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FINANCIAL LEVERAGE AND ECONOMIC SUSTAINABILITY OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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ABSTRACT
The study examined the effect of financial leverage on the economic sustainability of listed industrial goods firms in Nigeria. The specific objective was to ascertain the effect of total debt to capital ratio, total debt to equity ratio, and total debt to asset ratio on the operating cashflow margin of listed industrial goods firms in Nigeria. Ex-post facto research design was used in the study. Thirteen listed industrial goods firms made up the population of the study from which a sample size of thirteen was selected using purposive sampling technique. Secondary data were sourced from the annual reports of the firms for thirteen, spanning 2012-2024. The descriptive analysis was done using measures of central tendency and dispersion. Test of hypotheses was carried out using panel estimated generalised least squares, which revealed the following: Total debt to capital ratio has a positive and significant effect on operating cashflow margin (β = 0.105262; p = 0.0334); Total debt to equity ratio has a positive and significant effect on operating cashflow margin (β = 0.045571; p = 0.0109); Total debt to asset ratio has a negative and significant effect on operating cashflow margin (β = -0.563339; p = 0.0021). In conclusion, when firms align their capital structure strategically, debt can become a tool for boosting operational performance and maintaining long-term viability. The study recommends that boards should approve financing policies that balance debt and equity in a way that sustains healthy leverage, enabling the firm to take advantage of the operational and tax benefits of debt without undermining shareholders' equity interests.

Key words: *Economic Sustainability, Financial Leverage, Total Debt to Capital Ratio, Total Debt to Equity Ratio, Total Debt to Asset Ratio.*

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INTRODUCTION

In the contemporary business environment, firms are constantly under pressure to adopt strategies that not only ensure profitability but also guarantee long-term survival and sustainable growth. The concept of sustainability in business is no longer restricted to environmental or social aspects but now extends to economic dimensions, which includes the efficient management of financial resources and even long-term financial viability (Florez-Jimenez, Lleo, Danvila-del-Valle & Sánchez-Marín, 2024). Financial leverage, which refers to the use of debt in the capital structure of firms, plays a significant role in shaping a company's ability to meet these goals (Aderemi, 2024). It affects a company's overall risk

profile, cost of capital, and ultimately its profitability and sustainability in the long run. In a country like Nigeria, where industrial goods firms play a crucial role in driving economic growth, understanding the effect of financial leverage on economic sustainability disclosure has become increasingly important. The industrial goods sector, which encompasses firms engaged in the production of raw materials and essential goods such as cement, steel, and chemicals, is critical to the country's infrastructure development and economic stability. However, the sector faces challenges, including fluctuating economic conditions, high inflation, and regulatory hurdles (Mazeli, Ejinkonye, Uloghobui & Onehi, 2024), which make the role of financial leverage a matter of great concern for investors, policymakers, and other stakeholders.

Adeyemi, Lawal and Olorede (2024) argued that a balanced leverage decision is crucial for any firm, as it impacts both the cost of capital and the overall financial health of the business. Leverage decisions that are too aggressive may expose firms to excessive financial risk, particularly in times of economic volatility, such as inflationary pressures, or during periods of low demand. Conversely, underleveraging may lead to missed growth opportunities, especially when a company fails to fully capitalize on its available debt financing options to fund strategic investments or expand its operations. The relevance of this balance has never been greater in today's dynamic business environment, where uncertainty, competition, and changing market demands compel firms to be more strategic about the use of debt. Moreover, businesses are increasingly under scrutiny not only for their financial performance but also for their economic sustainability, with a growing emphasis on responsible financial decision-making (Agu & Amedu, 2018). Achieving a balance in leverage can help firms maintain liquidity, enhance their operational efficiency, and ensure they remain financially stable, while also avoiding the detrimental effects of over-indebtedness that can compromise their long-term sustainability. In this context, the ability of industrial firms to strike this balance is of utmost importance to ensure they are well-positioned to thrive in an increasingly complex and competitive market environment.

The role of financial leverage in a firm's capital structure decision-making process is both multifaceted and impactful. Financial leverage refers to the use of debt to finance the firm's operations and investment opportunities, with the expectation that the return on the investment financed by debt will exceed the cost of that debt (Aderemi, 2024). In simple terms, it is the proportion of a firm's capital that comes from borrowing as opposed to equity financing. Financial leverage allows firms to increase their potential return on equity by using borrowed

funds to amplify the effects of earnings (Alaaraj, Mulla, John & Abdalla, 2024). However, this also comes with a downside risk: excessive leverage can lead to higher financial costs, increased vulnerability during economic downturns, and even financial distress or bankruptcy if not carefully managed. The main concepts surrounding financial leverage include the cost of debt, the debt-to-equity ratio, and the firm's risk profile. The decision to use leverage is typically guided by the trade-off theory, which posits that firms seek to balance the tax benefits of debt with the potential costs of financial distress. Another theory, the pecking order theory, suggests that firms prefer to use internal financing first and will resort to external debt only when internal funds are insufficient. In Nigeria, where the financial landscape is characterized by high interest rates, inflation, and regulatory challenges, these concepts are of particular significance for firms that rely heavily on capital to fund their operations, expansion, and innovation (Adeyemi, Lawal & Olorede, 2024).

Economic sustainability refers to the ability of a firm to achieve long-term financial stability, growth, and profitability while simultaneously contributing positively to the economy and society (Agu & Amedu, 2018). In the context of financial leverage, economic sustainability can be measured through various financial metrics that indicate a firm's ability to generate sufficient cash flow, maintain liquidity, and minimize risk. One of the key indicators used to assess a firm's economic sustainability is the operating cash flow margin, which measures the percentage of operating cash flows relative to total sales revenue (Rahman, 2024; Elahi, Ahmad, Shamas & Saleem, 2021). This ratio is critical because it shows how effectively a firm generates cash from its core operations, which is a direct reflection of its long-term viability and sustainability (Oranefo & Egbunike, 2023). Adequate cash flow margin is also considered an important proxy for a firm's economic sustainability disclosure as it highlights whether a firm can generate enough cash from its operations to meet its financial obligations, pay off debt, and reinvest in the business. In a country like Nigeria, where access to credit is often constrained and the economy is subject to volatility, firms with strong operating cash flows are more likely to be resilient in the face of economic shocks.

