these practices affect financial outcomes in Nigeria. Also, cross-country analyses by Johnson (2018), Ogunleye et al. (2022), Suzuki (2019), and Zhang (2020) have underscored the pivotal role lean accounting practices play in shaping financial performance. Despite these collective investigations, several deficiencies and gaps exist that this present study seeks to bridge. For instance, while prior studies (Adeyemi & Ak anbi 2020; Nwankwo & Umeh 2021; Ojo & Olanrewaju 2019; Okafor & Omole 2022; Onyekachi, 2018) highlight the importance of lean accounting, they often lack comprehensive empirical investigations into the intricate dynamics between lean accounting practices and financial performance within Nigeria's diverse industries.

This scarcity is particularly notable in studies such as Afolayan (2019), Bello and Yusuf (2020), and Coker (2021). Although, Adebanjo (2021) and Akinola (2018) have examined the impact of lean accounti,.ng practices on financial performance in various settings, there is still a dearth of research specifically tailored towards understanding financial performance in Nigeria's unique business environment. Also, prior studies (Adebayo, 2022; Ajibade, 2021; Aluko, 2019; Daniels & Smith, 2020; Patel & Desai, 2021) on the link between lean accounting practices and financial performance documented mix findings. While Ajibade (2021), and Aluko (2019), revealed positive and significant link, Adebayo (2022), Daniels and Smith (2020), and Patel and Desai (2021) showed negative and significant link. Flowing from these conflicting outcomes, there is a knowledge gap regarding the effectiveness of these practices in the Nigerian listed manufacturing companies which further outlines the necessity for an intensive examination into how lean accounting practices affect the financial performance of listed manufacturing companies in Nigeria, given their critical role in the country's economic landscape. Therefore, the objective of this study does investigate the relationship between lean accounting practices and financial performance of listed manufacturing._The specific objectives are:

1. Examine the relationship between just-in-time costing and financial performance of listed manufacturing companies in Nigeria; and

2. Ascertain the relationship between inventory turnover ratio and financial performance of listed manufacturing companies in Nigeria.

Against the backdrop of knowledge gap identified, this study gives answer to how the lean accounting practices affects financial performance of listed manufacturing companies in Nigeria? Consistent with this, the following specific questions was raised for the study:

1. What is the relationship between just-in-time costing and financial performance of listed manufacturing companies in Nigeria?

2. What is the relationship between inventory turnover ratio and financial performance of listed manufacturing companies in Nigeria?

2.0 Literature Review

Conceptual Review

Financial Performance

Financial performance represents the general economic condition of a firm over a specified time frame and can be utilised for comparison with the performance of similar companies in related businesses or between businesses in general. Performance measurement is a technique of evaluating the efficacy of a company's initiatives in reaching the company's overall goal on a regular basis (Scherr, 2019).

Return of Asset

ROA is a metric that is usually used in estimating a firm's impending profitability by measuring its past profitability. Consistent with this, ROA is defined as the ratio of earnings after tax to total assets of the company (Rene et al., 2018). Okobo et al. (2022) posit that ROA denotes the company's return on all assets (or funding) provided to the company. According to Myšková and Hájek (2017), ROA enables us to compare companies with diverse proportions of debt in financial resources. A high proportion of ROA shows that the company is mostly effective at turning its assets into revenue, whereas, a low proportion of ROA implies that the company is not effective at turning its assets into revenue (Anozie et al., 2023). Against the backdrop, this study measured ROA as the ratio of earnings after tax (EAT) to total assets of the firm.

