

## **EFFECT OF FREE CASHFLOW, INVENTORY TURNOVER, AND FINANCIAL LEVERAGE ON MARKET VALUATION OF LISTED MANUFACTURING FIRMS IN NIGERIA**

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### **Abstract**

*This study investigated the effect of free cashflow efficiency, inventory turnover, and financial leverage on the market valuation of listed manufacturing firms in Nigeria, using Tobin's Q as the measure of market value. A quantitative panel data approach was adopted, covering 49 manufacturing firms listed on the Nigerian Exchange Group (NGX) between 2012 and 2023. Data were obtained from audited annual reports and analyzed using a random effects regression model, with relevant diagnostic tests confirming model validity. Findings revealed that financial leverage had a statistically significant and positive effect on market value, indicating that firms with higher leverage tended to achieve stronger market valuation. In contrast, free cash flow efficiency and inventory turnover did not exhibit statistically significant effects, although inventory turnover showed a weak positive association with firm performance. Financial leverage, however, exhibited a significant positive influence on Tobin's Q, suggesting that moderate use of debt enhances market valuation. Despite the model's overall significance, its explanatory power was modest, implying the presence of other influencing factors. The study concluded that properly managed leverage improves firm value, while the influence of internal cash flow and inventory efficiency is context-dependent. It recommended disciplined debt strategies and improved reinvestment governance for sustained performance.*

**Keywords:** Market valuation, free cashflow efficiency, inventory turnover, financial leverage, Tobin's Q

### **1. Introduction**

In the post-2020 era, Nigerian manufacturing firms faced persistent challenges around liquidity management, operational efficiency, and capital structure, all of which ultimately shaped their market valuations. Prior research emphasized that free cash flow efficiency enables firms to self-finance investments and reduce reliance on costly external funds (Akinleye & Olanipekun, 2024). However, empirical evidence within Nigeria was scant: Omodara and Olaoye (2023) found that while efficient cash flow improved profitability in Nigerian manufacturers, its direct link to market-based metrics like Tobin's Q remained unexplored. Similarly, studies on Inventory Turnover presented mixed results: Egbunike et al. (2019) reported no significant effect on accounting returns, whereas Etale and Sawyerr (2020) showed a moderate positive impact in one consumer-goods firm. Finally, financial leverage was shown to discipline management and enhance value in some contexts (Ibrahim et al., 2024), yet excessive debt was also associated with distress (Eze et al. 2021).

Despite these insights, there was a clear gap: no study had jointly examined how FCE, INT, and LEV directly influenced market valuation (Tobin's Q) of listed Nigerian manufacturers using a unified model. Most Nigerian investigations focused on accounting outcomes (ROA, ROE) rather than forward-looking measures valued by investors. As a result, managers and policymakers lacked evidence on which financial practices most effectively drove share-market perceptions in a volatile, capital-constrained environment. Without clarity on these direct effects, firms risked misallocating resources—overleveraging or under-investing in working capital management—thereby undermining sustainable value creation.

This study therefore aimed at assessing the direct effects of free cash flow efficiency, inventory turnover, and financial leverage on the market valuation (Tobin's Q) of listed manufacturing companies in Nigeria for the period 2012–2023. By employing a regression analysis, the research sought to determine which of these three core financial management metrics significantly drove Tobin's Q, thereby filling a critical empirical void and providing actionable guidance to corporate finance practitioners in Nigeria.

## **2. Literature Review and Hypotheses Development**

### **2.1. Conceptual Review**

#### **2.1.1. Free Cash Flow Efficiency**

Free cashflow efficiency represents a firm's capacity to generate excess operating cash after covering capital expenditures, thereby funding growth internally rather than relying on external financing. Jensen's (1986) free-cash-flow theory laid the foundation for understanding how unmanaged surplus cash can lead to agency conflicts. In Nigeria, Onyemenam et al. (2023) showed that among listed pharmaceutical firms, operating cash flow significantly improved performance only when managers deployed it efficiently (Onyemenam et al., 2023). Conversely, Liman and Mohammed (2018) found no direct effect of free cash flow on ROA in Nigerian banks, suggesting that without disciplined use, free cash may not translate into value (Liman & Mohammed, 2018).