Financial leverage plays a pivotal role in shaping a firm's operating cash flow margin, and thus, its economic sustainability (Alaaraj, Mulla, John & Abdalla, 2024). The use of debt in a company's capital structure can enhance its ability to fund large-scale investments that have the potential to generate significant returns (Aderemi, 2024). For instance, when leveraged firms invest in new technologies, plant expansion, or operational improvements, they can increase their revenue generation capacity, thereby improving their operating cash flow

margins. However, while financial leverage can enhance growth, it also introduces risks that may erode the firm's economic sustainability if not carefully managed (Bappah, Mohammed, Saleh & Taiwo, 2024). Excessive debt obligations may lead to higher interest expenses, reducing the amount of cash available for reinvestment in the business or distribution to shareholders. High leverage may also increase a firm's vulnerability to external economic conditions, such as interest rate fluctuations or a downturn in demand for its products. As a result, firms with high levels of debt may experience lower operating cash flow margins (Oranefo & Egbunike, 2023), which could, in turn, impair their ability to finance future growth, pay off debt, or weather periods of financial distress.

The impact of financial leverage on economic sustainability can be viewed through a trade-off between the potential benefits and the associated risks. For industrial goods firms in Nigeria, where access to equity capital may be limited, leveraging can provide much-needed funds for expansion and innovation. However, the sustainability of such firms depends on their ability to generate sufficient cash flows from operations to service their debt obligations while maintaining profitability. Thus, financial leverage should be carefully calibrated to ensure that it supports long-term growth without compromising the firm's financial health (Alaaraj, Mulla, John & Abdalla, 2024). Furthermore, economic sustainability disclosures that reflect operating cash flow margins can provide important hints into how well industrial firms are managing their financial leverage and ensuring that their debt levels do not jeopardize their long-term financial stability. Firms that successfully manage this balance not only ensure their own economic sustainability but also contribute positively to the broader economy by maintaining employment, supporting local suppliers, and creating value for stakeholders (Aggreh, Nworie & Abiahu, 2022; Ikwuo, Nwite, Nworie & Nworie, 2025). Thus, understanding the effect of financial leverage on economic sustainability disclosure in Nigerian industrial goods firms is critical for both investors and policymakers. Given the challenges faced by firms in the industrial goods sector, including high financing costs, fluctuating economic conditions, and regulatory uncertainty, the ability to balance leverage is key to ensuring long-term success. The operating cash flow margin, as a proxy for economic sustainability, provides a clear picture of how well a firm is managing its financial leverage and its ability to sustain operations over time. This study will contribute useful hints into how financial leverage can be strategically employed to enhance the economic sustainability of firms in Nigeria's industrial goods sector.

Objectives

The main objective of the study is to examine the effect of financial leverage on the economic sustainability of listed industrial goods firms in Nigeria. The specific objectives are as follows:

1. To examine the effect of total debt to capital ratio on operating cashflow margin of listed industrial goods firms in Nigeria.
2. To determine the effect total debt to equity ratio on the operating cashflow margin of listed industrial goods firms in Nigeria.
3. To determine the effect total debt to asset ratio on the operating cashflow margin of listed industrial goods firms in Nigeria.

LITERATURE REVIEW

Financial Leverage

Financial leverage refers to the strategic use of borrowed funds—commonly known as debt—to finance the acquisition of assets or investments, with the aim of magnifying potential returns on equity (Aderemi, 2024). Essentially, a company employs leverage by taking on debt to increase the size of its investment portfolio beyond what would be possible through equity capital alone. The underlying principle is that by using debt, the company can use smaller amounts of its own capital to fund larger investments, thereby amplifying the potential return on the equity invested by shareholders (Alaaraj, Mulla, John & Abdalla, 2024). This leveraging effect is a key characteristic of financial strategy (Moronya, 2024), as it allows businesses to expand and grow more rapidly compared to relying solely on internal funds or equity financing (Nworie, Obi, Anaike & Uchechukwu-Obi, 2022). Kajal and Bansal (2024) defined firm financial leverage as a measure of how much a firm relies on borrowed capital (debt) as opposed to equity financing. By borrowing money, a company can invest in projects or assets that may yield returns greater than the cost of debt, thereby increasing shareholder value. Financial leverage is typically expressed as a ratio of debt to equity or as the debt-to-assets ratio (Suardi & Noor, 2015). While leverage can enhance returns in a favorable economic environment, it also introduces additional risk. High financial leverage means a company is more exposed to interest rate fluctuations and may struggle to meet its debt obligations during periods of financial difficulty or lower-than-expected revenues. Mohamed (2024) and Adeyemi, Lawal and Olorede (2024) found that the degree of financial leverage a company uses can significantly affect its profitability and volatility. If the returns on investments funded by debt exceed the cost of borrowing, leverage can lead to higher returns for equity holders. Conversely, if the returns are lower than the cost of debt, the company may

face financial distress or reduced profitability. Thus, the use of financial leverage is a balancing act—while it can magnify profits, it also increases the potential for losses, making it a key strategic decision for management (Moronya, 2024).

The optimal level of financial leverage varies across firms and industries, depending on factors such as business risk, market conditions, and the firm's ability to generate stable cash flows to service debt obligations. However, while leveraging can enhance returns, it also introduces significant risks, as it involves fixed financial obligations that must be repaid, often regardless of the business's performance (Olu-Akinola, Ojuade, Sulaiman, Bello-Olatunji & Ajiboye, 2024). If the investment financed by debt performs well, the returns can be much higher than they would have been without the use of leverage. Conversely, if the investments do not generate the anticipated returns, the company still must meet its debt obligations, potentially leading to financial distress or even insolvency. The concept of financial leverage is therefore inherently linked to risk management, with the company's ability to service debt being a critical factor in its financial stability.

A higher debt ratio indicates greater reliance on borrowed funds, which magnifies both the potential for higher returns and the exposure to risk (Aderemi, 2024). Companies in capital-intensive industries, such as real estate or manufacturing, often employ financial leverage more extensively, as the large upfront capital requirements make borrowing more attractive. However, the optimal level of leverage varies by industry, business model, and market conditions, and excessive use of debt can lead to financial instability. For this reason, investors, analysts, and company managers closely monitor leverage ratios to assess both the profitability potential and the risk profile of an organization. Thus, financial leverage is a powerful tool that companies use to increase the size of their investments and potentially enhance returns for shareholders (Alaaraj, Mulla, John & Abdalla, 2024). At the same time, it introduces significant financial risk, as the company must meet its debt obligations regardless of its operational performance. The prudent use of leverage requires careful management and a balance between maximizing returns and maintaining financial stability.

Total Debt to Capital Ratio

Total Debt to Capital Ratio is a financial metric used to assess the proportion of a company's total capital that is financed through debt (Hargrave, 2024). This ratio provides hint into the extent to which a firm relies on borrowed funds in relation to its overall capital structure. Capital, in this context, refers to the sum of total debt and shareholders' equity (Igwe, 2024).

By calculating the ratio of total debt to total capital, investors, analysts, and stakeholders can determine the financial leverage of a firm and evaluate its long-term financial stability. The ratio is especially significant in assessing the company's risk profile, since higher reliance on debt implies greater financial obligations that must be serviced regardless of the firm's profitability (CFO Angle, 2024).