Lean Accounting Practices

Lean accounting is the process of directing, assessing, and monitoring of techniques that mirror lean thought and production and enable cognizant decision-making by supplying accurate, comprehensible, and relevant information and eliminating pointless steps associated with conventional cost management and reduction. The application of quick-response manufacturing can be greatly strengthened by lean accounting techniques, despite their primary focus on cutting waste and increasing efficiency (Kaire et al., 2023). In this study, lean accounting techniques are decomposed into just-in-time costing and inventory turnover ratio. Thus:

Just-in-Time Costing and Financial Performance

Just-In-Time (JIT) costing represents a fundamental component of lean accounting systems that originated in Japanese manufacturing during the 1970s (Akbar et al., 2023). The implementation of JIT costing enables companies to significantly reduce inventory waste while improving working capital efficiency, as demonstrated through measurable improvements in inventory turnover ratios and other key financial metrics (Fred-Horsfall & Imo, 2024). When properly implemented within lean accounting systems, JIT costing serves as both a

performance measurement tool and a driver of continuous improvement, aligning production processes with actual demand while minimizing resource expenditure (Akbar et al., 2023). Adeniran et al. (2024) examined the link between just-in-time and financial performance of listed manufacturing companies in Nigeria. The data assembled were analysed using multiple regression technique and revealed a positive and substantial link between just-in-time costing and financial performance of quoted manufacturing firms in Nigeria.

Ukehinakachi et al. (2023) surveyed the link between lean accounting and financial performance of 9 quoted industrial goods firms in Nigeria. Lean accounting was decomposed into value stream mapping and just-in-time costing while financial performance was captured using return on asset. The study utilised a triangulation of primary and secondary data as well as correlational research design. The study used a sample of one hundred and eighty-three (183) knowledgeable respondents sourced from the 9 quoted industrial goods companies in Nigeria for a period of one (1) year i.e 2021. The data sourced were analysed using multiple regression technique and ascertaind a positive and substantial association between just-in-time costing (JITC) and return on asset (ROA) in Nigeria. Jibrin and Ine-Tonbarapa (2023) examined the nexus between lean accounting practices and financial performance of 9 quoted consumer goods firms in Nigeria. Lean accounting practices were decomposed into just-in-time costing and value stream mapping while financial performance was measured using and return on equity (ROE). The study utilised firm size as a moderating variable. The data collected were analysed using multiple regression technique and revealed a positive and significant association between JITC and ROE in Nigeria.

Okpala (2023) also observed lean manufacturing from the six sigma methodologies against profitability from manufacturing small and medium enterprises in Nigeria, and found that it had no influence on profit levels. This observation was attributed to unwilling leadership support, followers' buy-in, and poor documentation of the lean success evidences. The divergence observed from Okpala's study (2013) was previously established by Panizzolo et al. (2012) with evidence from Indian SMEs which discovered that lean manufacturing system did not affect profitability due to restrictions that dwelt on culture, skills and knowledge gaps, and top management lack of commitment. Karanja et al. (2022) studied the association between lean production and business performance in Kenya. Lean production was decomposed into target costing, activity-based costing (ABC), and Just-in-Time (JIT) costing while business performance was measured using ROA. The data assembled were analysed using regression technique and showed a positive and substantial link between lean production and business performance in Kenya. Against the backdrop, the first hypothesis of the study is stated thus:

H_{O1}: Just-in-Time costing has no significant relationship with financial performance of listed manufacturing companies in Nigeria.

Inventory Turnover Ratio and Financial Performance

Inventory turnover ratio is a component of inventory management technique which is a set of controls and guidelines that monitor inventory levels and determine the quantity of stock, when to replenish or stock up, and how much to order (Bhargav, 2016). The idea of inventory management system or method has been of immense concern and significance to several scholars in the past years. Inventory management is a framework that businesses employ to govern their interest in inventory. It entails keeping track of and monitoring supply levels, projecting future demand, and deciding when and how to make arrangements (Atnafu & Balda, 2018).