#### **2.1.2. Inventory Turnover**

Inventory Turnover measures how many times a firm sells and replaces its stock in a period, serving as a proxy for operational efficiency. Ajibola et al. (2025) analyzed ten NSE-listed manufacturers (2014–2023) and found that higher inventory turnover significantly increased ROA, underscoring its importance for Nigerian manufacturers (Ajibola et al., 2025). In contrast, Egbunike et al. (2019) reported no significant link between inventory turnover and profitability across a broader sample of Nigerian manufacturing firms, indicating contextual factors like supply-chain bottlenecks may blunt its effect (Egbunike et al., 2019).

#### **2.1.3. Financial Leverage**

Financial Leverage denotes the degree to which a firm uses debt financing. The classic trade-off theory (Jensen & Meckling, 1976) posits moderate debt can discipline managers and provide tax shields, but excessive debt raises distress risk. Empirically for Nigeria, Ibrahim et al. (2024) found total debt-to-asset ratio had a positive significant effect on gross profit margin of listed industrial firms (Ibrahim et al., 2024). However, Bukit and Iskandar (2009) documented that high leverage sometimes depressed ROA among Nigerian manufacturers, especially when interest burdens soared (as cited in (Bukit, & Iskandar, 2009)

#### **2.1.4. Market Valuation**

Market-based measures incorporate investor expectations. Tobin's Q—market value of assets over replacement cost—offers a forward-looking gauge of how well financial and operational strategies are expected to pay off (Fama & French, 1998). In emerging contexts, Tobin's Q has been applied less frequently in Nigeria, but its ability to integrate market sentiment makes it an ideal proxy for this study.

#### **2.1.5. Tobin's Q**

Tobin's Q compares a firm's market valuation to the replacement cost of its assets. A value above one signals that investors expect returns above the cost of asset reproduction. Fama and French's (1998) international evidence confirmed Tobin's Q as a powerful predictor of firm value in capital markets. Though most Nigerian studies rely on ROA/ROE, this research adopts Tobin's Q to capture both internal management efficiency and how external investors perceive future growth potential.

### **2.2 Theoretical Review**

This study is grounded in three major frameworks: the free cash flow theory, agency theory, and trade-off theory. These theories jointly explain how internal financial practices and external capital structures influence firm value.

The Free Cash Flow Theory (Jensen, 1986) argues that firms with surplus cash may suffer value loss if such funds are misused for inefficient investments. In contrast, when free cash is effectively reinvested or returned to shareholders, firm performance improves. This becomes especially relevant in Nigeria, where limited external financing makes internal cash efficiency vital.

The Agency Theory (Jensen & Meckling, 1976) emphasizes the role of financial leverage in aligning managerial actions with shareholder interests. Debt imposes fixed obligations that limit managerial discretion, potentially reducing agency costs. However, excessive leverage can backfire, leading to distress and declining value.

The Trade-Off Theory (Kraus & Litzenberger, 1973) complements this by positing that firms balance tax benefits of debt with the cost of financial distress to determine optimal leverage. In Nigeria's high-interest environment, achieving this balance remains a challenge, though strategic debt usage can still enhance firm valuation.

Inventory Turnover, while an operational metric, links to agency theory via working capital control. efficient inventory management enhances liquidity and may improve firm value, but only if supported by stable infrastructure and effective market signals. Together, these theories provide a strong foundation for assessing how free cash flow efficiency, inventory turnover, and financial leverage impact market valuation.

### **2.3. Empirical Review**

#### **2.3.1. Free Cash Flow Efficiency and Market Valuation**

Recent studies in Nigeria present mixed evidence on whether free cash flow efficiency enhances firm value. Onyemenam et al (2023) found a positive and significant relationship between Free Cash Flow Efficiency and Tobin's Q among listed pharmaceutical firms, particularly when surplus cash was reinvested strategically. Similarly, Ibrahim et al. (2024) observed that efficient operating cash flow significantly boosted Tobin's Q in industrial firms.

On the other hand, Kantudu and Umar (2021) reported a significant negative link between free cash flow efficiency and ROA in 48 manufacturing firms, suggesting agency-driven overinvestment. This aligns with Etim and Osim (2022), who also

found a negative and significant association between cash flow and profitability, indicating inefficient deployment in some sectors.