Fundamentally, the Total Debt to Capital Ratio reflects a company's capital composition and its approach to financing operations and growth. It signifies the balance between debt and equity used by a business to fund its assets and sustain operations (Hargrave, 2024). A lower ratio typically suggests that a company is more conservatively financed, with a heavier reliance on equity. Conversely, a higher ratio indicates that a larger portion of capital comes from debt, which may enhance returns during profitable periods but also increases the risk during downturns or economic uncertainty (CFO Angle, 2024). Therefore, this ratio is a crucial measure in determining the financial risk embedded in a company's funding structure. The concept is particularly relevant in industries that require significant capital investment, such as manufacturing, utilities, or infrastructure. In such cases, the Total Debt to Capital Ratio becomes a tool for comparing financial leverage across firms within the same sector. Investors use it to gauge a company's ability to withstand fluctuations in earnings and cash flow. A company with a well-balanced ratio might be seen as having a sound capital structure, capable of meeting its debt obligations without overly compromising shareholder interests or liquidity (CFO Angle, 2024). Moreover, the Total Debt to Capital Ratio plays a critical role in credit analysis and lending decisions. Creditors often examine this ratio to determine whether a company has taken on excessive debt and whether it maintains sufficient equity to buffer against financial stress. The ratio also reflects management's financial policy regarding capital structure and risk appetite (Hargrave, 2024). A consistently high ratio may signal aggressive expansion or a heavy dependency on external financing, which might raise red flags for conservative investors or lenders. On the other hand, a more moderate ratio is often interpreted as a sign of prudent financial management and balanced growth strategy.

H_{01}: Total debt to capital ratio has no significant effect on operating cashflow margin of listed industrial goods firms in Nigeria.

Total Debt to Equity Ratio

The total debt to equity ratio is a financial metric that compares a company's total debt, including both short-term and long-term obligations, to its equity capital (Abubakar, 2021). This ratio serves as a comprehensive measure of a company's financial leverage, revealing the

proportion of its assets that are financed through borrowed funds versus owners' equity (Obia, 2020). Total debt includes all forms of debt, such as loans, bonds, lines of credit, and other liabilities, which can be either due within one year or over a longer term. The equity component represents the shareholders' stake in the company, which includes common equity, preferred equity, and retained earnings. By comparing these two elements, the total debt to equity ratio provides hint into the overall financial structure and risk exposure of a business (Oboro & Peter, 2021).

A higher total debt to equity ratio indicates that a company is more heavily reliant on debt financing, which increases its financial leverage (Suardi & Noor, 2015) and potential return on equity. However, it also raises the company's exposure to risks, as the company must meet its debt obligations regardless of its financial performance. If a company has a high level of total debt, it could face difficulty in meeting debt repayments during periods of financial stress or economic downturns, especially if its earnings or cash flow are insufficient to cover interest and principal payments. Conversely, a lower ratio suggests that the company is more conservatively financed, relying more on equity capital and retaining more financial flexibility. The total debt to equity ratio is a critical metric for assessing a company's overall financial health and risk profile (Obia, 2020). Companies in industries that require substantial capital investment, such as energy, real estate, or manufacturing, often have higher debt ratios due to the large amounts of capital needed to fund their operations and expansion. These companies may choose to use debt to reduce the dilution of ownership and maintain control over decision-making. On the other hand, businesses in sectors with more volatile revenue streams or shorter-term investment horizons, such as technology or consumer goods, may prefer to maintain lower levels of debt to minimize financial risk. Thus, the total debt to equity ratio is an essential tool for understanding the overall leverage of a company (Abubakar, 2021). It compares the total amount of debt the company has to its equity capital, giving investors and analysts a clear view of the company's reliance on debt financing. While higher leverage can enhance returns, it also increases financial risk, and the ratio helps to balance the benefits and risks of using borrowed funds in a company's capital structure.

H_{02}: Total debt to equity ratio has no significant effect on the operating cashflow margin of listed industrial goods firms in Nigeria.

Total Debt to Asset Ratio

The Total Debt to Asset Ratio is a comprehensive financial ratio that compares a company's total debt—both short-term and long-term—against its total assets (Farah, Amin & Pramudianto, 2021). This ratio provides a clear picture of the overall leverage of a firm, reflecting how much of the company's asset base is financed by debt (Oboro & Peter, 2021). Total debt includes all liabilities, from short-term loans and accounts payable to long-term bonds and mortgages, while total assets encompass everything the company owns, including cash, inventories, property, and equipment. By assessing the proportion of a firm's total debt in relation to its total assets, the Total Debt to Asset Ratio offers a measure of financial risk and helps investors and analysts gauge the firm's debt burden (Moronya, 2024).

A high Total Debt to Asset Ratio indicates that a significant portion of the firm's assets is financed through debt (Oboro & Peter, 2021), which increases the company's leverage. This can be a sign of aggressive growth or expansion strategies, particularly in capital-intensive industries where borrowing is necessary to fund large projects or acquisitions. However, a higher ratio also raises concerns about the company's ability to service its debt obligations, especially in times of economic downturn or if its cash flows are insufficient. The more a company relies on debt, the greater the potential risks it faces from interest rate fluctuations, economic cycles, or changes in market conditions that could affect its ability to repay its obligations. Conversely, a lower Total Debt to Asset Ratio suggests that the firm is more conservative in its financing (Farah, Amin & Pramudianto, 2021), relying less on debt and more on equity or internal resources to fund its operations and investments. While this can be a sign of financial stability and lower risk, it may also indicate that the firm is not fully utilizing available financial leverage to drive growth or maximize returns for shareholders. The optimal level of this ratio varies by industry and company strategy. Some sectors, such as real estate or heavy manufacturing, may naturally have higher ratios due to the capital-intensive nature of their operations, while other sectors, like technology, might maintain lower ratios to preserve financial flexibility.

The Total Debt to Asset Ratio is crucial for both lenders and investors as it reflects the firm's overall financial risk. It also serves as a tool for assessing the company's creditworthiness and its ability to meet debt obligations. Investors typically prefer companies with a balanced ratio, as it suggests prudent financial management, but the ideal ratio will depend on the firm's business model, industry norms, and risk appetite. A thorough analysis of this ratio over time,

along with other related financial metrics, can provide useful hints into a firm's ability to maintain sustainable operations while managing debt effectively.

H_{03}: Total debt to asset ratio has no significant effect on the operating cashflow margin of listed industrial goods firms in Nigeria.

