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Cash Flow Management and Assets Growth of Listed Industrial Goods Firms in Nigeria

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Abstract
Cash flow management is crucial, as users of accounting information primarily focus on a company's cash management practices. However, despite the growing importance of managing cash flow activities, there has been insufficient attention given to the usefulness of cash flow statement information. In this regard, this study examined cash flow management effect on asset growth among listed industrial goods firms in Nigeria. Specifically, it evaluates how cash flow from operating, investing, financing activities and cash flow per share contribute to asset growth. Multi-Level Mixed Effect (MLME) regression analysis estimator was used to test the hypotheses. Adopting ex-post facto research design, this study evaluates a sample of fifteen industrial goods firms listed on the Nigerian Exchange Group, selected based on their continuous listing from 2018 to 2023 and the availability of their annual reports where data were sourced. The Descriptive and inferential statistical methods were used, with preliminary tests of normality and multicollinearity checks to guild the regression analysis. The results indicated that cash flow per share does not significantly influence asset growth, but the cash flow from operating, investing, and financing activities has positive influences on asset growth during the period under investigation. This study concludes that effectively managing investing, financing, and operating cash flow activities is essential for asset growth. Based on the findings, this study recommends that stakeholders including investors, management, and policymakers should prioritize strategies that enhance cash flow management. Industrial goods firms in Nigeria should focus on optimizing operational cash flow through improved revenue generation and cost management while leveraging financing opportunities to support asset growth. Additionally, prudent investment in productive assets should be given priority, which will further strengthen asset growth opportunities.

Keywords: Asset Growth, Cash Flow Management, Financing Activities, Investing Cash Flow, Operating Cash Flow.

1. Introduction

Financial performance evaluation remains a critical focus for all companies utilizing financial resources to embark on successful projects aimed at maximizing profit and wealth. In this regard, a business's economic prosperity relies heavily on efficient and effective cash management within and outside the organization (Liman & Mohammed, 2018). The cash flow statement plays a phenomenal role by enhancing decision-making efficiency and effectiveness, especially regarding financial planning, the firm's earning potential, and expenditures. It provides worthy perceptivity into a company's operating, investing, and financing activities, thereby aiding in optimal financial decision-making. The cash flow statement not only aids in assessing future cash flows and their uncertainties but also helps determine the market value of companies (Akbar, Shah, & Stark, 2011). The cash flow statement describes the movement of cash and its equivalents over time, as well as its effect on a company's cash management (Atrill & Mclaney, 2011; Kantudu & Umar, 2021). It also facilitates the evaluation of a company's liquidity by determining its ability to generate cash and meet short-term obligations (Rahman & Sharma, 2020). The firm's solvency, financial flexibility, and overall performance are highly dependent on its capability to create positive cash flows from operating, investing, and financing activities (Turcas, 2011). Cash flow

management is crucial, as users of accounting information primarily focus on a company's cash management practices (Thalya, 2023). Weak management of cash flow activities can lead to a divergence between management's and shareholders' interests (Ali et al. 2018; Thanh & Nguyen 2013; and Zhou et al. 2012).

Despite the importance of managing cash flows activities, there has been insufficient attention given to the usefulness of cash flow statement information (Barton, Hansen & Paunal, 2010; Kumar & Krishnan, 2008; Subramaniam & Venkatachalam, 2007). Prior related studies which have been conducted in developing countries, including Nigeria, are limited despite the essentiality of cash flow management. While some studies including Oyieko, Nyang'au, and Wafula (2017) document a positive relationship between operating cash flows and return on equity for Kenyan listed firms, most studies conducted using Nigerian data, have predominantly focused on return on total assets as a measure for firm performance (Ugo & Egbuhuzor, 2022; Rosemary et al. 2021; Frank and James 2014; Liman & Mohammed, 2018; Nwanyanwu, 2015; Adelegan, 2003). This study shifts the focus from short-term performance metrics, like return on total assets, to asset growth, a key long-term financial performance indicator. Growth performance study in relation to listed industrial goods firms in a developing country like Nigeria provides a more dynamic assessment of long-term performance sustainability. While financial performance metrics like return on assets and equity focus on short-term profitability (De Wet, & Du Toit, 2007) growth performance encompasses market expansion, production capacity, technological advancement, and employment generation which are critical indicators for industrial sector development (Jacobs, Droge, Vickery & Calantone, 2011). Therefore, given Nigeria's present evolving economic landscape, infrastructure deficits, and fluctuating business environment, growth performance analysis will help policymakers, investors, and firms understand resilience, scalability, and industry competitiveness beyond immediate financial gains, ultimately fostering industrialization and economic diversification.

