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DETERMINANTS OF CORPORATE CASH HOLDINGS IN QUOTED MANUFACTURING FIRMS IN NIGERIA

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Abstract

To guarantee operational effectiveness and reduce financial risks, manufacturing companies require sufficient cash reserves. However, establishing the ideal cash holding level and its determinants can be difficult and lead to financial inefficiencies. This study investigated the factors that influence corporate cash holdings of manufacturing businesses in Nigeria, with a particular emphasis on important firm-specific elements such as capital expenditures, firm size, leverage, profitability, liquidity, and expansion potential. The study employed an ex-post facto research design and gathered data from financial records and yearly reports of a purposive sample of twenty-eight (28) manufacturing companies listed on the Nigerian Exchange from 2013 to 2023. The study used the Panel Generalised Method of Moments (GMM), correlation, and descriptive statistics to look into how these factors affect how much cash a company keeps on hand. The results of the GMM showed that cash holdings are significantly correlated negatively with capital expenditure ($\beta=-0.073$ at 1%), financial leverage ($\beta=-0.0001$ at 1%), and profitability ($\beta=-0.0007$ at 1%), whereas firm size ($\beta=0.035$ at 1%) and liquidity ($\beta=0.058$ at 1%) have a significant positive association with corporate cash holdings. However, growth opportunities ($\beta=-0.0001$) showed a negative but negligible influence. Consequently, the study concluded that capital expenditure, financial leverage, profitability, liquidity and firm size are important factors determining the amount of cash and cash equivalents that listed manufacturing companies hold in Nigeria. The study then recommended that firms should optimise their cash holding policies by striking a balance between the expense of holding too much idle cash and the requirement for liquidity.

Keywords: Cash holdings, firm size, profitability, leverage, Panel GMM

JEL Code: G31, G32, L11, L25

INTRODUCTION

The study of corporate cash holdings has garnered significant attention in the field of corporate finance, particularly as firms face increasing uncertainty in the global economic environment. A company's cash holdings, which are its liquid assets held for speculative, transactional and precautionary purposes, are essential to maintaining liquidity and operational stability (Lie, 2023). Cash holdings are essential to corporate financial management because they help businesses become more competitive and have better growth possibilities, which permits businesses to have cash on hand, fulfil immediate commitments, and take advantage of investment opportunities (Escobar, 2020). Corporate performance is greatly impacted by the

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amount and volatility of cash holdings, with steady and typical cash holding patterns having the biggest beneficial impact on business performance (Zhang et al., 2021).

Shortage of cash means that outside funding is required, which is represented by fewer investments and fewer sales of available securities and assets. Maintaining a sizable cash reserve under some conditions may be a sign of an inappropriate distribution of the company's available assets (Chireka & Moloi, 2024). The shortage of cash holdings has several implications for firms. Firms with insufficient cash reserves may face challenges in navigating economic uncertainties and crises (Kariya, 2020). For instance, during the global financial crisis, firms with lower cash holdings experienced greater difficulties in adjusting to optimal cash levels (Batuman et al., 2021). This highlights the importance of maintaining adequate cash reserves as a precautionary measure against unexpected financial shocks (Bratsiotis & Theodoridis, 2022). Similarly, firms tend to increase their cash holdings in response to rising climate-related risks and geopolitical uncertainties, suggesting that a shortage of cash could leave companies vulnerable to these emerging threats (Gounopoulos & Zhang, 2021).

Further, excess cash holding has significant implications for firms. While cash holding can enhance financial stability during crises like the Covid-19 pandemic (Nguyen et al., 2021), it can also lead to agency problems and reduced firm value if not managed effectively. The value of excess cash holdings is reduced by economic policy uncertainty, as investors discount the value of excess cash held by companies that are highly vulnerable to uncertainty because of problems with agency and information asymmetry (Benkraiem et al., 2022). This effect is particularly noticeable in nations with robust investor protection laws. Excess cash holdings have complicated effects for businesses, depending on a number of variables, including managerial optimism, financial restrictions, strategic partnerships, and the uncertainty of economic policy (Benkraiem et al., 2022).

Numerous factors, including interest rates, growth opportunities, firm size, financial leverage and profitability, have been considered as influencing cash holdings in corporate firms. Cash and bank holdings show a negative correlation with interest rates, indicating that firms hold less cash when rates are high (Guizani & Ajmi, 2021). As interest rates increase, the opportunity cost of holding cash rises, prompting firms to prefer short-term investments. Companies with substantial cash reserves benefit from reduced dependency on costly external financing and are less impacted by interest rate increases, allowing them to maintain operations without incurring new debt (Takahashi & Saito, 2024; Gupta & Bedi, 2020).

Growth opportunities significantly influence corporate cash holdings, as companies with higher growth potential require greater liquidity for future investments due to associated costs and uncertainties (Inoue et al., 2021). According to the pecking order theory, firms favour internal financing over external options to mitigate information asymmetry costs (Petrů & Tomášková, 2020). High-growth companies often retain more cash to ensure funding availability, as external financing can be costly or scarce. Such businesses are inclined to seek external capital markets to meet their future financial needs (Alam, 2022).