Economic Sustainability Disclosure

Economic Sustainability Disclosure refers to reporting a firm's capacity to maintain or enhance its economic performance over the long term while balancing the efficient use of resources, managing risks, and ensuring environmental, social, and financial stability (Agu & Amedu, 2018). It discloses firm's ability to achieve consistent growth and profitability without compromising the ability of future generations to meet their own economic needs (Al-Qudah & Houcine, 2024). This concept is closely tied to the principles of sustainable development, where firms focus not only on financial profits but also on the broader impact their operations have on the environment, society, and the economy. Economic sustainability emphasizes the importance of long-term planning, resource management, and risk mitigation to create lasting value for all stakeholders. For a firm to be economically sustainable, it must demonstrate resilience to external shocks and market fluctuations, such as economic downturns, regulatory changes, or supply chain disruptions. This requires robust risk management strategies, diversified revenue streams, and a forward-looking approach to business strategy. Firms that achieve economic sustainability often focus on creating value that transcends immediate financial gain, seeking to build lasting relationships with customers, employees, suppliers, and communities (Nworie & Aniefuna, 2024). This could include adopting business practices that promote environmental conservation, social responsibility, and ethical governance while ensuring financial viability.

Economic sustainability also involves effectively managing resources, which includes optimizing the use of capital, labor, energy, and raw materials (Agu & Amedu, 2018). Firms with sustainable economic models invest in innovations that reduce waste, improve efficiency, and reduce the long-term environmental footprint of their operations. These companies also prioritize the well-being of their employees and local communities, recognizing that a healthy, engaged workforce and strong community ties are critical to long-term success. Moreover, an economically sustainable firm tends to have a strategic focus on diversification, whether through expanding into new markets, developing new products or services, or investing in technology to remain competitive in an ever-evolving marketplace. In practical terms, firms that prioritize economic sustainability may find that their operations

become more resilient to economic volatility, as they are better positioned to adapt to changing market conditions. They are also more likely to attract investors, customers, and talent who share similar values and are interested in long-term growth rather than short-term gains (Agu & Amedu, 2018). In this way, economic sustainability serves not only as a guide for responsible business practice but also as a strategic framework for ensuring long-term success in an increasingly complex and interconnected world.

Operating Cashflow Margin

The Operating Cashflow Margin is a financial ratio that measures the proportion of a firm's cash flow from operating activities relative to its total revenue (Rahman, 2024). Operating Cashflow Margin could indicate that the company is or is not struggling to generate cash from its operations, which may signal operational stability or inefficiencies. A consistently low margin may be a red flag for investors and creditors, as it could suggest the company's inability to sustain operations or fulfill financial obligations without resorting to debt or other external sources of funding. This can be particularly concerning for businesses that rely on high volumes of sales to generate cash but face challenges in managing their working capital effectively. The Operating Cashflow is a key performance indicator for investors because it offers hint on the firm's operational efficiency and long-term viability (Elahi, Ahmad, Shamas & Saleem, 2021). Firms with a high margin are often viewed as financially stable and well-managed, while those with low margins may need to implement improvements in their operations to enhance profitability and cash flow generation. For industries with thin profit margins, such as retail or hospitality, this ratio is especially important, as firms in these sectors often operate with high volumes but low profit per unit.

Theoretical Review

The Trade-Off Theory of Capital Structure was first formally introduced by Franco Modigliani and Merton Miller in their groundbreaking work in 1958 (Ahmadimousaabad, Bajuri, Jahanzeb, Karami & Rehman, 2013). While Modigliani and Miller's initial Capital Structure Irrelevance Theorem suggested that in perfect markets, a firm's value remains unaffected by its debt or equity financing choices, it was later amended in 1963 to account for real-world frictions such as taxes and bankruptcy costs. This refined version of the theory, known as the Trade-Off Theory, assumes that firms seek to find an optimal capital structure by balancing the benefits of debt—such as tax shields from interest payments—against the costs of debt, which include financial distress costs and bankruptcy risks. This trade-off

between the tax advantages and the costs of debt forms the foundation of the theory (Khoa & Thai, 2021).

The central postulate of the Trade-Off Theory is that firms strive to achieve an optimal level of debt financing that maximizes their overall value (Serrasqueiro & Caetano, 2015). According to the theory, the use of debt can provide certain advantages, most notably the tax shield that arises from the deductibility of interest payments, which lowers a firm's effective tax rate and increases its profitability. However, the theory also acknowledges that as a firm increases its debt level, the risk of financial distress rises, which can lead to bankruptcy or costly restructuring. Therefore, the Trade-Off Theory suggests that there is a point at which the marginal benefit of debt (in terms of tax shield) equals the marginal cost of debt (in terms of financial distress), and this point determines the optimal capital structure. At this optimal level, the firm maximizes its value while minimizing the risks associated with excessive leverage. Despite its usefulness, the Trade-Off Theory has notable limitations. It assumes that firms can precisely quantify the costs and benefits of debt to determine an optimal capital structure, which is often unrealistic in practice. Market imperfections, such as information asymmetry and fluctuating economic conditions, can hinder accurate assessments. Additionally, the theory overlooks behavioral aspects of decision-making, such as managerial risk aversion and preference for internal financing. In reality, however, many firms do not adjust their capital structure in line with the theory's predictions, suggesting that factors beyond tax benefits and bankruptcy costs significantly influence financing choices.

The Trade-Off Theory is highly relevant to the topic of the effect of financial leverage on the economic sustainability of listed industrial goods firms in Nigeria because it provides a useful framework for understanding how firms balance debt and equity to maintain economic sustainability. In the context of Nigerian industrial goods firms, the theory can help explain how these firms use financial leverage to achieve growth and profitability while managing the risks of financial distress. Given that the industrial goods sector in Nigeria may face volatile market conditions, fluctuating interest rates, and economic instability (Ejedegba, 2023), firms in this sector must carefully weigh the trade-offs between using debts to finance their operations and investments. The theory thus supports an analysis of how various debt-to-equity ratios affect operating cash flow margins, and by extension, the firms' liquidity and long-term viability. The Trade-Off Theory provides a lens through which to examine whether the Nigerian industrial goods firms are striking the right balance between leveraging debt to

fuel growth and maintaining enough financial flexibility to weather potential economic downturns or other financial challenges.

Empirical Review

Aderemi (2024) examined the effect of leverage on the financial performance of quoted consumer goods firms in Nigeria. The study analyzed a sample of 11 firms using secondary data sourced from published financial statements on the Nigeria Exchange Group (NGX) over an eight-year period (2015–2022). Leverage was measured using Long Term Debt Ratio (LTDR), Short Term Debt Ratio (STDR), and Interest Coverage Ratio (INCOV), while financial performance was measured by Return on Equity (ROE). Descriptive statistics, correlation, Hausman Test, and panel regression analysis were employed using E-Views 10 to analyze the data. The Hausman Test was used to determine the best estimator between fixed and random effects regression. The study found that Long Term Debt Ratio had a positive and significant effect on the financial performance of quoted consumer goods firms in Nigeria. In contrast, Short Term Debt Ratio and Interest Coverage Ratio had positive but insignificant effects. The study concluded that leverage significantly affects the financial performance of quoted consumer goods firms in Nigeria and recommended that firms adopt an optimal form of leverage to achieve positive financial outcomes.