Abubakar et al. (2024) examined the impact of inventory management on financial performance of ten (10) quoted firms in Nigeria for a period of seven (7) years from 2012 to 2018. Inventory management was captured using inventory turnover ratio while financial

performance was measured using ROA. The data collected were analysed using multiple regression technique and revealed a positive and substantial link between inventory turnover ratio and financial performance of quoted firms in Nigeria. Otuya and Eginiwin (2024) examined the influence of inventory management on profitability of SMEs in Nigeria. The literature utilised a descriptive research design and employed a stratified random sample of 10 out of a total of 30 SMEs. The study utilized primary data through a well-structured questionnaire to elicit information from respondents. The data collected were analysed using a multiple regression technique and ascertained a positive and substantial link between inventory turnover ratio and financial performance of SMEs. The study also showed an adverse and substantial link between inventory conversion period and financial performance.

Etale and Sawyerr (2024) surveyed the link between inventory management and financial performance of listed industrial goods firms in Nigeria for the period of 8 years from 2011 to 2018. Inventory management was captured using inventory to assets ratio and inflation while financial performance was measured using return on assets. The data sourced were analysed using descriptive statistics and multiple regression technique and ascertained a positive and substantial link between inventory management and return on assets. Ali and Showkat (2022) examined the link between inventory management and operating profits of 4 listed pharmaceutical firms in Pakistan for the period of 9 years from 2009 to 2017. The data gathered were analysed using regression technique and ascertained an insignificant link between inventory turnover ratio and operating profits in Pakistan. Flowing from findings from erstwhile studies, this study presents the following hypothesis thus:

H_{O2}: Inventory turnover ratio has no significant relationship with financial performance of listed manufacturing companies in Nigeria.

Firm Size

Firm size of a company in a certain industry at a given point in time, as determined by its revenue, profit, workforce, and even facility size, is the optimum firm size. According to Esan, et al., 2023 Firm size has been explored by extant literatures as total assets, revenue, scale of operation and number of employees.

2.1 Theoretical Review and Framework

Production Theory

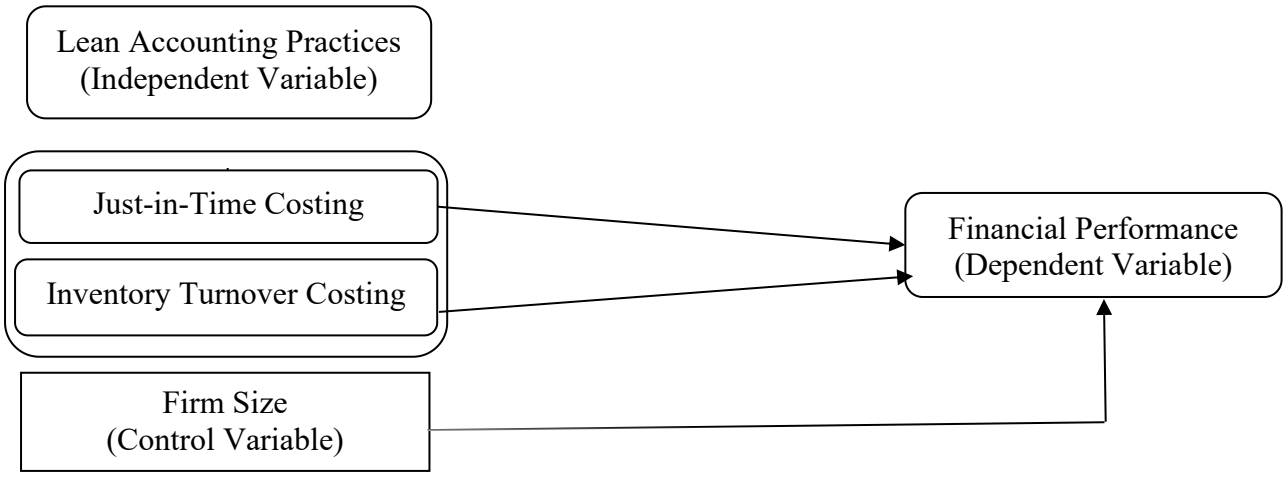
The theory on which this study is anchored is the production theory which is credited to Charles, Cobb, and Paul in 1928. The theory of production is an attempt to explicate the philosophies that a corporate entity uses to determine how much of each commodity it sells (its "outputs" or "products") and how much of each type of labor, raw material, and fixed capital good it uses (its "inputs" or "factors of production"). In relation to production theory, earlier studies have shown how diverse lean accounting practices such as just-in-time costing (Adeniran et al., 2024) and inventory turnover ratio (Jonah et al., 2023) can affect the financial performance of listed manufacturing companies.

