Firm's characteristics and cash holdings: a study of listed non-financial firms in Nigeria

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Abstract
The study examined the effect of firm's characteristics on cash holdings of listed non-financial firms in Nigeria. The specific objective was to examine the effect of profitability, liquidity, firm leverage, firm age and firm size on cash ratio. Ex-post facto research design was chosen for the study. Purposive sampling was used to select a sample size of sixty non-financial firms from a population pool of seventy-five non-financial firms listed on the Nigerian exchange group. Secondary data were collected from the annual reports of the sampled firms from 2014 to 2023 accounting year ends. Panel Estimated Generalized Least Squares were used in testing the hypotheses of the study. The findings revealed that: profitability has a positive but significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group (β = 0.0332; p-value = 0.1323); liquidity has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group (β = 0.1077; p-value = 0.0000); leverage has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group (β = 0.0000184; p-value = 0.0000); firm age has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group (β = 0.0019; p-value = 0.0000); firm size has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group (β = 0.0440; p-value = 0.0000). In conclusion, non-financial firms strategically manage cash reserves based on their operational needs, financial structure, and market conditions. The study recommends that financial managers of large companies should regularly conduct detailed cash flow forecasts to anticipate cash requirements based on operational cycles, seasonal fluctuations, and upcoming expenditures. This enables managers to maintain appropriate cash levels that reflect the firm's operational realities.

Keywords: *Firm's Characteristics, Cash Holdings, Profitability, Liquidity, Firm Leverage, Firm Age, Firm Size, Cash Ratio*

1.0 INTRODUCTION

Cash is a vital liquid asset for businesses, essential from inception through maturity and even during cessation. It is necessary for covering operating expenses, paying employees, funding capital expenditures, and investing in long-term growth projects (Vipond, 2019). Ye (2018) likens cash to the lifeblood of a business, emphasizing that a lack of cash can hinder a company's sustainability, regardless of its capabilities. Cash holdings is the portion of liquid assets that a firm maintain to cover potential operating losses and fund future investments (Jiang & Wu 2022). It is also any liquid investments, including cash and cash equivalents, that a firm retains to manage its liquidity needs and capitalize on investment opportunities (Erik 2022). These holdings are essential for liquidity management, operational flexibility, and strategic investment opportunities and assessing a company's financial health. However, cash level must not be excessive, or inadequate as it may affect firm's liquidity, operational and investment decisions and on the long run affect the returns to shareholders.

Excessive cash level provides a buffer against unexpected expenses or downturns in the company and allows for strategic investments when market conditions are favorable, but it also generate opportunity cost on potential returns from investments. Companies with limited cash may find it challenging to take advantage of sudden profitable investment opportunity or cover unexpected expenses. This can also amount to illiquidity that may on the long run threaten going concern assumption. However, Balanced Cash Reserves Provides sufficient funds to meet short-term obligations and investment opportunities but requires careful analysis and strategic decision making to avoid excessive risk or missed opportunities. The decisions on cash level can be influence by firm characteristics.

Firm characteristics are specific attributes of a company that influence its operations, strategic decisions, and overall performance. Firm characteristics according to Amahalu (2019) are the behavioural patterns of a company's operation enabling them to achieve their objectives throughout their operations. Also, firm characteristics could be seen as those specific traits that distinguish one company from the other, and it features normally influence a company's strategic decisions. There are many internal and external firm's attributes that could influence cash holding.

Profitability is a fundamental driver of a company's cash holdings. When a company generates profits, it has more resources available to retain as cash. Highly profitable companies typically have higher cash reserves. This is because they generate more revenue and can allocate a larger portion of their earnings to cash holdings. Companies that are profitable often have more opportunities to reinvest their earnings in growth initiatives, which can lead to increased cash consumption. Previous studies conducted by Davidson and Rosmita (2020), Nnubia and Ofoegbu (2021) Bojana, Kristina, Dejan and Dusan (2022) found that profitability has positive influence on cash holding.

Liquidity measures the ability of firm to meet short-term obligations and can also contribute to overall financial stability, reducing the risk of financial distress. Companies with high liquidity tend to have higher cash reserves. This is because they can easily access cash when needed and also influence cash holding. Liquidity has a negative influence on cash holding (Maheswar and Rabindra (2019), Bojana et.al (2022) while the previous work of Davidson and Rosmita (2020) found that liquidity has a positive influence on cash holding.