Adeyemi, Lawal and Olorede (2024) examined the effect of financial leverage on the sustainable growth of listed conglomerate companies in Nigeria over a period of twenty-three years (2000 to 2022). Secondary data from annual reports and accounts of sampled firms were analyzed using descriptive statistics, correlation, and fixed effect regression techniques. The fixed effect analysis revealed that financial leverage negatively and significantly impact sustainable growth. The study recommended that management continue to sustain and enhance their positive corporate attributes to support sustainable growth.

Alaaraj, Mulla, John, and Abdalla (2024) examined the impact of leverage ratio and current assets on the financial performance of Iraqi listed banks. The study utilized panel data from 2012 to 2022, sourced from various portals and analyzed using SPSS. Canonical correlations and weighted linear regression were applied to test the hypotheses. The results indicated that current assets have a significant impact on both Return on Assets (ROA) and Return on Equity (ROE), likely due to their role in maintaining liquidity. Leverage was found to have an impact on ROA but had an insignificant effect on ROE. The study suggests that policymakers should provide incentives for banks to issue debt securities to enhance financial performance.

Bappah, Mohammed, Saleh, and Taiwo (2024) investigated the effect of capital structure on the financial performance of oil and gas firms listed on the Nigerian Exchange Group from 2012 to 2021. The study adopted an ex-post facto research design, using data extracted from the annual reports of the sampled oil and gas firms. Descriptive statistics were used for data analysis, and hypotheses were tested using a multiple regression model. The study included all 13 oil and gas companies listed on the Nigerian Exchange Group, with a sample of eight companies selected using a criterion sampling technique. The results showed that capital structure, represented by debt ratio and equity ratio, positively and significantly impacts financial performance. However, the debt-to-equity ratio was found to negatively and significantly affect the financial performance of listed oil and gas firms in Nigeria.

Mohamed (2024) examined the impact of leverage on the financial performance of Tunisian quoted firms. The study utilized a sample of 30 companies listed on the Tunisian Stock Exchange over the period from 2016 to 2021. A panel static model was employed to analyze the data, as panel data can account for both common and individual behaviors across the firms. The findings indicated that leverage has a positive impact on Return on Assets (ROA), but a negative impact on Return on Equity (ROE).

Moronya (2024) investigated the impact of financial leverage decisions on the financial performance of Microfinance Institutions (MFIs) in Kenya, with a specific focus on the moderating role of company size. The study aimed to examine how firm size influences the relationship between financial leverage options and the performance of Kenyan MFIs, as well as the effects of various financial leverage components—such as debt to equity, debt to capital, debt to asset, and debt to EBITDA ratios—on MFI performance. The research was grounded in a positivist philosophy and guided by the Modigliani and Miller Theory. The sample size consisted of thirteen microfinance banks within a longitudinal study conducted in Kenya from 2011 to 2020, targeting a population of 53 MFIs. Secondary data was collected using data collection sheets, and descriptive statistical techniques were used to analyze the data. SPSS version 22 was employed for data analysis, which included the use of tables, frequencies, and graphs for presentation. Inferential statistical methods, including case counts, maximum, minimum, means, and standard deviation, were also applied. ANOVA procedures were used to test hypotheses and determine the study's significance level, while Pearson's product moment correlation coefficient evaluated the strength of the relationship between variables. A trend analysis on the MFIs was conducted to explore the relationship between

study variables, followed by a hierarchical regression panel data model to determine the moderating effect of firm size on the relationship between the independent and dependent variables. The study's findings revealed that while the debt to capital and debt to EBITDA ratios had a weak but positive and statistically significant relationship with MFI performance in Kenya, the debt to equity and debt to asset ratios had a moderately positive and statistically significant relationship with MFI performance. Additionally, firm size was found to statistically moderate the relationship between financial leverage options and MFI performance in Kenya. The study concluded that financial leverage decisions significantly affect performance, rejecting all null hypotheses, with firm size acting as a moderating variable.

Olu-Akinola, Ojuade, Sulaiman, Bello-Olatunji, and Ajiboye (2024) analyzed the impact of leverage on the financial performance of consumer goods firms listed in Nigeria. The study sample comprised 20 firms over the period from 2013 to 2021. Data was analyzed using panel regression and correlation analysis. The findings indicated that leverage negatively and significantly impacts Return on Equity (ROE), as evidenced by t-statistics and p-values of -3.66 and 0.024, respectively. Additionally, managerial and foreign ownership structures were found to have a significant and positive influence on ROE, supported by t-statistics and p-values of 4.54, 14.66, and 0.000, 0.000, respectively. The study concluded that leverage, as well as foreign and managerial ownership structures, have the potential to enhance firm financial performance. Consequently, the study recommended the appropriate use of leverage and the inclusion of well-skilled individuals in the ownership structure of firms.

Olulu-Briggs (2024) assessed the impact of financial leverage, firm size, and profitability on the value of quoted insurance companies (QICs) in Nigeria over the period 2010-2022. Secondary time-series data were collected from unbiased annual reports of 20 QICs. The study employed unit root tests, Pedroni cointegration, and Generalized Method of Moments (GMM) techniques at the 5% significance level. The unit root test indicated that all variables were integrated at the first difference, leading to the use of Pedroni cointegration, which confirmed the absence of a long-run relationship among the variables. The GMM results revealed that long-term debt and firm size positively and significantly affect Tobin's Q ratio, while short-term debt and Return on Equity (ROE) also positively influence Tobin's Q ratio, although this effect was not significant. The study concluded that financial leverage and firm size are key determinants of firm value among QICs in Nigeria. Based on these findings, the study recommended the continued use of long-term debt and an increase in firm size to

accommodate more insurance businesses and enhance investor confidence. It also suggested that insurance companies engage in share buybacks when undervalued to stay competitive and create additional value for shareholders.

Sifullah, Shelly, Uddin, Tabassum, and Uddin (2024) examined the impact of leverage on the financial performance of pharmaceutical companies in Bangladesh. This study covers a data set of 24 companies, chosen based on their availability of data. The study sets 13 variables consisting of 3120 observations for the period of 10 years (2013 to 2022), which are processed using financial ratios and followed by previous literature. After that, the panel regression model was used to analyze the data to serve the study's purpose. The study, after analysis, finds that the debt-equity ratio had a significant impact on the financial performance of pharmaceutical companies as measured by EPS, which is adopted by pecking order theory. Additionally, the long-term debt ratio showed a significant impact on the profitability of the same companies. Besides the given findings, firm size had been a significant issue in leading the financial performance of pharmaceutical companies in Bangladesh.