Contingency Theory

Owning to the companies been listed in the capital market hence contingency theory was explore in the curse of the study. Contingency theory was primarily developed by Fiedler in the 1960”s. Fiedler introduced this theory in his work “A Theory of Leadership Effectiveness,” published 1967, The theory emphasized that the effectiveness of leadership was contingent upon the fit between leader’s style and the specific situational factors. The Contingency Theory suggests that the effectiveness of management practices, including cost management practices depends on the alignment between the characteristics of the organisation and the external environment (Donaldson, 2001).

Conceptual Framework

Figure 1: Schema on the Relationship between Lean Accounting Practices and Financial Performance



Source: Researcher's Idea (2026)

3.0 Methodology

The *ex post facto* research design was utilised to investigate the relationship between lean accounting practices and financial performance of listed manufacturing companies in Nigeria for a period of twelve (12) years from 2013 to 2024. The choice of 2013 was made as it was the second phase of the implementation of International Financial Reporting Standards (IFRS) for the preparation of annual reports by listed companies in Nigeria. Also, 2024 was considered to enable the researcher include current available data. The total population of the study was restricted to two (2) manufacturing companies listed on the Nigerian Exchange Group (NGX) as at 31st December, 2024. It comprised 20 companies decomposed into 13 industrial goods and 7 oil and gas companies. The choice of this sector was made because this sector tends to ensure the turning of inputs (raw materials, resources, and services) into outputs (finished products and services) so as to guarantee higher national outputs and improved economic growth and development. Owing to the smallness of the population of the study and due to the fact that the manufacturing companies operate in the real sector of the economy and the contribution to national Gross Domestic Product can not be undermined the entire companies were taken as sample using the census technique.

The Panel Least Squares (PLS) regression technique was utilised to explore the relationship between lean accounting practices and financial performance of listed manufacturing companies in Nigeria. The PLS was preferred because it helped to control for unobserved factors that are constant over time for a specific firm but may vary across different firms. This was conducted with the aid of the E-views software and Excel package. In interpreting the PLS regression model, some statistics were generated among which are the Hausman statistic, Jarque-Bera (J-B) statistic, F-Statistic, Durbin-Watson (D-W) statistic, t-statistics, coefficient of determination (R-Squared), and adjusted R-Squared which represents the goodness-of-fit measures. Inference drawn from regression result was premised on these statistics. However, it was very important to determine whether the model was efficient in forecasting the financial performance of listed manufacturing companies in Nigeria.

Flowing from production theory on which this study is anchored, this study adapted the model by Nwokoye (2024) and improved on the model by replacing cash conversion cycle (CCC) and value stream mapping (VSM) with JIT to suit the study. Nwokoye 2024) model is presented as follows:

$A_c = {}_0 + {}_1CCC_1 + {}_2VSM_2 + {}_3ITP_3 + \varepsilon_{ut}$.....(1)

$A_m = {}_0 + {}_1CCC_1 + {}_2VSM_2 + {}_3ITP_3 + \varepsilon_{ut}$.....(2)

Thus, the functional model formulated in this study is stated therefore:

Financial Performance = f(Lean Accounting Practices) ----------(3)

Financial Performance = f(JIT, ITR) ----------(4)

Arising from the functional model and incorporating the control variable, the econometric model is indicated therefore:

$A = {}_0 + {}_1 T + {}_2ITR + {}_3FSIZE + \mu_{it}$.....(5)

Where:

ROA = Return on Assets; JIT = Just-In-Time Costing; ITR = Inventory Turnover Ratio; FSIZE = Firm Size; μ = The Stochastic Error Term; i = Firm; t = Period Considered; β_0 = Intercept; β_1, β_2 = Parameter Estimates; *a priori* expectations are $\beta_1>0$ and $\beta_2>0$ which suggests that the independent variables are anticipated to have positive and significant association with financial performance (i.e good predictors of financial performance), precisely to align with prevailing theory (production theory) on which this study is fixed.