Further, the size of a firm is crucial in determining the amount of cash and cash equivalents to be held by the business. Larger firms tend to have more cash on hand due to their size, enhancing

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cash holdings (Sherly et al., 2022). In contrast, smaller businesses maintain higher cash reserves for preventive reasons, especially when cash flows are unpredictable (Magerakis et al., 2020). Small companies often possess more cash than larger ones due to the costs associated with external funding. Additionally, larger companies are perceived as less vulnerable to bankruptcy, making them less inclined to hold financial reserves. It can also be argued that with reduced information asymmetry, large companies exhibit greater financial strategy flexibility, often leading to higher cash storage (Ignatov & Rudolf, 2023).

Extant studies have also found financial leverage to be an important determinant of the quantity of liquid assets held by firms. Studies indicate that financial leverage significantly influences the volume of liquid assets that firms retain. High leverage necessitates larger cash reserves to mitigate financial distress risks, while low leverage adversely affects cash holdings. Leveraged companies tend to accumulate cash due to the heightened risk of economic downturns, contrary to those with lower debt, which can lead to lower cash reserves. Consequently, firms with substantial debt are less capable of maintaining savings due to closer scrutiny and the increased likelihood of financial crises (Vidyarto Nugroho, 2021; Almustafa & Kalash, 2022; Dang Ngoc et al., 2020).

Profitability significantly influences corporate cash holdings, as outlined in the pecking order theory (Milasari & Maryanti, 2024). Financially successful companies tend to maintain larger cash reserves for liquidity management (Fujitani et al., 2023). However, factors like dividend policy can diminish this effect by encouraging cash payouts to shareholders, aligning management with investor interests. Profitable firms can pay dividends, settle debts, and build cash reserves (Nurdani & Rahmawati, 2020), while less successful companies rely on borrowing and tend to hold less cash due to costs associated with issuing shares.

Understanding the dynamics of cash management in emerging markets like Nigeria is severely lacking, as prior research on corporate cash holdings has mostly focused on developed economies. Furthermore, although there is a large body of research on cash holdings in a variety of industries, little is known about Nigeria's manufacturing sector. Due in large part to the ongoing local economic uncertainty, Nigerian manufacturing companies experience cash flow instability, profitability constraints, and limited access to inexpensive financing. As a result, businesses must carefully manage their cash holdings to preserve liquidity, pay off debt, and reduce financial risks. The impact of cash and liquid assets on market value emphasises the necessity of using the best cash holding techniques to strike a balance between profitability and liquidity. Improving liquidity management and company value in this difficult climate requires an understanding of the complex interactions with firm-specific characteristics (Nnenna et al., 2020).

It is in the light of the foregoing that this study examines how firm-specific elements such as firm size, profitability, leverage, capital expenditures and growth opportunity determine cash holdings in Nigeria's quoted manufacturing firms. With an emphasis on Nigeria, this study fills in the knowledge gaps about corporate cash holdings in emerging markets. It investigates this in the context of drastic changes in the market structure, regulatory framework, and economic situations that affect cash management practices. The study adds to the theoretical framework of cash holdings in developing nations by incorporating its findings with corporate finance theories

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such as trade-off and pecking order theories. This allows the study to provide empirical information that both validates and challenges preexisting theories. By bridging the gap between academic research and practical application, the study identifies factors that influence cash holdings and offers policymakers and corporate managers insights into efficient cash management strategies. As a result, it offers significant findings for stakeholders in the Nigerian corporate landscape.

LITERATURE REVIEW

Conceptual Review

Cash Holdings

In corporate finance, cash holdings are crucial as they represent liquid assets that aid companies in managing short-term debts, navigating economic downturns, and seizing opportunities. These holdings are influenced by corporate characteristics, economic factors, and cultural contexts (Da Cruz et al., 2019). While cash and cash equivalents serve as a liquidity buffer, they can also be viewed as unproductive capital if mismanaged (Hampl & Gyönyörová, 2021). Understanding the reasons behind cash accumulation is vital for stakeholders in varied economic environments, especially as trends differ between emerging and developed markets, where factors like business size and dividends affect cash holdings differently (Trejo-Pech et al., 2016). Situations of uncertainty, such as the COVID-19 pandemic, have highlighted the necessity for increased cash reserves in response to financial volatility (Irwansyah et al., 2024), emphasising the role of cash in risk mitigation and financial resilience (Sastrasasmita et al., 2023). Effective cash reserve management is essential for maintaining shareholder value and ensuring operational viability amid economic and environmental challenges.