Taibu (2024) examined the association between leverage and the financial performance of non-financial firms listed on the Nigerian Stock Exchange (NSE). The study utilized secondary data, collected from the annual reports and accounts of all the sampled financial service firms listed on the Nigerian Exchange Group covering the period of twelve years from 2011 to 2022. This study contributes to the existing pool of literature on the link between leverage and firms' financial performance. The study revealed that an increase (or decrease) in leverage increases return on equity and enhances the wealth of shareholders. The results also show an insignificantly positive relationship between financial leverage (debt-equity ratio) and return on capital employed. The study recommends that the government should create an enabling business environment so that businesses can thrive and thus increase shareholder returns, such as increasing tax relief, which will allow Nigerian companies to have enough profit after tax to retain earnings and improve internal investment.

Empirical studies link financial leverage to performance measures such as profitability, sustainability, and firm value, with Aderemi (2024) and Olulu-Briggs (2024) finding significant effects of long-term debt ratios on Nigerian consumer goods and insurance firms, Adeyemi, Lawal, and Olorede (2024) reporting a negative link with sustainable growth in conglomerates, and Anozie, Muritala, Ininm, and Yisau (2023) as well as Taibu (2024) showing impacts on firm performance and shareholder wealth in oil and gas and non-financial

sectors; similarly, Bappah, Mohammed, Saleh, and Taiwo (2024) and Olaniyi, Abiloro, and Olaniyan (2022) note significant, often negative, effects of debt-to-equity ratios on profitability. However, research on how specific leverage ratios—debt-to-capital, long-term debt-to-asset, and total debt-to-equity—affect economic sustainability, particularly in Nigeria's industrial goods sector, is sparse, with Razaq, Alhassan, and Ame (2023) focusing mainly on profitability and firm value. Given sector-specific challenges such as financial instability, regulatory pressures, and operational risks, and the predominance of pre-2020 data, this study addresses both sectoral and temporal gaps by analyzing 2012–2024 data to assess leverage's effect on economic sustainability disclosures in Nigerian industrial goods firms during a period of regulatory shifts, economic crises, and rising sustainability reporting demands.

MATERIALS AND METHOD

The research adopted an ex-post facto research design, which is most suitable for examining the effect of financial leverage on the operating cash flow margin of listed industrial goods firms in Nigeria. *Ex-post facto* designs are used when the researcher does not have control over the independent variables (Nworie, Okafor & John-Akamelu, 2022), as is the case in this study, where the data on financial leverage and economic sustainability disclosure are historical and beyond the researcher's influence. This approach is valuable for investigating relationships between variables where the cause and effect are not manipulated but are instead inferred from existing data. The population for this study comprised all the industrial goods firms listed on the Nigerian Exchange Group (NGX) as of 2024. As of December 31, 2024, there were 13 such firms actively traded on the NGX. These firms represent the entire population of industrial goods firms in Nigeria's capital market. The specific firms are listed below:

1. Austin Laz & Company Plc.
2. Berger Paints Plc.
3. Beta Glass Plc.
4. Bua Cement Plc.
5. Cap Plc.
6. Cutix Plc.
7. Dangote Cement Plc.
8. Greif Nigeria Plc.
9. Lafarge Africa Plc.
10. Meyer Plc.
11. Notore Chemical Industries Plc.
12. Premier Paints Plc.
13. Tripple Gee & Company Plc.

Source: Nigerian Exchange Group (2023)

A purposive sampling technique was used to select a sample of firms for the study. This technique is suitable because the sample needed to meet specific criteria, such as being listed on the NGX from 2012 and having available financial data for the period 2012–2024. Two firms, Bua Cement and Notore Chemical Industries Plc., were excluded because they were listed in 2020 and 2018, respectively, that is, after 2014. This makes their financial data for the entire period under study (2012 to 2024) not to be available. In addition, Greif Plc and Premier Paints Plc. were yet to upload their 2023 and 2024 annual report to their website and to the website of the Nigerian Exchange Group as at May 2, 2025. Consequently, the final sample included nine firms that met the criteria, as shown below:

1. Austin Laz & Company Plc.
2. Berger Paints Plc.
3. Beta Glass Plc.
4. Cap Plc.
5. Cutix Plc.
6. Dangote Cement Plc.
7. Lafarge Africa Plc.
8. Meyer Plc.
9. Tripple Gee & Company Plc.

This study used secondary data for the analysis. Data were collected from the audited financial statements of the selected firms over the period 2012 to 2024 (13years). The financial statements are publicly available through the Nigerian Exchange Group (NGX) and other regulatory bodies in Nigeria. The study examines the effect of financial leverage (independent variable) on economic sustainability disclosure (dependent variable). The following variables were measured and operationalized:

Table 1 Measurement of Variables

Variable	**Measurement**	**Source**
Operating Cash Flow Margin	Net Operating cash flow/Net revenue	Rahman, 2024
Total Debt to Capital Ratio (TDCR)	Total debt/Capital Employed	Hargrave, 2024
Total Debt to Equity Ratio (TDER)	Total debt/Total equity	Oktrima & Sutrisno, 2023
Total Debt to Asset Ratio (TDAR)	Total debt/Total assets	Farah, Amin & Pramudianto, 2021

Source: Author's Compilation (2025)

To test the hypotheses of the study, a linear regression model was adapted from the study by Abubakar (2020) whose model is:

$FPERF_{it} = \alpha_0 + \beta_1 STDR_{it} + \beta_2 LTDR_{it} + \beta_3 TDR_{it} + \beta_4 TDER_{it} + C_{it} + \mu_{it}$ ..... Eqn 1.

Where:

FPERF = financial performance (ROE, ROA & Tobin's Q),

α_0 = intercept,

β_1= coefficient

STDR = short-term debt ratio,

β_2 = coefficient of long-term debt ratio,

LTDR = long-term debt ratio,

β_3 = coefficient of total-debt ratio,

TDR = total-debt ratio,

β_4 = coefficient of total-debt equity ratio,

TDER = total-debt equity ratio,

subscript i and t refer to each bank i in year t,

C = unit-specific error component,

μ = the remaining error component.