Operationalisation of Variables

The measurement of the dependent variable and independent variables is presented in Table 1 as follows:

Table 1: Measurement of Variables

S/N	Variables	Codes	Measurements	Apriori Sign	Sources
	Dependent				
1	Financial Performance	ROA	This was computed as the proportion of earnings after tax to total assets i.e $\frac{Earnings\ After\ Tax\ (EAT)}{Total\ Assets\ (TA)}$		Mandipa and Sibindi (2022)
	Independent				
2	Just-In-Time Costing	JIT	This was measured as a ratio of the absolute difference between opening and closing balances of finished goods (FG) to cost of goods sold i.e $\frac{Opening\ FG - Closing\ FG}{Cost\ of\ Goods\ Sold}$	+	Tugce (2023)
3	Inventory Turnover Ratio	ITR	This was measured as the ratio of cost of goods sold and average inventory i.e $\frac{Cost\ of\ Goods\ Sold}{Average\ Inventory\ (AI)}$	+	Udo (2023)
	Control				
4	Firm Size	FSIZE	This was computed as the logarithm of total assets	+	Akenroye et al. (2022)

Source: Researcher's Compilation (2026)

4.0 Data Presentation and Interpretation of Results

4.1 Pre-Diagnostic Tests

Descriptive Analysis

Descriptive analysis helps in clarifying the statistical characteristics of any dataset. In this study, importance was attached to values of the mean, minimum, maximum, and standard deviations, as these are the statistics regularly employed by most scholars.

Table 2: Descriptive Statistics

	ROA	JIT	ITR	FSIZE
Mean	0.045	-0.009	-156.079	9.781
Median	0.040	-0.000	-17.751	9.483
Maximum	1.762	10.807	2119.468	13.391
Minimum	-1.799	-10.395	-29714.78	7.116
Std. Dev.	0.230	1.025	1958.156	1.598
Skewness	0.075	0.367	-14.456	0.242
Kurtosis	34.362	97.092	218.256	2.016
Jarque-Bera	9836.169	88538.61	471714.0	12.022
Probability	0.000	0.000	0.000	0.002
Sum	10.935	-2.383	-37459.03	2347.441
Sum Sq. Dev.	12.747	251.119	9.16E	610.325
Observations	240	240	240	240

Researcher's Compilation (2026)

The outcome of the descriptive statistics is displayed in Table 2 and financial performance (captured using return on assets [ROA]) constitutes the key variable of concern as it is the dependent variable. The mean statistic of ROA is 0.045; the median value is 0.040 while the maximum and minimum statistics are 1.762 and -1.799 which indicates that financial performance is relatively impressive. The standard deviation statistic is 0.230 with a positive skewness of 0.075 signifying that the values of ROA are geared towards the right therefore suggesting high skewness. The Jarque-Bera (J-B) statistic of 9836.169 and probability value (p-value) of 0.000 show that the value of ROA is not normally distributed.

Looking at other variables, it can be observed that the maximum and minimum values of JIT are 10.807 and -10.395, and maximum and minimum values of ITR are 2119.468 and -29714.78. From the maximum and minimum values of JIT and ITR, it is observed that ITR has the maximum value of 2119.468 thus suggesting that the companies under investigation spent average of 2120 days in selling and replacing its inventory. The J-B statistics and the associated p-values of the independent variables (JIT and ITR) are 88538.61 (0.000) and 471714.0 (0.000) respectively. It can be said that the variables are not generally dispersed at 5% significant level. This implies that robust results would be ascertained. In relation to the control variable, maximum and minimum values of FSIZE are 13.391 and 7.116 while its Jarque-Bera statistics and the associated p-value are 12.022 and 0.002 which suggest that the variable is not generally dispersed at 5% significant level.