Cash holding can also be influenced by Leverage. Leverage is the use of debt to finance operations or investments by a company (Daruwala, 2023). Highly leveraged companies describe the ability of a company to get funds from external sources by issuing debt to get cash. Such a company may have lower cash holdings. This is because they need to allocate a portion of their cash flow to debt servicing and interest payments. This is in line with previous works conducted by Bojana et.al (2022), Amahalu (2019) which found that leverage has negative influence on cash holding. But Maheswar and Rabindra (2019) found leverage to have a positive influence on cash holding.

It could also be argued that firm size plays a crucial role in corporate finance, shaping how a company manages its earnings. Changes in firm size can directly impact a company's cash holdings (Magerakis, Gkillas, Tsagkanos & Siriopoulos, 2020). Larger firms, often benefiting from economies of scale, may retain a larger portion of their earnings and invest in projects that could generate higher returns over time, potentially boosting future cash flow. Similarly, older firms may have more stable cash flows and established practices for cash management, influencing their cash holding strategies (Mohd-Ashhari & Faizal, 2018).

Firm characteristics and cash holdings are not always straightforward, External factors such as inflation can significantly influence how profitable companies manage their cash reserves. Higher levels of inflation generally reduce the tendency of firms to hold cash. This is in line with trade off theory which believes that as inflation rises, firms tend to reduce their cash reserves due to increased operational costs and uncertainty about future cash flows. However, when inflation reaches a certain threshold, firms may increase cash holdings as a precautionary measure to mitigate bankruptcy risks which is in line with pecking order theory. There is a negative relationship between inflation and corporate cash holdings (Mesfin & Enye 2016) and no significant effect on cash holding (Rizky 2019)

In Nigeria, firms face the dilemma of balancing cash reserves against the opportunity cost of holding cash in an inflationary environment. High inflation diminishes the real value of cash, leading firms to potentially reduce cash holdings in favor of investments that can yield higher returns. Also, the relationship between firm characteristics such as profitability, leverage, liquidity, firm size and firm's age and its effect on cash holdings is complicated by inflation causing volatility and uncertainty into financial planning and complicating their financial management strategies. Factors such as inadequate financial planning, limited access to credit markets, and economic volatility contribute to cash holding levels that deviate from what is considered optimal (Pratiwi, Wahyuni & Adrianto, 2024)
However, Different sectors may respond uniquely to inflationary pressures based on their operational dynamics and market conditions, firms may exhibit similar levels of cash holdings, yet the underlying motivation can differ significantly and understanding these various motivations behind cash holding is fundamental but complex. By studying non-financial firms listed on the NGX, the researcher would contribute to a better understanding of the factors that influence corporate cash holding decisions in a developing economy with a history of high inflation
Several studies, including those by Davidson and Rosmita (2020), Qian Pengyu (2021), Ernie (2020), Henry and Viriany (2023), Mouline and Sadik (2021), Oket and Paaso (2018), Lan and Block (2012), Jaradi et al. (2021), Nnado, Onyeka, and Ugwu (2020), and Rashid, Riaz, and Raiz (2022), have investigated factors influencing cash flow. However, significant gaps remain in the existing literature. Firstly, local studies in Nigeria have rarely considered firm's

characteristics moderated by inflation as a determinant of cash flow, leaving a notable gap in understanding cash flow dynamics within the Nigerian context. Secondly, research in Nigeria has not comprehensively examined the entire non-financial sector of the Nigerian exchange group, indicating a need for a broader scope of analysis to gain a complete understanding of cash flow dynamics within the Nigerian market.

1.1 Objectives of the Study

The major objective of this study was to ascertain firm's characteristics and their effect on cash holdings in listed non-financial firms on NGX. The specific objective was to designed to:

1. Examine the effect of profitability on cash ratio of non-financial firms listed on Nigeria Exchange Group (NGX)
2. Determine the effect of liquidity on cash ratio of non-financial firms listed on Nigeria Exchange Group (NGX).
3. Assess the effect of firm leverage on cash ratio of non-financial firms listed on Nigeria Exchange Group (NGX)
4. Find the effect of firm age on cash ratio of non-financial firms listed on Nigeria Exchange Group (NGX)
5. Ascertain the effect of firm size on cash ratio of non-financial firms listed on Nigeria Exchange Group (NGX)

2.0 Literature Review

2.1 Conceptual Review

2.1.1 Cash holding:

Cash holdings refer to the amount of cash that a company keeps on hand for various purposes Hsu-Che, Jen-Hsiang & Pei-Wen 2021). Cash holding refers to the amount of cash or cash equivalents that a business keeps on hand or easily accessible for operational and investment purposes. It is the amount of cash and cash equivalents that a company holds at a given point in time. This is an essential aspect of corporate financial policy, as it allows companies to maintain enough liquidity for daily operations, hedge risks, and finance long-term investments (Almeida et al. 2014). Cash holding is also the amount of cash that a person or a company keeps available to spend rather than investing. They are cash held by the company as cash in hand or available for investment in physical assets and distributed to investors. It is seen as highly liquid assets that can be converted into cash in a short period of time. This includes physical cash, bank deposits, and short-term investments (Opler et al. 1999).