Additionally, this study tests the variable of cash flow per share in relation to cash flow management, a rarely explored metric in prior related Nigerian studies. Notably, Profita (2016) highlights the importance of cash flow per share as a more accurate and less manipulable measure of the financial health of a company compared to earnings per share. Similarly, Gigler, Kanodia and Venugopalan, (2007) argued that cash flow per share is a more accurate and less manipulable measure of financial health than earnings per share because it is based on actual cash inflows and outflows, making it less susceptible to accounting manipulations and non-cash adjustments. Unlike earnings per share which can be distorted by accrual accounting and one-time gains or losses, cash flow per share provides a clearer reflection of a company's liquidity, operational strength, and ability to sustain growth and dividends without relying on external financing (Consler, Lepak & Havranek, 2011). Further, this study is motivated by the need to explore the industrial goods sector in Nigeria, a sector vital to the country's economic transformation (Oranefo & Egbunike, 2023). Little wonder why, National Bureau of Statistics (NBS, 2024) reckoned that in 2023, the industrial goods sector contributed around 32.58 percent to Nigeria's Gross Domestic Product (GDP). The findings from this study will inform stakeholders in designing economic policies for sustainable asset growth, guide investors in making informed investment decisions, assist government authorities in shaping policies that foster investor confidence, ultimately contributing to financial stability, investor confidence, and sustainable growth in Nigeria's industrial goods sector. Particularly, policymakers will be able to use insights from cash flow management to design economic policies that promote sustainable asset growth. Further, government authorities can implement supportive regulations that enhance transparency and efficiency in financial reporting, fostering investor confidence. By aligning corporate cash flow management strategies with national economic objectives,

the industrial goods sector will experience financial stability, increased investments, and long-term sustainable growth. The outcome of this study will also serve as a foundation for academia to further research. However, the specific objective of this study is to investigate the effect of four (4) key proxies of cash flow management to include: cash flow from operations, cash flow from investing, cash flow from financing, and cash flow per share, on asset growth in Nigeria.

2. Literature Review and Hypotheses Development

Investment Cash Flow and Asset Growth

Investment not only stimulates economic growth but also positively influences firm performance, as an increase in productive capacity enables the firm to make more goods or services, potentially leading to higher revenue and profitability. This, in turn, can contribute to asset growth, signaling value creation for shareholders. Additionally, when a firm generates plus cash flows from investments and uses these cash flows to meet the cost of capital, it further contributes to asset growth (Oktavianingsi, Safkaur & Sesa, 2021), reinforcing the role of investment in both firm-level and broader economic expansion. Soje, Adegboye, & Tanko (2024) and Etim, Daferighe, Enang, & Nyong (2022) showed that cash flow from investment activities had a positive significant effect on financial performance. Based on the foregoing argument, the first hypothesis is stated as follows:

H1: Investment Cashflow Management Significantly affects Asset Growth of Listed Industrial Goods Firms in Nigeria.

Operating Cash Flow and Asset Growth

Cash flows from operating activities show whether a company's daily operations generate or deplete cash, with negative net cash flows indicating that expenditures exceed revenue, while positive cash flows suggest profitability (Omag, 2016). Negative cash flows often push firms to seek external funding, such as debt or issuing stock, which increases interest expenses and bankruptcy risks (Frank & James, 2014). While growing firms may experience negative cash flows initially due to expanding inventory or fulfilling short-term obligations, they must eventually achieve positive cash flows to sustain operations. Conversely, positive cash flow, if driven by reduced spending rather than increased sales, can still lead to risks like liquidation if sales plummet (Lan, 2012). According to the agency theory, operating cash flow is crucial for aligning management and shareholder interests, as it signals efficient management of resources and enables dividend payments, boosting shareholder value and stock prices (Wu & Rao, 2017; Parast, Delkhak & Jamshidi, 2013). However, stakeholder theory emphasizes balancing the interests of various groups beyond shareholders, such as employees, customers, and the broader community. A singular focus on maximizing operating cash flow may lead to cost-cutting decisions, like layoffs or wage reductions that harm product quality, employee morale, and long-term firm performance (Turvey, Lake, Van Duren & Sparling, 2000). Etim, Daferighe, Enang, & Nyong (2022) and Ugwu & Nwachukwu (2024) documented a positive result of cash flow from operations on financial performance. Based on the preceding argument, the second hypothesis is stated as follows:

H2: Operating Cashflow Management Significantly affects Asset Growth of Listed Industrial Goods Firms in Nigeria.

Financing Cash Flow and Asset Growth

In line with the Pecking Order Theory, Parast et al. (2013) emphasized that firms tend to have a preferred hierarchy when choosing financing sources, starting with funds in the organization (retained earnings),

followed by debt, and resorting to equity financing as a last option (Oktavianingsi et al., 2021). Firms favor financing by debt due to its tax advantages, as the interest on debt is tax-deductible, reducing tax liability and increasing after-tax profits. This positive financing cash flow from issuing of debt can enhance firm performance and contribute to firm growth which also aligns with the outcome of Ugwu & Nwachukwu (2024) who documented a positive result of cash flow from operations on financial performance. Based on the preceding argument, the third hypothesis is stated as follows:

H3: Financing Cashflow Management Significantly affects Asset Growth of Listed Industrial Goods Firms in Nigeria.

Cash Flow Per Share and Asset Growth

Firms with strong cash flow per share are positioned to make strategic choices, such as reinvesting growth opportunities like research and development, acquisitions, or expanding operations, which can improve long-term firm performance (Machuga et al., 2002). Efficient reinvestment of cash in projects with positive net present value contributes to shareholder wealth maximization by potentially increasing the firm's overall value, thus enhancing shareholder wealth. According to Jameh, Bagheri, & Karami (2022), consistent cash flow per share also stabilizes a firm's dividend policy, enabling the firm to maintain or increase dividends over time, which is attractive to income-focused investors. However, from an agency theory perspective, management may manipulate cash flow per share to meet short-term performance targets or influence stock prices (Jameh et al., 2022) which might involve delaying necessary investments or making accounting decisions to artificially boost cash flows. While these actions can increase share prices in the short term, they may damage the firm's asset growth, long-term performance, and competitiveness (Muzhingi, 2018), as management decisions driven by conflicts of interest can lead to suboptimal outcomes. About the preceding argument, the fourth hypothesis is stated as follows:

H4: Cashflow per Share Management Significantly affects Asset Growth of Listed Industrial Goods Firms in Nigeria.

Theoretical Review

This study is hinged on Free Cash Flow Theory developed by Jensen (1986) with arguments based on the premise that companies with large free cash flow are more probable to engage in investments that could ultimately undermine the firm's value. Cash flow that exceeds the company's infrastructure investment needs has a significant effect on the net present value of free cash flows (Agrawal & Jayaraman, 1994; Jensen, 1987). The free cash flow theory suggests that firms with substantial free cash flow, which is cash flow remaining after funding all positive net present value (NPV) projects, face agency problems if managers do not efficiently allocate or distribute these excess resources. Similarly, Darek (2012) criticized the theory, arguing that managers do not always prioritize shareholder wealth maximization when pursuing company growth. Increasing cash flows under managerial control does not necessarily translate into increased wealth and may instead result in higher compensation for managers, as reward is often tied to company growth. The significant positive impact of operating, investing, and financing cash flows on asset growth obtained in this study suggests that industrial goods firms in Nigeria effectively reinvest free cash into productive assets rather than engaging in wasteful expenditures. This implies reduced agency costs, efficient capital allocation, and the potential disciplining role of debt financing, supporting Jensen's argument that firms with strong cash flow can enhance asset growth when governance mechanisms ensure prudent financial management.