Table 3: Correlation Matrix

Correlation				
Probability	ROA	JIT	ITR	FSIZE
ROA	1.000			

JIT	-0.058	1.000		
	0.369	-----		
ITR	0.003	0.002	1.000	
	0.958	0.974	-----	
FSIZE	0.119	0.008	0.077	1.000
	0.063	0.899	0.232	-----

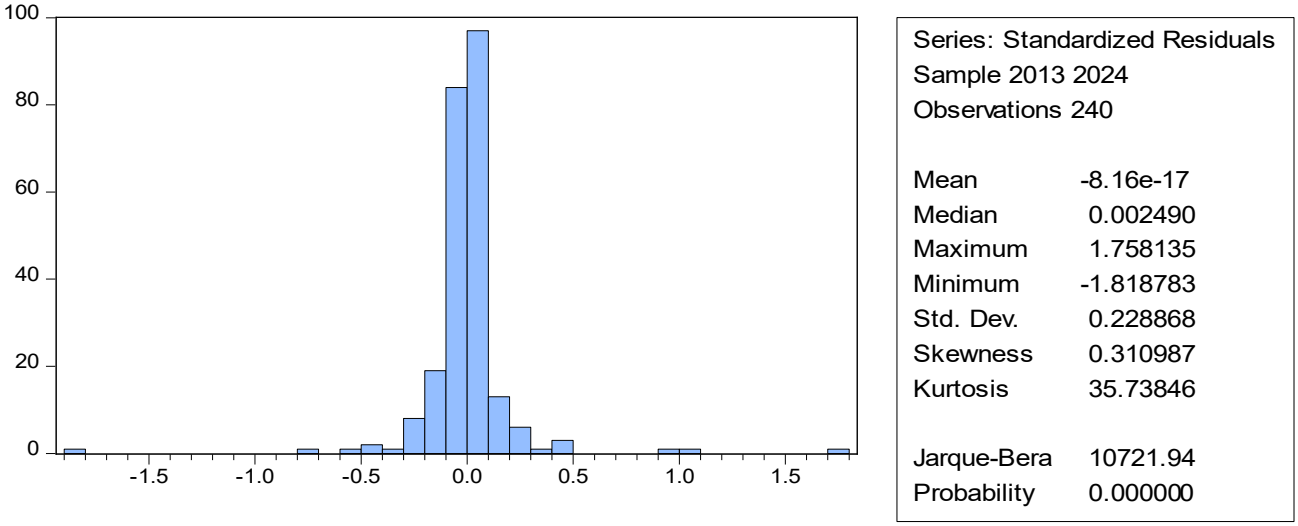
Source: Researcher's Compilation (2026)

The correlation matrix showed in Table 3 revealed the extent of association between the explanatory variables (JIT and ITR), the explained variable (ROA), and the control variable (FSIZE). Indisputably, the connection between a variable and itself is one (1). Furthermore, Table 3 disclosed that the association between ROA and JIT is negative and weak based on a correlation coefficient of -0.058. Also, the association between ROA and ITR is positive and weak based on the correlation coefficient of -0.003. In relation to the control variable, the association between ROA and FSIZE is positive and weak based on a correlation coefficient of 0.119. Based on these values, it is evidenced that there is absence of multicollinearity in the model as the correlation coefficients are less than 0.90 (90%). In terms of the association amongst the variables, the study perceived that the strongest association is between FSIZE and ITR with correlation coefficient of 0.077 while the least is between ITR and JIT with correlation coefficient of 0.002.