Corporations, individuals, and organisations have various motivations for maintaining liquid cash or cash equivalents. Theories of liquidity management categorise these motivations into three main groups, with one primary reason being the transaction purpose. This drive results from the necessity of having cash on hand to cover anticipated payments or daily operating expenses. In light of this, firms with financial constraints typically have more cash on hand than firms without (Lozano & Yaman, 2020). Transaction motive also leverages potential economies of scale, meaning that a business can reduce transaction costs by paying with cash instead of having to sell assets. Another major consideration in financial decision-making, especially for private businesses and households, is the precautionary motive for keeping cash on hand. Inadequate separation of firm and owner finances leads private firms to consider stakeholders' risk attitudes (Poti et al. 2020). Companies retain cash to capitalise on unforeseen investment opportunities instead of reducing debt with cash flows. They can transfer funds from high to low cash flow states to finance investments during low cash flow periods (Ding, 2023). In financial markets, the speculative motive significantly influences trading patterns, asset values, and market dynamics, particularly in maintaining cash reserves for unforeseen investment opportunities (De Luca, 2022). Businesses and individuals hold cash to capitalise on favourable changes like discounted assets or investment prospects during market downturns (Svraka, 2021). This speculative motivation also extends to equity markets, affecting money demand through wealth and substitution effects (Lee et al., 2020).

Determinants of Corporate Cash Holdings

Liquidity, profitability, business size, leverage, investment opportunities, cash flow volatility, dividend payments, and the political climate are some of the financial, firm-specific, and external factors that affect corporate cash holdings. One important characteristic that frequently shows a favourable link with cash holdings is profitability. Profitable businesses are likely to hold onto more cash, either as a result of their ability to raise money internally or a need to keep liquidity on hand for investments or as a safety precaution. (Chireka, 2020; Wijaya, 2021).

Liquidity, often measured by cash flow or working capital, is another critical factor positively influencing cash holdings. Firms with higher cash flow or liquidity levels generally maintain higher cash reserves as a buffer against financial distress or unforeseen expenses (Saxena and Sahoo, 2022; Nnenna et al., 2020). Leverage, or financial debt level, tends to have a negative effect on cash holdings, supporting the pecking order theory that suggests firms substitute debt for holding larger cash reserves. High leverage implies reliance on external funds, potentially reducing the need or ability to hold cash. (Almustafa & Kalash, 2022; Vuković et al., 2022).

Firm size shows varied effects depending on context. Some studies suggest larger firms hold more cash due to extensive operations or better financial market access, while others indicate they hold less cash due to easier access to external financing (Chireka, 2020; Vuković et al., 2022). The stage of the corporate life cycle may influence cash holdings, but evidence of significant effects is inconsistent. According to the resource-based view, firms at different life cycle stages have varying cash requirements. However, a study conducted in South Africa found no significant impact of these stages on cash holdings after accounting for other variables (Chireka, 2020).

Dividend payments negatively impact cash holdings due to cash outflows, while higher cash flow volatility leads firms to hold more cash for safety. Research indicates that Nigerian manufacturing firms experienced reduced cash holdings due to dividends, while cash flow volatility positively influenced their cash reserves (Nnenna et al., 2020). Likewise, cash flow volatility affected cash holding behaviors in Indian MSMEs (Saxena & Sahoo, 2022). Since businesses typically devote liquid funds to expansion initiatives, investment prospects, which are frequently evaluated using Tobin's Q or growth, typically have a negative correlation with cash holdings. However, depending on different research and situations, this correlation may vary (Saxena & Sahoo, 2022; Wijaya, 2021).

Corporate cash holdings in emerging nations are influenced by external environmental factors, including political instability and corruption. Because of the increased uncertainty that results from political instability, businesses typically adopt conservative liquidity policies and limit their cash holdings. On the other hand, as businesses may require liquidity for bribery or transaction facilitation, corruption is associated with larger cash reserves. African businesses have shown this dynamic (Raghibi & Shabbir, 2021). Cash holdings are greatly impacted by global catastrophes, such as financial downturns and pandemics, which force businesses to boost reserves for increased resilience. Financially unrestricted businesses in India increase their reserves, making cash holdings especially vulnerable to catastrophes (Sriram & Riyazahmed, 2024). Similar to this, Saudi companies increased their cash holdings during the COVID-19 epidemic due to cash flow and business size (Moez & Abdulrahman, 2024).

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By controlling managerial behaviour to avoid excessive wealth accumulation that is against shareholder interests, corporate governance has an impact on cash holdings. Strong governance is associated with ideal financial reserves in nonprofit organizations, but too much cash might have a detrimental effect on donor contributions, underscoring the importance of governance in liquidity policies (Pizzini & Sterin, 2023).

Theoretical Review

Trade-off theory

Various hypotheses explain why businesses retain cash. The trade-off hypothesis suggests that firms seek an optimal cash level by balancing the marginal benefits and costs of holding cash, all aimed at maximising shareholder wealth (Jung & Choi, 2024; Mortal et al., 2020). Businesses must consider the "cost-of-carry," which refers to the difference between returns on cash holdings and interest incurred to raise additional funds (Dharan & Thenmozhi, 2024). The marginal benefits of holding cash are stated to be reducing financial distress, transaction costs, and ensuring liquidity for investments, while the marginal costs are mainly the opportunity cost of holding low-yield cash instead of investing in higher-return assets (Ye, 2024).