3. Methodology

This study adopts *ex-post facto* research design. *Ex-post* facto research design is appropriate for this study because the data set was sourced secondarily, consists of historical, already-recorded financial and economic information. *ex-post facto* research design allows for conducting the analysis without manipulating variables, ensuring the authenticity and reliability of observed relationships. As of December 31, 2023, the total population comprised fifteen (15) industrial goods firms listed on the Nigerian Exchange Group. Purposive non-probability sampling technique was employed to select 11 firms based on specific criteria: (1) firms must have been listed on the Nigerian Exchange Group from 2018 to 2023; (2) firms must provide full access to their annual reports for the period under study. Data for this study were sourced from secondary sources, specifically the stock exchange fact books and the firm's annual financial reports. The computed values of cash flow and asset growth were collected from the audited financial reports of the selected firms. The analysis included both descriptive and inferential statistics, utilizing pre-regression tests such as normality and multicollinearity checks, followed by panel regression analysis using fixed and random effect models determined by the Hausman test. Notably, panel data analysis involves statistical techniques that use data collected over time for the same subjects, capturing both cross-sectional and time-series dimensions (Hsiao, 2022). This form of data analysis allows for controlling individual heterogeneity, which can lead to more accurate and reliable estimates by accounting for unobserved variables that may influence the results (Andreß, Golsch & Schmidt, 2013; Hsiao, 2007). Unlike ordinary least squares (OLS), which handles only cross-sectional or time-series data separately, panel data models can provide more efficient and unbiased estimates due to their ability to control for these time-invariant characteristics and better handle complex dynamic relationships.

Model Specification

In this study, the model specified by Ni, Huang, Chiang & Liao (2019) was modified to suit the purpose of establishing the effect of the independent variables on the dependent variable captured in this study. The functional form of the model for this study is stated as:

Asset Growth Functional Model

ASSET GROWTH = f (Cashflow Operations + Cashflow Investing + Cashflow Financing + Cashflow Per Share) …… (1)

However, the econometric form of the modified model is expressed as follows.

$$AGROWTH_{it} = \partial_0 + \partial_1 CASHFO_{it} + \partial_2 CASHFI_{it} + \partial_3 CASHFF_{it} + \partial_4 CFPS_{it} + \mu_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (2)$$

Where:

AGROWTH	=	Asset Growth
CASHFO	=	Cash Flow from Operations
CASHFI	=	Cash Flow from Investing
CASHFF	=	Cash Flow from Financing
CFPS	=	Cash Flow per Share
∂_0	=	Constant
∂_1- ∂_4	=	Slope Coefficient
μ	=	Stochastic disturbance
i	=	ith company
t	=	period.

Table 1: **Operationalization of Variables**

S/N	Variables	Measurements	Sources	Apriori Sign
Dependent Variable				
1	Asset Growth	Computed in percentages as the value of total assets at t minus value of total assets at t_{-1} divided by the value of total asset at t_{-1}	Fadun, (2013).	
Independent Variables				
1	Cash Flow Operations	Computed in percentages as net cash flow from operations divided by total asset	Sapuan, Wahab, Fauzi, and Omonov (2021).	+
2	Cash Flow Investment	Computed in percentages as net cash flow from investing divided by total asset	Park and Jang (2013).	+
3	Cash Flow Financing	Computed in percentages as net cash flow from financing divided by total asset	Frank and James (2014).	+
4	Cash Flow Per Share	Cash Flow Per Share = (Operating Cash Flow – Preferred Dividends) / Common Shares Outstanding	Watson and Wells (2005).	+

Source: Author's Compilation (2024).

4. Results and Discussion

Descriptive Statistics

Table 2 presents the descriptive statistics result for both the independent and dependent variables, detailing their arithmetic mean, standard deviation, maximum, and minimum values over the period under review. Regarding asset growth (AGROWTH), the table reveals a mean value of 6.208, with a standard deviation value of 25.45, indicating a 6.2% growth rate of assets among industrial goods firms in Nigeria during period under investigation. For cash flow operation (CASHFO) variable, the mean value is 0.051, with a standard deviation of 0.24.

Table 2: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CASHFO	54	.051	.243	-.91	.52
CASHFF	54	-.056	.096	-.38	.15
CASHFI	54	-.057	.116	-.779	.04
AGROWTH	54	6.209	25.457	-63.52	100.82
CASHFPS	54	3.808	8.518	-8.03	35.1

Source: Authors' Computation 2025.