Post-Diagnostic Tests

In this study, the following post diagnostic tests were carried out:

Figure 2: Histogram Normality Test



Source: Researcher's Computation (2026)

The normality and other mean statistics of the residuals presented in Figure 2 revealed a Jarque-Bera statistic of 10721.94 with a related p-value of 0.000 which denotes that the variables are standard and not normally dispersed. The kurtosis value of 35.738 showed a

positive kurtosis in excess of 3.00 which shows a leptokurtic kurtosis. The skewness statistic of 0.310 means the residual from the model is skewed to the right and the average standard deviation of 0.228 revealed that the nonconformity from the mean is relatively high.

Table 4: Test of Heteroscedasticity

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.112	Prob. F(3,236)	0.344
Obs*R-squared	3.345	Prob. Chi-Square(3)	0.341
Scaled explained SS	56.231	Prob. Chi-Square(3)	0.000

Source: Researcher's Computation (2026)

The test of heteroscedasticity was carried out using Breuch-Pagan-Godfrey panel cross-section LR test. The test showed an Obs*R-squared value of 3.345 and a p-value of 0.341. This is consistent with the homoscedastic residuals as the Chi-Square p-value is more than the benchmark of 0.05. This shows that there is no evidence of heteroscedasticity in the model.

Table 5: Test of Multicollinearity

Variance Inflation Factors			
	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
C	0.008	8.932	NA
JIT	0.000	1.000	1.000
ITR	5.82E	1.012	1.006
FSIZE	8.74E	8.854	1.006

Source: Researcher's Computation (2026)

The test of multicollinearity was conducted using Breuch-Pagan-Godfrey test. The test revealed that the centered variance inflation factor (VIF) of the respective independent variables is not up to the rule of the thumb of 10. This denotes lack of multicollinearity in the model.

Table 6: Cross-Sectional Dependence Test

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	268.284	190	0.000
Pesaran scaled LM	4.015		0.000
Pesaran CD	1.591		0.111

Source: Researcher's Computation (2026)

The cross-sectional dependence was conducted using Breuch-Pagan-Godfrey test. The test showed a Pesaran CD statistic of 1.591 and a p-value of 0.111. This aligns with the null hypothesis residuals. Furthermore, the result showed that there is absence of cross-sectional dependence (correlation) in residuals in the hypotheses.

Table 7: Correlated Random Effects-Hausman Test

Correlated Random Effects - Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000	3	1.000

Source: Researcher's Computation (2026)

The correlated Hausman test revealed a Chi-Squares statistic of 0.000 with an associated p-value of 1.000. The result revealed that the random effect model is more efficient as the p-value is more than 5% i.e 1.000 > 0.05 residuals in the hypotheses.

Table 8: Panel Least Squares (PLS) Regression Output

Variable	Fixed Effect Model (FEM)		Random Effect Model (REM)	
	Coefficient	Prob.	Coefficient	Prob.
C	0.237	0.672	-0.117	0.300
JIT	-0.014	0.288	-0.014	0.041
ITR	7.59E	0.921	0.20E	0.005
FSIZE	-0.019	0.731	0.016	0.150
R-squared	0.159		0.511	
Adjusted R-squared	0.074		0.490	
S.E. of regression	0.222		0.222	
Sum squared resid	10.715		11.632	
Log likelihood	32.526			
F-statistic	1.870		0.924	
Prob(F-statistic)	0.012		0.002	
Durbin-Watson stat	2.252		1.996	

Source: Researcher's Computation (2026)

Based on the correlated Hausman test Chi-Squares statistic of 0.000 and a p-value of 1.000, the random effect model is more efficient as the p-value is more than 5% i.e 1.000>0.05 residuals in the hypotheses. Based on the random effect panel least squares (PLS) regression output, the R-Squared of the model is 0.511 (51.1%) with an adjusted R-Squared of 0.490 (49.0%). This indicated that the explanatory variables expounded 49% dissimilarity in the explained variable (ROA). The F-statistic value of 0.924 with a related p-value of 0.002 that is significant at 1% shows that there is a substantial linear link between the explained variable (ROA) and the explanatory variables. The Durbin-Watson (DW) statistics of 1.996 showed the nonexistence of autocorrelation in the model. The coefficients and p-values of the two (2) explanatory variables (JIT and ITR) considered, are stated as follows: -0.014 (0.041) and 0.20E (0.005) correspondingly. The outcome showed that JIT has an adverse and significant association with ROA while ITR has a positive and significant association with ROA. Looking at the control variable, the coefficient and p-value of FSIZE is 0.016 (0.150) which implies that FSIZE has a positive but insignificant association with ROA.