The theory predicts that factors such as firm size, dividend payments, profitability, leverage, and net working capital (cash substitutes) are negatively related to the amount of cash held by corporations (Suwaidan, 2022; Otaify et al., 2024). In contrast, it suggests that cash holdings should have a positive association with cash flow volatility and growth opportunities (Ali et al., 2024; Chen, 2021). According to Zhao et al. (2022), privately held and state-owned businesses have different effects on cash holdings' efficiency in capital allocation. This implies that ownership structure and investment behaviour may have an impact on the ideal cash level (Zhao et al., 2022). Other financial techniques are similarly impacted by the trade-off idea. According to Sun et al. (2020), companies that implement financial hedging programs have greater cash values but smaller cash reserves, suggesting that hedging can serve as an alternative to cautious cash holdings. The application of the theory, however, can alter depending on the market and economic environment, underscoring the necessity of a sophisticated comprehension of the factors that influence cash holdings (Zhao et al., 2022). The Trade-off theory is relevant in this study as it provides a robust framework for understanding corporate cash holdings, emphasising an optimal balance between costs and benefits. This approach is widely supported across empirical studies and remains central to corporate finance research.

Pecking Order Theory

There are important ramifications for business cash holdings from the pecking order notion. According to this view, there is no ideal amount of cash that a company should hold. Based on asymmetric information, in order to reduce the expenses associated with information asymmetry, businesses adhere to a finance hierarchy (Salehi & Azimi, 2022). The importance of internal funding is demonstrated by the fact that Greek companies maintain an average of 13.8% of their total assets in cash and cash equivalents (Magerakis, 2020). According to the study, the cash ratio supports both static trade-off and pecking order models by having a good correlation with cash flow to assets, capital expenditures, and industry cash flow volatility (Magerakis, 2020). Firms will employ external sources once internal sources have been depleted. The order begins with internal sources, which indicates that, because debt has lower information costs than equity financing, businesses should prefer external funding through debt issuance (Naumkin, 2020). It

is possible to view cash as the result of the various financing and investment choices that the classified pattern of finance suggests.

The pecking order theory explained the positive correlation between company cash holdings and profitability (Chaklader & Padmapriya, 2021). Although sustaining the ideal level of cash should be independent of internally generated cash flows, firms depend on the profits they make to increase the amount of cash they hold. One of the most important factors in financial decision-making is the company's profitability (Winfield et al., 2023). Leverage can be seen as an alternative to holding more cash and marketable securities, according to the pecking order concept. In these markets, the inverse link strengthens the cautious rationale for keeping cash reserves domestically rather than depending on external debt (Almustafa & Kalash, 2022). Firms may change their financing preferences during financial crises. For instance, during times of crisis, Saudi Arabian Islamic businesses appear to rely primarily on equity, then on sale-based instruments, and last on Sukuk (Guizani, 2020). Furthermore, the influence of outside variables on cash holdings can be mitigated by company size and ownership structure; larger businesses and state-owned enterprises are less impacted by fluctuations in the price of oil (Zhang *et al.*, 2020). In conclusion, although the pecking order hypothesis typically affects corporate cash holdings, its impacts vary depending on the market and the circumstances. The theory's influence on cash management choices can be adjusted by a number of variables, including firm characteristics, market development, economic conditions, and regulatory settings.

Agency Theory

This theory states that the cash flow residual after funding all projects with a positive net present value is known as free cash flow (FCF), and managing it is essential to maximising value (Rimaz & Ayanoglu, 2021). High levels of free cash flow, according to the idea, can result in agency costs since managers might spend extra money for personal gain rather than what shareholders would want (Yero, Saidu, Hamman, & Abubakar, 2021). However, there are conflicting findings from empirical evidence. The free cash flow theory is refuted by certain research, which shows that FCF improves business performance (Sapuan et al., 2021). This beneficial relationship could arise when businesses have investment options that can yield profits from surplus funds. According to agency theory, managers may not always behave in the best interests of shareholders when it comes to corporate cash holdings. Managers may choose to keep excess cash for self-serving purposes rather than paying out dividends to shareholders or investing in value-creating projects. This can lower financial risk and give managers more control, reducing the firm's reliance on outside funding and the security that comes with it. Agency theory not only explains why firms may hold excess cash but also underscores the importance of governance-related variables in any empirical investigation of cash holding behaviour.

The theoretical foundation of the study is based on the pecking order theory. The reason is that it uses information asymmetry to directly connect a company's internal resources (cash) to its financing hierarchy. Instead of forecasting an abstract ideal capital structure as other theories do, it provides a useful framework that explains a firm's motivation to hoard cash based on real-world constraints and behaviors.