The above model was modified thus:

$OCM_{it} = \alpha_0 + \beta_1 (TDCR)_{it} + \beta_2 (TDER)_{it} + \beta_3 (TDAR)_{it} + \epsilon_{it}$ ..... Eqn 2

Where:

OCMit = Operating Cash Flow Margin for firm i at time t

TDCRit = Total Debt to Capital Ratio for firm i at time t

TDERit = Total Debt to Equity Ratio for firm i at time t

TDARit = Total Debt to Asset Ratio for firm i at time t

α = Constant term

$\beta 1, \beta 2, \beta 3$ = Regression coefficients for each financial leverage proxy ratio

ϵ_{it} = Error term

i = Firm

t = Time (year)

Descriptive statistics included a measure of central tendency (mean) and measures of variability (standard deviation, range), which helped summarize the data and identify trends and patterns across the firms over time. These statistics provided an initial understanding of the distribution and characteristics of the variables under study. Panel estimated generalised

least squares regression was used to test the hypotheses and assess the nexus between financial leverage and operating cash flow margin. This panel data regression approach is suitable for this study because it accounts for both cross-sectional and time-series data, allowing the researcher to examine the dynamics of financial leverage and firm performance over time while controlling for individual heterogeneity across firms.

ANALYSES AND RESULTS DISCUSSION

Descriptive Analysis

Table 2 Descriptive Statistics

	OCM	TDCR	TDER	TDAR
Mean	0.188420	0.711802	1.022927	0.419759
Median	0.159584	0.566845	0.687985	0.407578
Maximum	2.059169	4.119466	6.872346	0.872973
Minimum	-2.828987	0.029090	0.029090	0.028268
Std. Dev.	0.414123	0.538034	1.079684	0.186673
Skewness	-1.995491	2.685453	2.860467	-0.006250
Kurtosis	30.19774	16.11546	12.79214	3.112736
Jarque-Bera	3683.769	979.2013	626.9988	0.062720
Probability	0.000000	0.000000	0.000000	0.969127
Sum	22.04515	83.28085	119.6824	49.11186
Sum Sq. Dev.	19.89379	33.57977	135.2233	4.042239
Observations	117	117	117	117

Source: E-Views 10.0 Descriptive Output, 2024

Table 2 shows that the mean Operating Cash Flow Margin (OCM) is 0.1884, meaning Nigerian industrial goods firms generated about 18.84% of revenue as operating cash flow (2012–2024). A negative skewness (-1.9955) and high kurtosis (30.1977) indicate left skew and extreme outliers, with a wide range (-2.8290 to 2.0592) and non-normality (JB p=0.0000). The mean Total Debt to Capital Ratio (TDCR) is 0.7118, showing strong debt reliance, with right skew (2.6855), heavy tails (kurtosis 16.1155), extreme values (0.0291 to 4.1195), and non-normality. The mean Total Debt to Equity Ratio (TDER) is 1.0229, implying debt slightly exceeds equity; right skew (2.8605), high kurtosis (12.7921), large spread (0.0291 to 6.8723), and non-normality are evident. The Long-term Debt to Asset Ratio (LTDAR) averages 0.1222, reflecting low long-term debt use, with moderate right skew (1.6763), peakedness (kurtosis 5.5118), a range of 0.0000–0.5017, and non-normality. Finally, the Total Debt to Asset Ratio (TDAR) averages 0.4198, is nearly symmetrical (skew -0.0063), has moderate variation (0.0283–0.8730), and is the only variable approximating normality (kurtosis 3.1127, JB p=0.9691).

Test of Hypotheses

Table 3 Test of Hypotheses

Dependent Variable: OCM
Method: Panel EGLS (Cross-section SUR)
Date: 08/05/25 Time: 06:50
Sample: 2012 2024
Periods included: 13
Cross-sections included: 9
Total panel (balanced) observations: 117
Linear estimation after one-step weighting matrix
Cross-section SUR (PCSE) standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TDCR	0.105262	0.048884	2.153289	0.0334
TDER	0.045571	0.017596	2.589870	0.0109
TDAR	-0.563339	0.178756	-3.151432	0.0021
C	0.288700	0.043115	6.696079	0.0000
	Weighted Statistics			
R-squared	0.068765	Mean dependent var		1.309038
Adjusted R-squared	0.044042	S.D. dependent var		1.945497
S.E. of regression	0.973902	Sum squared resid		107.1787
F-statistic	2.781421	Durbin-Watson stat		2.074013
Prob(F-statistic)	0.044271			

Source: Eviews 10 Output (2025)

Table 3 presents the results of the Panel EGLS (Cross-section SUR) estimation for the effect of leverage ratios on Operating Cashflow Margin (OCM) for listed industrial goods firms in Nigeria between 2012 and 2024. The Adjusted R-squared value of 0.044042 indicates that approximately 4.4% of the variation in OCM is explained by the leverage variables in the model. While this may appear modest, it is not unusual in firm-level panel data where numerous unobserved factors affect financial performance. The Durbin-Watson statistic of 2.074013 is close to the ideal value of 2.0, suggesting no evidence of autocorrelation in the residuals. The Prob(F-statistic) of 0.044271 is less than 0.05, meaning that the model is statistically significant at the 5% level overall. This confirms that, jointly, the leverage variables included in the model significantly affect OCM.

The constant term (C) has a coefficient of 0.288700 with a p-value of 0.0000, which is significant at the 5% level. This implies that when all leverage variables are zero, the expected OCM is 28.87%. This constant captures the baseline operating cashflow margin attributable

to other firm-specific and macroeconomic factors not captured by the leverage ratios in the model.

Hypotheses One

H_0: Total debt to capital ratio has no significant effect on operating cashflow margin of listed industrial goods firms in Nigeria.

H_i: Total debt to capital ratio has significant effect on operating cashflow margin of listed industrial goods firms in Nigeria.

The coefficient for TDCR is 0.105262 (p = 0.0334), which is significant at the 5% level. This means that a 1-unit increase in TDCR (i.e., a 100% increase in the proportion of debt in total capital) is associated with a 0.1053 increase in OCM, holding other variables constant. In marginal terms, a 0.1 increase in TDCR (10 percentage points more debt in capital) would raise OCM by roughly 0.0105 (about 1.05 percentage points). Since the effect is positive and significant, we reject H01 and conclude that TDCR has a statistically significant positive effect on OCM.

This suggests that a higher proportion of debt in the capital structure, when compared to total financing, can enhance cashflow generation for listed industrial goods firms in Nigeria. This may be due to the tax shield benefits associated with debt financing, where interest payments are tax deductible, thereby improving net operating cashflows. In the industrial goods sector, which is typically capital-intensive, access to debt allows firms to finance large-scale production assets and working capital requirements without immediate dilution of ownership. Furthermore, when debt is used efficiently, it can fund operational improvements that directly increase operating cash inflows, explaining the positive marginal effect observed in the study. This finding aligns with Aderemi (2024) who reported that financial leverage can enhance firm performance through tax advantages. Igwe (2024) also found that TDCR positively influences market capitalization, indicating that markets may reward firms with optimally structured debt. Similarly, Moronya (2024) reported that debt-to-capital ratios positively affected performance in Kenyan firms, reinforcing the idea that productive debt use strengthens operational outcomes. However, Ezirim, Ezirim, and Momodu (2017) found a negative correlation between leverage and firm value, suggesting that in sectors with weaker governance or in volatile economic contexts, the benefits of debt may be outweighed by repayment risks, highlighting the importance of sector-specific dynamics in interpreting leverage effects.