5.0 Discussion of Findings

Just-in-time costing (JIT) showed an adverse and significant relationship with financial performance (ROA) which denotes that as JIT increases, there is a substantial reduction in financial performance. This does not align with the *a priori* expectation ($\beta_1>0$). This implies that

JIT system is highly sensitive to disruptions, potentially harming sale revenue and profitability. Also, JIT works in a stable and high-infrastructure environment; Nigeria presents almost the opposite conditions. JIT assumes reliable supply chain stability, predictable transportation, and stable power supply; relying on JIT may face production stoppages, emergency purchases, and higher expediting costs which decreases profitability. This outcome also indicates drawbacks that outweigh its benefits, thus leading to decreased financial performance. This, of course, results in inefficient decision-making and can worsen governance process, ultimately decreasing firm performance. This finding is consistent with the finding of Oyedele et al. (2023) but negates the findings of Jibrin and Ine-Tonbarapa (2023), Olaoye and Olaniyan (2022), and Ukehinakachi et al. (2023).

Inventory turnover ratio (ITR) was revealed to have a positive and significant relationship with financial performance (ROA), which implies that as ITR rises, there is a significant increase in financial performance. This supports the *a priori* expectation ($\beta_2>0$). Flowing from the finding, it can be argued that companies with higher inventory turnover ratios tend to have high operational efficiency in terms of quick conversion of inventory into sales; lower holding, storage, and obsolescence costs; and reduced risk of damage, spoilage, or theft. A high ITR also indicates that products match consumer demand, companies response quickly to market changes, and inventory levels are well aligned with sales forecasts, thus suggesting efficient inventory management. The finding also indicates that higher inventory ratios can decrease inventory holding costs, thus contributing to improved financial performance. Also, companies with greater inventory turnover ratios, effective supply chain management, better inventory forecasts, and improved operational efficiencies might experience increased sales, therefore leading to improved financial performance. The result supports the findings of Abubakar et al. (2024), Etale and Sawyerr (2024), Jonah et al. (2023), and Otuya and Eginiwin (2024) but contradicts the findings of Ekpenyong et al. (2023), Kagongo and Irungu (2024).

5.1 Conclusion and Recommendations

The study concluded that just-in-time costing and inventory turnover ratio are good predictors of financial performance while firm size is not a good predictor of financial performance of listed manufacturing companies in Nigeria. Therefore, it recommended that:

i. Management should be more analytical and take another look at the specific aspects of just-in-time costing that might be contributing to such adverse impacts. Management should explore alternative cost management strategies that might be more effective in improving financial performance, and conduct industry-specific analysis to ascertain if the negative influences hold across different industries.

ii. Management should focus on inventory management practices to improve inventory turnover ratios, sustain best inventory policies to minimize holding costs and maximize sales, and adjust inventory management strategies as needed to maintain optimal performance.

5.2 Recommendations for Further Studies

The study recommended that

i. Other researchers should investigate other regions outside Africa like Europe, Asia and America. This will enable us to properly evaluate and appreciate the degree of relationship between lean accounting practices and financial performance in different countries and regions across the globe.

ii. Studies should be conducted in this direction by considering other sectors like agricultural sector, service sector, and financial sector.

5.3 Contribution to knowledge

This study contributed to empirical studies on lean accounting practices and financial performance of listed manufacturing companies in Nigeria due to dearth in empirical studies that have control for firm size. This study contributed to knowledge by validating the production theory in Nigeria, as the study revealed that kaizen costing has a positive and significant relationship with financial performance of listed companies in Nigeria.

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