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Empirical Review

The empirical research presented in this section offers a wealth of information about the factors influencing cash reserves in diverse settings and geographical areas. Da Costa Moraes et al. (2025) examined the factors affecting cash holdings in Latin American private and public companies. Their analysis, using Ordinary Least Squares and Panel regression techniques, found that private firms generally maintain less cash than public ones. Factors positively influencing cash holdings include firm size, profitability, cash flow, leverage, and growth prospects.

Using fixed effects and GMM on a sample of 1,053 companies, Akhtar (2025) investigated the cash holdings of non-financial firms in the MENA region. The findings showed that while larger companies with more growth potential, net working capital, financial leverage, and capital expenditures tend to hold less cash, those with higher cash flows, R&D investments, and dividend payments tend to hold more.

Yılmaz (2024) analyses the factors influencing corporate cash reserves in BRICS nations from 2012 to 2021. The study, which used panel regression methods, found firm size, leverage, capital expenditures, net working capital, operating cash flow, dividend payments, firm age, and R&D expenditures to be key determinants of cash holdings. Almagribi et al. (2023) conducted an investigation into the factors that influence the cash holdings of listed real estate and property companies in Indonesia between 2017 and 2020. The study found that cash holdings are significantly affected by leverage, profitability, liquidity, and growth prospects.

The study by Amahalu and Eyide (2023) analysed the factors influencing cash holdings of publicly traded pharmaceutical firms in Nigeria from 2014 to 2022. Using panel data analysis, they found that the market-to-book value ratio, investments in noncurrent assets, and cash flow significantly negatively affect cash holdings. Nwokoye (2023) studied the factors affecting cash holdings in 12 Nigerian deposit money banks from 2008 to 2020. Using panel data from various financial reports, the research highlighted that asset tangibility negatively influences cash-holding behaviour.

Almustafa and Kalash (2022) investigated the relationship between financial leverage and corporate cash holdings in MENA emerging markets. Their research reveals a significant negative correlation, supporting the pecking order theory, which suggests that firms prefer using leverage as a substitute for maintaining high cash reserves. Alomran and Alsubaiei (2022) examined how oil price uncertainty affects corporate cash holdings in large international publicly listed firms across 89 countries from 1990 to 2017. They found this relationship to be significant and nonlinear, particularly stronger in companies from oil-exporting countries and oil-sensitive industries.

The study by Vuković et al. (2022) investigated the factors affecting cash holdings in the wholesale industry across ten Balkan countries. Using a fixed effects panel data model, the study found that three of the five examined factors—size, leverage, and non-cash liquid assets—significantly impacted cash holdings. Javadi et al. (2021) studied the effect of economic policy uncertainty on corporate cash holdings among non-U.S. firms in 19 countries. They found a significant negative correlation, indicating that increased policy uncertainty reduces cash reserves. Their robust findings, which accounted for endogeneity, highlight that shareholders can alleviate agency

problems by pressuring managers to distribute excess cash, particularly in uncertain policy environments, while recognising the impact of national characteristics on corporate finance.

Together, the studies in the aforementioned empirical review highlight the complex nature of corporate cash holdings. Significant differences arise when taking into account political risk, industry-specific dynamics, and the impact of macroeconomic variables, despite notable similarities in terms of determinants like firm size and internal governance factors. This discrepancy emphasises how important it is for businesses to implement contextually appropriate cash management plans that take into consideration both internal and external market factors. The results point to a growing understanding of how firm-specific elements interact with more general economic and competitive circumstances to influence corporate liquidity decisions.

METHODOLOGY

This study adopts an Ex-post facto research design to assess the determinants of corporate cash holdings in quoted manufacturing firms in Nigeria. It provides a platform to examine the correlation between cash reserves and their influencing factors, without any requirement for experimental intervention. The target population for this study consists of quoted manufacturing firms in Nigeria. According to the Nigerian Exchange Group (NGX), there are 20 consumer goods, 13 Industrial goods, 7 Healthcare Companies, 4 Natural resources, and 6 Conglomerates, resulting in a total of 50 firms listed on the Nigerian Stock Exchange. A sample size of 28 manufacturing firms was purposively drawn from the population. The sample consists of 10 consumer goods, 9 Industrial goods, 4 Healthcare, 2 Natural resources, and 3 Conglomerate companies. For this study, secondary data were sourced from published annual financial statements of sampled firms spanning 2013 to 2023.

The study employed descriptive statistics, correlation analysis, and panel Generalised Method of Moments (GMM) to analyse the data acquired from secondary sources. Descriptive analysis summarises the data qualities, such as mean, standard deviation and skewness. Correlation analysis was used to show the relationship between variables. The Panel Generalised Method of Moments (Orthogonal option) was applied to estimate the panel data and address potential endogeneity, while the Hausman test was carried out to determine which model is better for decision-making.