Other studies have found no statistically significant relationship. Liman and Mohammed (2018) observed no effect of free cash flow efficiency on ROA in Nigerian banks, while Egbunike et al. (2019) reported similar non-significance across manufacturing firms. These findings suggest that although free cash flow efficiency has potential to drive market value when well-managed, its impact can be neutral or even negative if discipline and strategic reinvestment are lacking. To assess the value-enhancing potential of internally generated funds, the study first examines the effect of free cash flow efficiency on market valuation.

**H<sub>1</sub>:** *Free Cash Flow Efficiency has a positive effect on market value of listed manufacturing firms in Nigeria.*

### **2.3.2. Inventory Turnover and Market Value**

Empirical studies in Nigeria have shown mixed outcomes on the effect of inventory turnover (INT) on firm performance. Okafor and Nwankwo (2021) found that higher INT significantly improved ROA in manufacturing firms, while Adebayo et al. (2022) linked increased INT to better Tobin's Q among consumer goods firms, supporting a positive relationship between operational efficiency and firm value.

Conversely, Chukwu and Eze (2023) and Musa and Ahmed (2021) reported that excessive INT reduced ROE and profit margins, respectively, highlighting that over-rotation can harm performance when stockouts or supply chain issues arise. On the other hand, Egbunike et al. (2019) and Onyema and Chukwu (2020) found no significant relationship between INT and performance metrics like ROA and Tobin's Q, attributing the result to infrastructural limitations that hinder efficiency gains. Overall, findings suggest that moderate improvements in inventory management may support performance, but extreme turnover levels and weak logistics often prevent consistent value creation in Nigeria's manufacturing sector. Next, the study investigates whether inventory turnover, as a measure of operational efficiency, significantly influences firm performance in the Nigerian manufacturing context.

**H<sub>2</sub>:** *Inventory Turnover has a positive effect on market value of listed manufacturing firms in Nigeria.*

### **2.3.3. Financial Leverage and Firm Value**

Studies on financial leverage in Nigeria reveal mixed findings. Ibrahim et al. (2024) showed that higher debt-to-asset ratios significantly improved gross profit and Tobin's Q for industrial firms. Likewise, Afolabi et al. (2019) found a positive and significant relationship between debt-equity ratios and both ROA and Tobin's Q in non-financial firms, emphasizing leverage's role in enhancing value through tax benefits and discipline.

In contrast, Ikwuo et al. (2025) reported that higher long-term debt ratios significantly reduced shareholder value in oil and gas firms. Similarly, Okafor and Nwankwo (2021) found that excessive leverage negatively affected ROE and Tobin's Q in cement companies due to rising financial risk. Some research observed no significant relationship. Igwe (2024) found that overall debt negatively, but not significantly, impacted market capitalization in ICT firms. These studies suggest that while moderate leverage may boost firm value, excessive debt or industry-specific conditions can negate those gains, and in some cases, produce no discernible effect. Finally, the study explores the impact of financial leverage on firm valuation, considering both the benefits of debt financing and its potential risks.

**H<sub>3</sub>:** Financial Leverage has a positive effect on market value of listed manufacturing firms in Nigeria.

### 3. Method

This study examines how free cash flow efficiency, inventory turnover, and financial leverage affect market value, using Tobin’s Q as the dependent variable. A quantitative panel data design is employed, covering 49 manufacturing firms listed on the NGX from 2012 to 2023. This approach captures variations across firms and over time. The study follows a positivist philosophy, emphasizing empirical analysis. Purposive sampling was used to select firms with consistent financial data. Secondary data were sourced from audited annual reports, ensuring accuracy and comparability for statistical estimation.

The variables used in this study are clearly defined and measured to align with established financial research standards. The dependent variable, Tobin’s Q, is calculated as the ratio of the market value of equity plus total liabilities minus cash equivalents to total assets. This measure captures the firm’s market valuation relative to the replacement cost of its assets. The first independent variable, free cash flow efficiency, is measured by subtracting investing cash flow from operating cash flow and dividing the result by revenue, indicating the efficiency with which firms generate and utilize internal funds. Inventory Turnover, another independent variable, is computed as the ratio of the cost of goods sold to average inventory, reflecting how effectively a firm manages its inventory. The final independent variable, financial leverage, is expressed as the ratio of total liabilities to total assets, multiplied by 100, representing the proportion of a firm’s assets financed through debt.