The concept of cash holding is important for companies as it provides them with the liquidity needed to meet their short-term obligations and invest in new opportunities. Cash holding is considered a strategic tool to create value, reduce transaction costs, gain market share, and resist financial constraints (Faulkender & Wang 2006). It is essential for meeting short-term obligations, funding day-to-day operations, and withstanding financial difficulties. It is a crucial financial decision made by managers to ensure the smooth functioning of the organization.

2.1.1.1 Cash Ratio

The cash ratio is a financial metric that measures a company's liquidity by assessing its ability to cover short-term liabilities using only its cash and cash equivalents (Amahalu & Okudo, 2023). It is calculated by dividing cash and cash equivalents by current liabilities. This ratio provides a conservative view of a company's liquidity, as it focuses solely on the most liquid assets, excluding inventory and receivables. A cash ratio of less than 1 indicates that a company may not have enough cash on hand to meet its short-term obligations, while a ratio greater than 1 suggests that it can easily cover its liabilities.

In practice, the cash ratio is particularly useful for assessing the financial health of companies in industries where cash flow is critical, such as retail or services. Investors and creditors may use the cash ratio to gauge the risk of default, as it highlights how quickly a company can respond to financial pressures. However, while a high cash ratio may indicate strong liquidity, it could also suggest that a company is not efficiently using its cash to generate returns (Amahalu & Okudo, 2023). Therefore, it's essential to consider the cash ratio in conjunction with other financial metrics to gain a comprehensive understanding of a company's overall financial position.

2.1.2 Profitability:

Profitability is a crucial metric that reflects a company's ability to generate income relative to its expenses (Alduais et al., 2023). It serves as a key indicator of financial health and operational efficiency, guiding businesses in their strategic decisions**.** Profitability refers to the capacity of a business to earn a profit, which is the surplus remaining after all expenses have been deducted from total revenue. It is often expressed as a ratio, indicating how much profit is generated for each unit of revenue or investment. Such ratios may include: Net Profit Margin which indicates how much net income is generated as a percentage of total revenue. And can be measure by net profit/total revenue. Return on Assets (ROA) indicates how effectively a company uses its assets to generate profit, and is measured by the formula Net Income/Total Assets (Wall Street Prep, 2024). Return on Equity (ROE) measures the return generated on shareholders' equity and is computed by assessing Net Income/Shareholders' Equity (Business Insider, 2024).

High profitability signals that a company can sustain operations and invest in growth opportunities. Investors often look at profitability metrics to evaluate potential returns on their investments. Analyzing profitability helps identify areas where costs can be reduced or revenues increased, driving strategic improvements.

2.1.3 Liquidity

Liquidity refers to the ability of a company or individual to convert assets into cash or pay obligations when they come due (Precoro, 2022; Nworie & Agwaramgbo, 2023). Liquidity also refers to the ease with which an asset can be converted into cash without incurring significant losses in value (Agicap, 2022). It allows companies to meet short-term obligations and operational expenses and provides a buffer against unexpected cash flow disruptions. Liquidity enables companies to take advantage of investment opportunities that arise and is a key factor in a company's financial health and creditworthiness (Tipalti, 2022). Liquidity is measured using liquidity ratios, such as: Current ratio which is measured by current

assets/current liabilities (Nworie & Ofoje, 2022). Quick ratio is measured by calculating (Cash + Marketable securities + Accounts receivable)/Current liabilities. Cash ratio which is computed by Cash and cash equivalents/Current liabilities.

2.1.4 Leverage:

Leverage refers to the use of debt or borrowed capital to increase the potential return of an investment. It is a tool that can be used by both investors and companies to amplify returns, but it also increases risk (Investopedia, 2022). Leverage is defined as the use of credit or borrowed capital to undertake an investment or project. It allows entities to finance their assets using debt instead of equity, which can influence growth (Nworie, Obi, Anaike & Uchechukwu-Obi, 2022). Leverage allows investors to significantly increase potential returns on an investment using instruments like options, futures, and margin accounts and enables companies to invest in growth strategies and expand operations without issuing stock. Leverage multiplies the potential returns from a project, but also the potential downside risk if the investment does not perform well. The degree of a company's leverage is often measured using financial ratios, such as: Debt-to-equity ratio computed by Total debt/total equity. Debt-to-assets ratio calculated using Total debt/total assets. Degree of financial leverage calculated by percentage change in earnings per share divided by percentage change in operating income.