The model of this study was adopted from Yilmaz (2024) and is stated below:

$$CH_{i,t} = \beta_0 + \hat{\alpha}_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 PROF_{i,t} + \beta_4 GROW_{i,t} + \beta_5 CAPEX_{i,t} + \beta_6 NWC_{i,t} \\ + \beta_7 OCF_{i,t} + \beta_8 AGE_{i,t} + \beta_9 DIV_{i,t} + \beta_{10} RD_{i,t} + \beta_{11} GDPGR_{i,t} + \beta_{12} INFL_{i,t} \\ + \beta_{13} COUN_i + \beta_{14} IND_i + \varepsilon_{i,t}$$

Where:

CH = Cash Holdings

FS = Firm Size

LEV = Leverage

PROF = Profit Margin

GROW = Growth Opportunity

CAPEX = Capital Expenditure

NWC = Net Working Capital

OCF = Operating Cash Flow

AGE = Firms Age

DIV = Dividend

RD = Research and development

GDPGR = GDP growth rate

INFL= Inflation Rate

COUN = Country

IND = Industry

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6, \dots$ = Regression Slope Parameters

e_t = error term

The model is modified as follows to suit this study.

$$CCH_{i,t} = \beta_0 + CCH_{i,t-1} + \beta_1 SIZE_{i,t} + \beta_2 LEV_{i,t} + \beta_3 PROF_{i,t} + \beta_4 GOP_{i,t} + \beta_5 CAPEX_{i,t} + \beta_6 LIQ_{i,t} + \varepsilon_{i,t}$$

Where:

CCH Corporate cash holding

FS = Firm Size

LEV = Leverage

PROF = Profitability

GOP = Growth Opportunity (Control variable)

CAPEX = Capital Expenditure (Control variable)

LIQ = Liquidity

β_0 = Regression Intercept

e_{it} = Error term

Table 1: Measurement of Variables

Variables	Measurements	Expectation	Source
Corporate Cash Holdings	$\frac{\text{Cash and cash equivalent}}{\text{Total asset}}$	None	Vuković <i>et al.</i> , (2022)
Firm Size	$\text{Log of total asset}$	+ve	Almustafa and Kalash (2022); Almagribi <i>et al.</i> , (2023)
Leverage	$\frac{\text{Total debt}}{\text{Total asset}}$	-ve	Joshi (2021; Yilmaz (2024)
Profitability	$\frac{\text{Net income}}{\text{Total assets}}$	+ve	Vuković <i>et al.</i> , (2022)
Growth opportunity	$\frac{\text{Stock price per share}}{\text{Book value per share}}$	+ve	Almagribi <i>et al.</i> (2023)
Capital Expenditure	$\frac{\text{Capex}}{\text{Total asset}}$	-ve	Joshi (2021)
Liquidity	$\frac{\text{Current Asset} - \text{cash}}{\text{Current liabilities}}$	+ve	Almagribi <i>et al.</i> (2023)

Source: Authors' Compilation (2025)

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive analysis spans ten years, from 2013 to 2023, and is based on information gathered from the annual financial statement publications of twenty-eight (28) industrial companies. The mean, median, maximum, minimum, standard deviation, skewness, and kurtosis are all included in the descriptive statistics (Table 2).

Table 2: Descriptive Statistics

Statistics	CCH	CAPEX	GOP	FS	LEV	LIQ	PROF
Mean	0.125	0.605	0.633	16.467	0.694	1.137	0.044
Median	0.076	0.557	0.778	16.286	0.595	1.016	0.053
Maximum	0.488	0.941	3.726	20.284	1.970	2.594	0.888
Minimum	0.000	0.008	-3.302	12.870	0.195	0.043	-2.651
Std.Dev.	2.259	0.523	1.299	1.966	0.594	0.612	0.404
Skewness	1.036	0.061	-0.834	0.066	1.641	0.453	-0.433
Kurtosis	2.982	2.063	4.892	2.129	8.083	2.612	37.100
Observations	308	308	308	308	308	308	308

Source: Authors' Computations (2025)

A common metric for characterising data distribution is the mean, which is calculated by averaging all of the values in a dataset to show its central tendency. For CCH, CAPEX, FS, GOP, LEV, LIQ, and PROF, the mean values for the different financial indicators are as follows: 0.124, 0.605, 0.633, 16.467, 0.694, 1.137, and 0.044, respectively. The median denotes the central value for each variable and is the point in a dataset where 50% of observations fall below it. For CCH, CAPEX, FS, GOP, LEV, LIQ, and PROF, the corresponding median values are 0.053, 0.557, 0.778, 16.286, 0.595, 1.016, and 0.053, respectively.

Each variable's highest value is displayed by the maximum value, which is 0.488, 0.941, 3.726, 20.284, 1.970, 2.594, and 0.888 for CCH, CAPEX, FS, GOP, LEV, LIQ, and PROF, respectively. The lowest value is displayed by the minimum value, which is 0.000, 0.008, -3.302, 12.870, 0.195, 0.043, and -2.651. A dataset's standard deviation quantifies its degree of variation. The variables CCH, CAPEX, FS, GOP, LEV, LIQ, and PROF have the following standard deviations: 5.264134, 0.363050, 1.996262, 122.8243, 45.93656, 0.682969, and 31.76496, respectively. The results show that PROF has the smallest standard deviation, indicating that its data is closely clustered around the mean, while CCH has the largest, indicating a wide spread in its data.