**Table 1: Variable Definitions and Measurements**

Variable Name	Acronym	Definition	Measurement	Sources
Market value (Tobin Q)	TBQ	Ratio of market value to asset replacement cost	(Market Value of Equity + Liabilities – Cash Equivalents)/Total Assets	Lai et al. (2020)
Free Cash Flow Efficiency	FCE	Efficiency in generating excess cash after capital investments	(Operating Cash Flow – Investing Cash Flow)/Revenue	Lai et al. (2020)
Inventory Turnover	INT	Frequency at which inventory is sold and replaced over a period	Cost of Goods Sold/Average Inventory	Chancharat and Kumpamool (2022)
Financial Leverage	LEV	Proportion of total assets financed by liabilities	(Total Liabilities/Total Assets)×100	Jehu and Ibrahim (2020)

Source: Researcher’s Compilation (2025)

The model was adapted from Lai *et al.* (2020) who employed Tobin’s Q to assess firm value in relation to free cashflow. The model is specified as follows:  $Tobin\ Q_{it} = \beta_0 + \beta_1 FCE_{it} + \beta_2 INT_{it} + \beta_3 LEV_{it} + \epsilon_{it}$  Where: Tobin  $Q_{it}$  = Market value for firm  $i$  in year  $t$ ; FCE = Free Cash Flow Efficiency; INT = Inventory Turnover; LEV = Financial Leverage. Data were analyzed using panel regression, with random effects as the main estimator based on the Hausman test. The dependent variable is Tobin’s Q. Independent variables are Free Cash Flow Efficiency, Inventory Turnover, and Financial Leverage. Control variables include Firm Size and Firm Age to adjust for structural differences among firms.

Prior to the regression analysis, several diagnostic tests were conducted to ensure the reliability and validity of the model estimates. To detect multicollinearity among the independent variables, the Variance Inflation Factor (VIF) was computed, with values below 10 considered acceptable. The Breusch–Pagan/Cook–Weisberg test was employed to examine the presence of heteroskedasticity, while the Wooldridge test was used to check for serial correlation in the panel dataset. Model selection between fixed effects and random effects estimators was guided by the Hausman specification test. Furthermore, the Ramsey RESET test was applied to detect any potential model misspecification. Lastly, the Shapiro–Wilk test was conducted to assess the normality of residuals, ensuring that the assumptions of panel regression were met.

#### 4. Results and Discussion

##### 4.1. Descriptive Statistics

The analysis begins with an overview of the descriptive statistics, providing a summary of the distribution, central tendencies, and variability of both the independent and dependent variables examined in the study.

**Table 2: Descriptive statistics and Normality Test**

Variable	Mean	Median	Max	Min	Std. Dev.	Obs	z-value	Prob>z (p-value)
TBQ	3	1.1	159	-0.31	11	524	13.638	0.0000
FCE	26	0.17	10751	-21	481	513	13.986	0.0000
INT	4.4	4	23	0.00028	2.8	468	8.881	0.0000
LEV	92	60	2354	12	204	528	13.542	0.0000

Source: Researcher Computation (2025)

The results of the Shapiro–Wilk normality test on Table 2 reveal that all variables in the study deviate significantly from a normal distribution. Market value, measured by Tobin’s Q, has a mean of 3 and a median of 1.1, with values ranging from –0.31 to 159. The large standard deviation of 11 and a z-value of 13.638 ( $p = 0.0000$ ) indicate a substantial spread and strong departure from normality. Similarly, Free Cash Flow Efficiency displays extreme variability, with a mean of 26, median of just 0.17, and a maximum value of 10,751. The z-value of 13.986 and p-value of 0.0000 confirm significant skewness, suggesting that only a few firms exhibit very high FCFE while most remain relatively low.