The cashflow financing (CASHFF) variable indicated a mean value of -0.056 and a standard deviation of 0.96. Meanwhile, the cash flow investing (CASHFI) variable shows a mean value of 0.006, with a standard deviation of 0.261. Overall, the descriptive statistics indicate that cash flow from operations was higher than cash flow from investing and financing activities during the review period. Additionally, the cash flow per share (CFPS) variable shows a mean value of 3.80, with a standard deviation of 8.51 for the listed industrial goods firms in Nigeria during the study period.

Normality of Data Statistics

Table 3 shows the result obtained from the Shapiro-Wilk normality test for the data employed in this study. It is observed that the dependent variable, asset growth (AGROWTH, z = 3.792; Prob>z = 0.00007) is not normally distributed due to its statistically significant probability value.

Table 3: **Shapiro-Wilk W test for normal data**

Variable	Obs	W	V	z	Prob>z
CASHFO	54	0.802	9.886	4.908	0.000
CASHFF	54	0.879	6.041	3.853	0.000
CASHFI	54	0.519	24.033	6.811	0.000
AGROWTH	54	0.883	5.872	3.792	0.000
CASHFPS	54	0.698	15.084	5.813	0.000

Source: Authors' Computation 2025.

Further, examination of the independent variables shows that cash flow operation (CASHFO; z = 4.908; Prob>z = 0.00000), cash flow investing (CASHFI; z = 6.811; Prob>z = 0.00000), cash flow financing (CASHFF; z = 3.853; Prob>z = 0.00000) and Cash Flow per Share (CASHFPS; z = 5.813; Prob>z = 0.00000) are also not normally distributed since their z probabilities are statistically significant at 1%, levels respectively. Although, the data distribution for this study tends towards a non-normal distribution, the researcher proceeded to conduct parametric test holding on to the view that some researchers suggest using parametric tests as they tend to perform well in practice, especially when the data is approximately normal or when the non-normality is not severe (Glass, Peckham, & Sanders, 1972). Parametric tests can still yield valid and reliable results if the non-normality in the data is primarily due to outliers or skewness rather than a fundamentally different distribution shape (Templeton & Blank, 2023).

Table 4: **Asset Growth Regression Result**

	POOL LEAST SQUARE	FIXED EFFECT	RANDOM EFFECT	MIXED EFFECT REGRESSION
_CONS.	4.983	3.144	4.983	4.983
	(0.129)	(0.547)	(0.123)	(0.105)
CASHFO	111.495***	96.859 **	111.495***	111.495***
	(0.000)	(0.001)	(0.000)	(0.000)
CASHFF	90.849***	89.739**	90.849 ***	90.849**
	(0.000)	(0.022)	(0.003)	(0.002)
CASHFI	98.536***	95.324***	98.536***	98.536**
	(0.000)	(0.000)	(0.000)	(0.000)
CASHFPS	0.004	0.674	0.004	0.004
	(0.990)	(0.572)	(0.990)	(0.990)
F-STAT/WALD STAT	16.63***	8.27**	41.33***	45.55***
	(0.0000)	(0.0001)	(0.0000)	(0.0000)
R- SQUARED	0.4576	0.4589	0.4533	
VIF TEST				
CASHFO: 3.24				
CASHFI: 2.61				
CASHFF: 1.33				
CASHFPS: 1.19				
HAUSMAN TEST		**Test for Random Effects Errors**		
CHI² = 0.74		chibar2(01) = 0.00		
PROBABILITY = (0.9458)		Prob > chibar2 = 1.0000		

NOTE:(1) BRACKET () ARE P-VALUES; (2) **, *, IMPLIES STATISTICAL SIGNIFICANCE AT 5% AND 1% LEVELS RESPECTIVELY**

Source: Authors' Computation (2024).