Skewness, which can be classified as positive, negative, or zero, is a metric used to quantify the probability distribution of the random variable. When the observed values of the variable have a long tail to the right, huge values, or a positive skew, this is known as a positive skewness. On the other hand, a lengthy tail on the left is indicated by a negative skewness. Left and right sides are equal when there is zero skewness. CCH, CAPEX, FS, GOP, LEV, LIQ, and PROF have skewnesses of 1.036, 0.061, -0.834, 0.066, 1.641, 0.453, and -0.433, respectively, in the table above.

It is clear from these numbers that CCH, CAPEX, FS, LEV, and LIQ all show positive skewness, whereas GOP and PROF show negative skewness.

Kurtosis quantifies the probability distribution's peakedness. A high peak is indicated by a kurtosis coefficient value greater than three (3), whereas a low peak is indicated by a value less than three (3). While FS and LIQ have kurtosis values below 3, suggesting low peakedness, CCH, CAPEX, GOP, LEV, and PROF have kurtosis values above 3, indicating high peakedness.

Correlation Analysis

Table 3: Correlation Matrix

VARIABLES	CCH	CAPEX	FS	GOP	LEV	LIQ	PROF
CCH	1						
CAPEX	-0.02	1					
FS	-0.14	-0.16	1				
GOP	0.01	-0.07	0.12	1			
LEV	0.44	-0.03	-0.20	0.00	1		
LIQ	-0.02	-0.33	-0.20	0.09	-0.08	1	
PROF	0.46	-0.06	-0.22	0.01	0.86	-0.08	1

Source: Authors' Computations (2025)

Table 3 depicts how CCH, CAPEX, FS, GOP, LEV, LIQ, and PROF are related to one another. GOP, LEV, and PROF have a positive correlation with CCH, while CAPEX, FS, and LIQ have a negative correlation. The correlation between CAPEX and FS, GOP, LEV, LIQ, and PROF is negative. There is a negative correlation between FS and LEV, LIQ, and PROF, but a favourable correlation with GOP. The GOP has a favourable correlation with PROF, LEV, and LIQ. PROF and LEV have a positive correlation, while LIQ and LEV have a negative correlation. PROF and LIQ have a negative correlation.

Table 4: Regression Results

Variables	RE	FE	GMM(First Diff)	GMM(ORTH)
CONSTANT	-0.219	0.270	-	-
CCH (-1)	-	-	0.119 (13.079) ***	0.167 (50.726) ***
CAPEX	-0.073 (-2.329) ***	-0.037 (-1.044)	-0.042 (-1.714) **	-0.073 (-4.554) ***
FS	0.018 (2.069) ***	0.039 (2.609) ***	0.035 (5.755) ***	0.035 (5.619) ***
GOP	-5.248 (-0.783)	0.0001 (-1.624)	0.003 (0.657)	-0.0001 (-0.771)
LEV	0.0001 (0.356) ***	0.0001 (0.419)	0.0003 (-12.121) ***	-0.0001 (-6.578) ***
LIQ	0.072 (4.469)	0.077 (4.436) ***	0.029 (2.066) ***	0.058 (4.358) ***
PROF	0.0003	0.0003	-0.006	-0.0007

	(0.668)	(0.563) ***	(-10.081) ***	(-14.362) ***
Adjusted R-squared	0.114	0.461	-	-
F-Statistics	7.551	8.939	-	-
Durbin-Watson	0.930	1.022	-	-
Hansen J-Statistic	-	-	21.629	21.732
m-Statistics	-	-	0.028	

Source: Author's Computation (2025)

Keys: *, **, and *** show $p < 0.1$, $p < 0.05$ and 0.01 ; () t-statistics in parentheses

Table 4 presents the findings of a panel least squares regression model to investigate the factors influencing corporate cash holdings in Nigerian listed manufacturing companies. The GMM (First Differences), GMM (Orthogonal Deviation), random effects, and pooled fixed effects models are used for comparison and a robustness evaluation. The primary emphasis of this paper is the GMM (Orthogonal) model, which is highlighted for its resilience while managing panel data with possible (suspected) endogeneity. The coefficient of cash and cash holding lagged by one period (CCH-1) is positive and statistically significant with a value of 0.149, indicating a strong persistence in cash holdings over time. This suggests that companies that have historically had large cash holdings tend to maintain high levels in the present, most likely as a result of a cautious or conservative financial policy.

Capital expenditure exhibits a negative and highly significant relationship with cash holdings, with a coefficient of -0.042. this indicates that firms invest more in capital assets; they tend to hold less cash, likely relocating resources towards long-term investments. With a coefficient of 0.035, firm size has a positive and significant impact on cash holdings. This suggests that larger manufacturing firms hold more cash, possibly due to greater cash generation capacity or as a buffer against scale-related risks.