Inventory turnover appears more stable, with a mean of 4.4 and median of 4, but still shows a non-normal distribution based on its z-value of 8.881 ( $p = 0.0000$ ). The spread, as indicated by the standard deviation of 2.8, suggests moderate variability across firms. Financial leverage on the other hand, exhibits considerable dispersion, with a mean of 92%, median of 60%, and values ranging up to 2,354%. Its z-value of 13.542 ( $p = 0.0000$ ) confirms strong deviation from normality. These findings collectively suggest that robust statistical techniques or transformation methods may be necessary to ensure valid regression estimates, given the significant non-normality in the dataset.

##### 4.2. Correlation Analysis

In examining the association among the variables, we employed the Pearson correlation coefficient (correlation matrix) and the results are presented in the table below.

**Table 3: Correlation Matrix**

Variable	TBQ	FCE	INT	LEV
TBQ	1			

FCE	0.1825	1		
INT	0.0563	-0.0888	1	
LEV	0.2042	0.9526	-0.0841	1

Source: Researcher Computation (2025)

The correlation matrix on Table 3 reveals the relationships among the study variables, beginning with market value, measured by Tobin’s Q. Tobin’s Q shows a positive but weak correlation with free cash flow efficiency (0.1825), suggesting that as free cash flow efficiency increases, market valuation may also improve slightly, though the association is not strong. Similarly, Tobin’s Q has a very weak positive correlation with inventory turnover (0.0563), indicating a minimal link between operational efficiency and market performance. The correlation between Tobin’s Q and financial leverage is slightly stronger at 0.2042, implying that firms with higher leverage tend to have marginally higher market valuations.

Among the independent variables, free cash flow efficiency and financial leverage exhibit a very strong positive correlation (0.9526), suggesting that firms with higher leverage often report higher free cash flow efficiency —possibly due to pressure to maintain strong internal cash flows under debt obligations. Conversely, inventory turnover shows weak negative correlations with both free cash flow efficiency (–0.0888) and financial leverage (–0.0841), indicating that higher inventory efficiency is slightly associated with lower reliance on debt and internal cash flows. Overall, the correlations suggest limited multicollinearity concerns, though the strong association between free cash flow efficiency and leverage warrants further attention in regression diagnostics

### 4.3 Regression Analysis

**Table 4: Regression Results**

Details	Expected Sign	Regression results
Constant		0.13 (0.8500)
FCE	+	-0.00 (0.4060)
INT	+	0.15 (0.0940)
LEV	+	0.02 (0.0300)*
FCE*LEV	+	-
INT*LEV	+	-
F-value (p-value)		23.71 (0.0000)***
Breusch-Pagan LM test (p-value)		4.75 (0.0147)*
Multicollinearity Test (VIF)	< 10	7.54
Portmanteau test (p-value)	> 0.05	45.00 (0.4720)
Ramsey RESET test (p-value)	> 0.05	0.07 (0.9746)
Hausman test (p-value)	> 0.05	2.55 (0.4656)
Heteroskedasticity test (p-value)	> 0.05	10.35 (0.0013)**
R-square		0.05
Adjusted R-square		0.04
Observations		464

Source: Researcher Computation (2025)

The regression results on Table 4 provide insights into the financial determinants of market value, as measured by Tobin’s Q, among Nigerian manufacturing firms. The constant term is statistically insignificant (0.13; p = 0.8500), indicating that when all

independent variables are held constant, the baseline market valuation is not significantly different from zero. Free Cash Flow Efficiency (FCE) shows a negative but statistically insignificant relationship with Tobin's Q (coefficient =  $-0.00$ ;  $p = 0.4060$ ), suggesting that internally generated cash flow alone does not significantly influence firm market value. Inventory Turnover (INT) is positively related to market value with a coefficient of  $0.15$ , but the  $p$ -value ( $0.0940$ ) indicates marginal significance at the 10% level, implying limited evidence that improved inventory efficiency boosts market valuation.

Financial Leverage (LEV) is the only predictor with a statistically significant and positive effect on market value (coefficient =  $0.02$ ;  $p = 0.0300$ ), supporting the view that moderate debt use may enhance firm value, possibly due to tax advantages and improved managerial discipline. The interaction terms (*FCELEV* and *INTLEV*) were not included in this model, indicating that only the direct effects of the explanatory variables are assessed. The overall model is statistically significant, as shown by the  $F$ -value of  $23.71$  and  $p$ -value of  $0.0000$ , confirming that the set of independent variables jointly explains a significant portion of the variance in Tobin's Q.