The variance inflation factor (VIFs) obtained from the pooled ordinary least square model presented in table 4, shows values of 3.24 for CASHFO, 2.61 for CASHFI, 1.33 for CASHFF, and 1.19 for cash flow per share, all of which are well within the benchmark of 10, confirming the absence of multicollinearity. Both the F-statistics (8.27, p-value = 0.0001) for the fixed effect model and the Wald-statistic (41.33, p-value = 0.0000) for the random effect model are statistically significant at the 5% and 1% levels, respectively. The R-squared values for the fixed and random effect models are 0.4589 and 0.4533, indicating that about 45-46% of the variations in asset growth are explained by the independent variables. The Hausman test p-value of 0.9458 supports the use of the random effect model. However, a test for random effect error reveals unobserved heterogeneity, indicating a violation of the homoscedasticity assumption. To address this, a panel multilevel mixed effect regression analysis was employed, controlling for unobserved heterogeneity and serving as the basis for hypothesis testing in this study.

The positive result of cash flow from operations with coefficient value of 111.495, corresponding to a 1% statistically significant level on asset growth aligns with both agency theory and pecking order theory, which emphasizes the importance of efficient cash management, reduced dependency on external financing, and alignment of managerial and shareholder interests for enhancing asset growth. This outcome implies that all things have been equal, a 1% increase in cashflow from operations will yield a significant increase in asset growth of about 111% during the period under examination for the sampled

firms. According to the agency theory, the principal-agent relationship aims to align managers' interests with those of shareholders, and a strong cash flow from operations signifies efficient managerial performance and resource allocation, reducing agency costs and enhancing shareholder value. This is particularly relevant in the Nigerian context, where concerns about agency problems and managerial opportunism exist (Obembe, Olaniyi & Soetan, 2016; Kasum & Etudaiye-Muthar, 2014). A positive result of cash flow from operations on asset growth suggests that Nigerian managers are incentivized to maximize shareholder wealth, consistent with the findings of Nangih, Ofor, & Ven (2020). Additionally, the positive influence of cash flow from investment activities with coefficient value of 98.536, corresponding to a 1% statistically significant level on asset growth aligns with investment theory, which holds that firms allocate resources to projects expected to generate positive returns. On the bases of the ceteris paribus axiom, this finding implies that a 1% increase in cashflow from investment will yield a significant increase in asset growth of about 99% for industrial goods firms in Nigeria. This indicates that industrial goods firms in Nigeria are making strategic investments in areas such as technology, research and development, or market expansion, contributing to competitiveness and long-term value creation, especially given Nigeria's infrastructure needs. This finding supports the results of Liman & Mohammed (2018).

Finally, the positive influence of cash flow from financing with coefficient value of 90.849, corresponding to a 1% statistically significant level on asset growth aligns with the pecking order theory, suggesting that effective management of internal financing sources plays a determining role in asset growth. From the result, a 1% increase in cash flow financing increases asset growth by 91%. According to the Pecking Order Theory, firms prefer internal financing due to lower information asymmetry and transaction costs. For industrial goods firms in Nigeria, which require significant investments in infrastructure, plant, and machinery, positive cash flow from financing signifies their ability to secure necessary capital for projects, enhancing production capacity and competitiveness. This result highlights strategic financing structure which has been demonstrated by managers of industrial goods firms in Nigeria to optimize financing cash flow. Notably, this outcome is seen to align with the outcome of Soet, Muturi, & Oluoch (2018). Overall, the results clearly suggest that effective operating cash flows management helps firms cover expenses, which in turn fosters asset growth. Similarly, investments activities yielding returns above the cost of capital contribute positively to asset growth, indicating that poor investment choices will stifle asset growth. Strategic and optimal use of financing cash flow supports asset growth, but caution should be taken because excessive financing may hinder asset growth by raising the cost of capital.

5. Conclusion and Recommendations

This study, which is anchored on the impact of corporate cash flow activities on asset growth among listed industrial goods firms in Nigeria, concludes that cash flow from operations, investing, and financing activities are critical to improving asset growth. Consequently, the study recommends that stakeholders including investors, management, and policymakers should prioritize strategies that enhance cash flow management. Specifically, industrial goods firms in Nigeria should focus on optimizing operational cash flow through improved revenue generation and cost management while leveraging financing opportunities to support asset growth. Additionally, prudent investment in productive assets should be given priority, which will further strengthen asset growth opportunities.

This study calls for further research to explore the unexpected outcome of cash flow per share, suggesting that future studies should examine the role of firm size and utilize advanced econometric methods to

address potential endogeneity issues, thereby providing clearer insights into the management of cash flow activities as it affects asset growth.

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