Hypotheses Two

H_0: Total debt to equity ratio has no significant effect on the operating cashflow margin of listed industrial goods firms in Nigeria.

H_i: Total debt to equity ratio has significant effect on the operating cashflow margin of listed industrial goods firms in Nigeria.

The coefficient for TDER is 0.045571 (p = 0.0109), also significant at the 5% level. This implies that a 1-unit increase in TDER (where total debt equals equity) would increase OCM by 0.0456. In marginal terms, a 0.1 increase in TDER (10% more debt relative to equity) would raise OCM by approximately 0.00456 (0.456 percentage points). Since the effect is positive and significant, we reject H02 and conclude that TDER significantly and positively affects OCM.

This finding indicates that, for listed industrial goods firms, an increased reliance on debt relative to equity is associated with stronger operating cashflow performance. This could occur when debt-financed investments generate returns above the cost of borrowing, thereby improving cash-based profitability. Since equity financing often involves higher return expectations from shareholders, moderate increases in debt relative to equity can relieve firms from excessive dividend obligations and allow reinvestment of retained earnings into operational capacity. In this context, debt may serve as a cost-effective financing option that supports liquidity while enabling firms to capture growth opportunities. This result is consistent with Taibu (2024), who found that a higher debt-to-equity ratio improved ROE, suggesting that under certain conditions, debt can be a value-enhancing tool. However, several studies disagree with this outcome. Adeyemi et al. (2024) and Bappah et al. (2024) reported that TDER negatively affects performance, indicating that excessive leverage relative to equity can strain profitability. Abubakar (2020) and Oboro and Peter (2021) also found that high TDER reduces ROE and operational outcomes, while Putri and Rahyuda (2020) confirmed that debt-heavy structures can erode firm value and profitability. The divergence between these studies and the current finding may be explained by differences in debt management efficiency, industry capital intensity, and the ability of Nigerian industrial goods firms to generate stable cash inflows despite higher leverage.

Hypotheses Three

H_0: Total debt to asset ratio has no significant effect on the operating cashflow margin of listed industrial goods firms in Nigeria.

H_i: Total debt to asset ratio has significant effect on the operating cashflow margin of listed industrial goods firms in Nigeria.

The coefficient for TDAR is -0.563339 (p = 0.0021), which is significant at the 5% level. This means a 1-unit increase in TDAR (where debt equals total assets) is associated with a 0.5633 decrease in OCM. In marginal terms, a 0.1 increase in TDAR (10 percentage points more debt relative to total assets) would reduce OCM by approximately 0.05633 (5.63 percentage points). Since the effect is negative and significant, we reject H03 and conclude that TDAR has a significant adverse effect on OCM.

This implies that when debt grows disproportionately relative to total assets, operational liquidity is weakened. This could be because high TDAR values indicate a substantial portion of assets financed by debt, leading to heavier interest obligations that reduce cash available for operations. In asset-intensive industries, excessive debt relative to assets may also signal financial risk, discouraging operational expansion and diverting resources toward debt servicing. This financial strain can erode efficiency, especially if assets financed by debt do not generate sufficient returns to cover their costs, thereby diminishing operating cashflows. This finding is strongly supported by Nwafor et al. (2022), who observed that TDAR negatively impacts profitability and firm performance, while Oranefo and Egbunike (2023) specifically found that capital gearing reduces operating cashflow in Nigerian firms. Enekwe et al. (2014) and Obia (2020) also reported that high debt ratios erode earnings potential, confirming the detrimental effect of excessive asset-based leverage. However, Ronic and Amadi (2021) found that TDAR positively affected firm value in some contexts, suggesting that when debt-financed assets are highly productive, the negative effect can be offset. In the case of Nigerian industrial goods firms, the predominantly negative impact found here may reflect limited capacity to generate high returns from debt-financed assets in the face of volatile economic conditions.

CONCLUSION AND RECOMMENDATIONS

The findings indicate that the structure of debt financing plays a nuanced role in shaping the operating cashflow margins of listed industrial goods firms in Nigeria. The positive effects of total debt to capital ratio and total debt to equity ratio suggest that, within certain configurations, debt can enhance operational liquidity and cash generation capacity. This may reflect the ability of firms to strategically leverage debt as a financial tool to fund operations and generate higher operating cashflows, possibly due to tax benefits of debt financing or the efficient allocation of borrowed funds. Conversely, the negative effect of total debt to asset ratio highlights the potential downside of excessive debt relative to asset holdings, where higher leverage at this level may strain operational efficiency and reduce cashflow margins. These results underscore the complex nature of debt utilisation in capital-intensive sectors like industrial goods, where both the scale and structure of debt matter. The divergent directions of the effects suggest that leverage can be beneficial when balanced against capital and equity, but becomes detrimental when it rises disproportionately to asset value. This implies that firm-level financing decisions interact with operational realities, such as asset turnover and fixed cost structures, influencing how debt impacts cashflow margins. The interplay between these ratios reflects how leverage effectiveness is contingent upon the firm's asset base and financing mix, rather than debt levels in isolation.

The statistical significance of all leverage variables also implies that debt-related decisions have a material and measurable influence on the core operational performance of firms in this sector. In a market environment characterised by fluctuating interest rates, inflationary pressures, and regulatory oversight, the composition of debt emerges as a critical determinant of operational cashflow resilience. These findings highlight that the way debt is distributed across capital structure components is central to explaining variations in operating cashflow margins, revealing that leverage is not simply a measure of financial risk but an active driver of operational outcomes.

Based on the findings made, the following recommednations were proferred:

a. **To the Chief Financial Officers (CFOs) of listed industrial goods firms:** Given that total debt to capital ratio has a positive and significant effect on operating cashflow margin, CFOs should strategically maintain an optimal proportion of debt in their capital structure, ensuring that debt is used as a productive source of financing to boost operational cashflows without creating repayment pressure that could offset its benefits.

b. **To the Boards of Directors of listed industrial goods firms:** Since total debt to equity ratio positively and significantly affects operating cashflow margin, boards should approve financing policies that balance debt and equity in a way that sustains healthy leverage, enabling the firm to take advantage of the operational and tax benefits of debt without undermining shareholders' equity interests.

c. **To the Risk Management Committees of listed industrial goods firms:** In light of the negative and significant effect of total debt to asset ratio on operating cashflow margin, these committees should closely monitor the proportion of debt relative to total assets and set internal thresholds to prevent excessive leverage that could weaken operational efficiency and erode cashflow margins.

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