Model diagnostics indicate that the regression is generally well-specified. The Breusch–Pagan LM test ( $p = 0.0147$ ) supports the use of a random effects model over pooled OLS. The Variance Inflation Factor (VIF) of  $7.54$  is within acceptable limits, suggesting no severe multicollinearity. The portmanteau test ( $p = 0.4720$ ) and Ramsey RESET test ( $p = 0.9746$ ) confirm no autocorrelation or functional form misspecification. However, the presence of heteroskedasticity is evident ( $p = 0.0013$ ), warranting the use of robust standard errors. Despite statistical significance, the model's explanatory power is modest, with an  $R$ -square of  $0.05$  and adjusted  $R$ -square of  $0.04$ , indicating that only 4–5% of the variation in market value is explained by the model. This suggests that other unobserved factors may play a substantial role in driving market valuation in the Nigerian manufacturing sector.

#### **4.4. Discussion of Findings and Test of Hypotheses**

The first hypothesis of the study states that:  $H_1$ : free cash flow efficiency has a positive effect on market value (Tobin's Q) of listed Nigerian manufacturing firms. To test this hypothesis, panel regression analysis using the random effects model was conducted. the regression coefficient for free cash flow efficiency (FCE) was found to be negative ( $-0.00$ ) and statistically insignificant with a  $p$ -value of  $0.4060$ . This indicates that free cash flow efficiency does not exert a significant influence on Tobin's Q. Therefore, the null hypothesis is accepted, implying that, within the sampled Nigerian manufacturing firms, free cash flow efficiency has no significant effect on market-based firm performance during the study period.

This result aligns with the findings of Liman and Mohammed (2018) and Egbunike et al. (2019) who reported no significant relationship between cash flow metrics and market value, highlighting that internally generated cash, without efficient reinvestment or governance oversight, may not translate into improved valuation. Similarly, Kantudu and Umar (2021) found a negative and significant relationship between free cash flow and investment efficiency, emphasizing agency costs. On the contrary, the finding contradicts the results of Onyemenam et al. (2023) and Ibrahim et al. (2024), who demonstrated that efficient deployment of internal funds could positively impact Tobin's Q in the pharmaceutical and industrial sectors respectively. Also, Omodara and Olaoye (2023) linked sound cash flow management to improved profitability, indirectly suggesting its potential influence on firm value.

The divergence in findings may be attributed to contextual and structural factors. In the Nigerian manufacturing sector, inefficient allocation of internal funds, weak financial

controls, and limited oversight may reduce the value-enhancing effects of free cash flow. In contrast, sectors or firms with stronger governance frameworks and capital allocation strategies are more likely to harness free cash flow efficiently. Additionally, macroeconomic instability, poor infrastructure, and financing constraints may pressure firms into using free cash flow for survival purposes rather than strategic growth. Thus, the study highlights that the value relevance of free cash flow efficiency is highly conditional on managerial prudence, sectoral characteristics, and institutional environments.

The second hypothesis of the study states that: H<sub>2</sub>: inventory turnover has a positive effect on market value (Tobin's Q) of listed Nigerian manufacturing firms. This hypothesis was tested using a random effects panel regression model. The result revealed a positive coefficient of 0.15 for Inventory Turnover, suggesting a direct relationship with Tobin's Q. However, the p-value associated with this estimate was 0.0940, indicating that the effect is not statistically significant at the 5% level, although it approaches marginal significance at the 10% threshold. Consequently, the null hypothesis is accepted at the 5% level, implying that Inventory Turnover does not have a statistically significant effect on market value in this context.

The insignificant result aligns with the findings of Egbunike et al. (2019) and Onyema and Chukwu (2020) who reported that inventory turnover had no statistically significant effect on either profitability or Tobin's Q in Nigerian manufacturing and food processing firms, respectively. These studies suggest that operational efficiency related to inventory may not directly influence market valuation. In contrast, the positive sign of the coefficient supports the assertions of Okafor and Nwankwo (2021), Ajibola et al. (2025), and Adebayo et al (2022) who found that higher inventory turnover was significantly associated with improved ROA and market value, particularly when supply chain systems were stable and inventory strategies well-aligned with production cycles.