The result also shows that growth opportunity has a negative but statistically insignificant coefficient of 0.003, suggesting that growth opportunity does not crucially influence cash holdings in these firms, possibly because their growth is externally financed or not very volatile. At 0.0003, leverage shows a favourable and noteworthy effect on cash and cash holdings. Higher leverage is linked to larger cash holdings; levered companies may keep more cash on hand to manage interest payments or lower default risk, and creditors and investors may require more liquidity from highly leveraged companies.

Liquidity has a positive and significant impact on cash and cash holdings with a coefficient of 0.029. This suggests that highly liquid firms do not need to hold much idle cash. With a coefficient of -0.006, profitability has a negative association with corporate cash holdings. This suggests that more profitable firms tend to hold less cash, possibly because they generate steady cash flows and do not need to hoard liquidity. Additionally, they frequently receive inflows of capital and may reinvest or distribute extra dividends. The Hansen J-statistic of 0.305 confirms the validity of the instrumental variables used in the GMM estimation, indicating no issues of over-emphasising. The Arellano-Bond test for a second-order serial correlation yields a paltry m-statistic of 0.028, implying no evidence of serial correlation and reinforcing the model's reliability.

Discussion of Findings

Following the completion of the investigation into the factors influencing corporate cash holdings in Nigerian listed manufacturing companies, some noteworthy findings are worth discussing. The results of this study showed a significant negative correlation between cash holdings and financial leverage, which is in line with the pecking order theory and the findings of Yılmaz (2024), Almagribi et al. (2023), and Almustafa and Kalash (2022). The result suggests that companies prefer debt over equity, which causes them to hold less cash. Additionally, a strong and positive correlation was discovered between corporate cash holdings and firm size. This supports the findings of multiple studies that demonstrate the importance of firm size, such as Yılmaz (2024), Tripathy and Uzma (2020), and Gupta and Bedi (2020). This suggests that while smaller businesses may do so as a precaution, larger businesses usually have more cash on hand because they have better growth prospects.

The study also found that corporate cash holdings are negatively impacted by profitability. Although this contradicts the positive relationship discovered by Da Costa Moraes et al. (2025), Almagribi et al. (2023), and Da Costa Moraes et al. (2025), it is consistent with the postulates of the Pecking theory. This implies that a company's cash flow increases as it becomes more profitable, which may result in higher retained earnings. Because they can rely on their cash flow for investments and operational needs, businesses with sufficient internal resources might feel less pressure to keep large sums of cash on hand. Furthermore, this study's finding of a negative correlation between capital expenditure and cash holdings is in line with the pecking order theory and several empirical studies, such as Akhtar (2025). This is predicated on the idea that capital expenditures directly deplete a business's cash reserves. On the other hand, the study found a direct correlation between corporate cash holdings and the liquidity ratio. This supports the findings of Almagribi et al. (2023) and supports the notion that financially sound businesses have both substantial cash reserves and strong overall liquidity.

Growth potential and cash holdings are found to have a negative but statistically insignificant relationship. The results contradict the study conducted by Almagribi et al. (2023), who found a significant positive coefficient. According to the research, high-growth companies might find themselves hoarding cash to protect themselves from unpredictability in the economy. Because businesses may hold cash regardless of their potential for growth, this can lessen the apparent negative relationship.

CONCLUSION AND RECOMMENDATIONS

The purpose of this study was to investigate the factors influencing corporate cash holdings in quoted Nigerian manufacturing companies. Out of 50 manufacturing companies listed on the Nigerian Exchange Group, 28 were chosen based on the usability of their financial statements from 2013 to 2023. Using the Generalised Method of Moments (GMM) as the method of data analysis, the study effectively addressed potential endogeneity issues and provided reliable estimates. The findings revealed that profitability, financial leverage and capital expenditure have a significant negative relationship with corporate cash holdings. In contrast, liquidity and firm size have a significant positive correlation with corporate cash holdings. Nonetheless, the association of growth potential with cash holdings is negative but statistically negligible. Overall,

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it can be concluded that profitability, firm size, leverage, capital expenditure and liquidity are significant factors that determine cash holdings in quoted manufacturing firms in Nigeria.

To improve the cash management in manufacturing companies in Nigeria, some value policy recommendations may be considered.

- i. Firms should optimise their cash holding policies by striking a balance between the expense of holding too much idle cash and the requirement for liquidity.
- ii. By using cost controls to reduce expenditures in non-critical operational areas, business management can increase efficiency and make more investments in key capital expenditures.
- iii. To maximise financial leverage while keeping enough cash reserves, companies may need to modify debt and equity levels in order to align their capital structure with strategic objectives.
- iv. To boost profitability and reduce cash withdrawals, businesses can diversify their sources of income. This will improve cash reserves and act as a cushion.
- v. Large businesses should implement cash flow optimisation techniques, such as prompt receivables collection and efficient inventory control.
- vi. Lastly, to ensure that cash holdings are in line with strategic goals, managers can develop and improve cash management strategies that react dynamically to changes in the liquidity ratio.

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