The disparity in findings could be attributed to several contextual factors. While higher inventory turnover typically indicates effective inventory management and cost control, its impact on firm value may depend on the nature of the firm's production process, industry volatility, and the sensitivity of investors to operational metrics. In Nigeria, structural issues such as supply chain inefficiencies, logistics challenges, and inflation-induced stockpiling may obscure the expected positive effect of inventory turnover. Therefore, while the theoretical expectation and some empirical evidence support a positive relationship, the lack of significance in this study underscores the importance of sectoral and institutional contexts in shaping how operational metrics affect market valuation.

The third hypothesis of the study states that: H<sub>3</sub>: financial leverage has a positive effect on market value (Tobin's Q) of listed Nigerian manufacturing firms. To test this hypothesis, the study employed random effects panel regression. The regression output revealed a positive coefficient of 0.02 for Financial Leverage, with a p-value of 0.0300. This result is statistically significant at the 5% level, indicating that increases in Financial Leverage are significantly associated with higher market valuation. Therefore, the null hypothesis is rejected, and it is concluded that Financial Leverage has a significant positive effect on the market value of Nigerian manufacturing firms. This finding aligns with prior empirical evidence. Ibrahim et al. (2024) reported that financial leverage positively influenced gross profit margin and Tobin's Q in listed Nigerian industrial firms. Similarly, Afolabi et al. (2019) found that debt-equity ratios were significantly associated with improved performance metrics such as ROA and Tobin's Q. Additionally, Omodara and Olaoye (2023) established that financial

leverage, when optimally managed, enhances profitability and firm value through tax advantages and greater financial discipline. However, contrary views are presented by Ikwuo et al. (2025) who documented a significant negative relationship between high leverage and shareholder value in oil and gas firms. Okafor and Nwankwo (2021) also observed that excessive leverage in the cement sub-sector led to declines in ROE and Tobin's Q due to increased financial distress. Likewise, Igwe (2024) found that the overall debt ratio had a negative but statistically insignificant impact on market capitalization among ICT firms, pointing to the limitations of leverage in value creation under certain conditions.

The mixed empirical findings suggest that the effect of financial leverage on market value may depend heavily on the structure and efficiency of debt usage. In sectors with stable cash flows and access to low-cost debt, leverage may enhance firm value. In the Nigerian manufacturing sector, moderate use of debt appears to confer benefits through tax shields and the enforcement of managerial discipline. However, firms operating in more volatile or capital-intensive sectors may experience diminishing returns to leverage due to rising interest costs and default risks. These contextual differences explain why some studies support a positive effect while others reveal adverse or insignificant outcomes. Thus, the result from this study confirms that in a moderately leveraged and efficiently managed financial environment, leverage contributes positively to market valuation.

## **5. Conclusion**

This study set out to examine the relationship between free cash flow efficiency, inventory turnover, financial leverage, and market value—proxied by Tobin's Q—among listed manufacturing firms in Nigeria from 2012 to 2023. Using a quantitative panel data approach and random effects regression analysis, the findings reveal that free cash flow efficiency and inventory turnover do not significantly affect market value, although Inventory Turnover showed a weakly positive association. In contrast, Financial Leverage demonstrated a statistically significant and positive impact on Tobin's Q, indicating that firms with moderate levels of debt tend to achieve better market valuation. These results underscore the importance of effective financial structuring and strategic resource utilization in enhancing firm value within Nigeria's manufacturing sector.

Based on these findings, it is recommended that corporate financial managers adopt a cautious but strategic approach to leverage, utilizing debt in ways that optimize tax benefits without incurring excessive financial risk. Policymakers and industry regulators should also foster a more stable and accessible financial environment to support responsible borrowing. In addition, firms are encouraged to improve their internal governance and reinvestment frameworks to ensure that free cash flows are directed toward value-generating activities. Enhancing inventory management systems and supply chain reliability may further strengthen the potential of operational metrics like inventory turnover to contribute meaningfully to firm valuation. Ultimately, a balanced integration of financial discipline, operational efficiency, and market responsiveness is essential for sustaining competitive performance in Nigeria's manufacturing sector.

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