2.1.5 Firm Age

Firm age refers to the length of time a business has been in operation since its establishment. It is a critical concept in the field of entrepreneurship, economics, and business studies, as it encapsulates various dimensions of a company’s lifecycle, including its maturity, experience, and evolution within the market (Akben-Selcuk, 2016). The age of a firm is typically measured from the date of its incorporation or founding to the present day, and this temporal aspect is significant in assessing the organization’s operational history, resilience, and adaptability to changing market conditions. (Akben-Selcuk, 2016).

The concept of firm age is vital for understanding the dynamics of business performance and growth trajectories. Older firms often benefit from accumulated knowledge, established relationships, and enhanced reputations, which can translate into competitive advantages (Khan et al., 2022)

Over time, a firm develops not only its operational capabilities but also its brand identity and market position. This historical context provides older firms with insights and experiences that can guide decision-making processes, enabling them to navigate challenges more effectively than younger firms. As a result, firm age is often associated with stability, reliability, and an established customer base, which can positively impact financial performance and market perception (Khan et al., 2022).

Conversely, younger firms are generally characterized by their innovation potential and flexibility (Nworie & Mba, 2022). They are often more inclined to take risks and experiment with new business models, products, and services. This willingness to innovate can lead to rapid growth and the ability to disrupt established markets. However, younger firms may face challenges such as limited resources, lack of brand recognition, and vulnerability to market fluctuations. Firm age thus serves as a contrasting factor that influences a company’s strategic

orientation, risk tolerance, and overall approach to market competition (Park, Lee, & Kim 2023)

Furthermore, the age of a firm can influence its access to resources, such as funding and partnerships. Older firms may find it easier to secure financing due to their proven track record and established relationships with financial institutions and investors. In contrast, younger firms often have to navigate barriers to entry and may rely on venture capital or angel investors to fuel their growth. This disparity in resource accessibility can significantly impact the trajectory of a firm's development and its long-term sustainability (Okunbo & Oghuvwu, 2022).

In addition, firm age plays a role in shaping the organizational culture and management practices within a company. Older firms may have more formalized structures and processes developed over years of operation, whereas younger firms may embrace more informal, innovative, and adaptive approaches to management. This distinction can affect employee engagement, motivation, and retention, as organizational culture is often rooted in the historical context of the firm’s age. In summary, firm age is a multifaceted concept that encompasses the time a business has been operational, impacting various aspects of its performance, strategy, and organizational dynamics. It serves as an important indicator of a firm’s experience, resilience, and potential for growth, influencing both internal practices and external market perceptions. Understanding the implications of firm age is essential for entrepreneurs, investors, and policymakers as they navigate the complexities of business development and competition in a dynamic economic environment.

2.1.6 Firm Size:

Firm size is a multidimensional concept in business and economics that refers to the scale of operations of a company, typically measured by various quantitative metrics such as the number of employees, total revenue, assets, or market share. This notion plays a crucial role in the strategic planning and operational execution of businesses, impacting their market position, competitive strategy, and overall performance (Ndiaye & Moustapha, 2023). While firm size can be assessed through different indicators, each measure offers unique insights into the company's capabilities, market reach, and resource allocation.

In essence, firm size captures the extent of a company's resources and the magnitude of its activities within a given market or industry (Kasongo, 2019). A larger firm, often characterized by a more extensive workforce and higher revenue, typically possesses greater financial resources, which can enable it to invest more in research and development, marketing, and infrastructure. This financial heft can translate into advantages such as economies of scale, where larger firms can produce goods or services at a lower per-unit cost due to increased efficiency. Thus, firm size not only influences operational capabilities but also plays a significant role in shaping competitive dynamics within industries.

In contrast, smaller firms may exhibit agility and flexibility that larger firms might lack. They often can respond more rapidly to market changes or customer demands, positioning themselves advantageously in niche markets or innovative sectors. The size of a firm can also influence its approach to risk management, organizational structure, and decision-making processes. Smaller organizations might have less bureaucracy, allowing for quicker decisions, while larger firms may adopt more formalized structures that can delay responses but provide stability and consistency.

2.1.7 Inflation as Controlling Variables

Inflation" refers to price increases resulting from the diminished purchasing power of a country's currency over time. Inflation is typically expressed as a percentage that describes the rate at which prices are increasing compared to previous periods. Inflation typically occurs when the growth of a country's money supply outpaces the growth of its economy or when supply is significantly lower than demand (Investopedia, 2023).

During periods of inflation, companies require more funds to acquire the same quantity of goods, raw materials, and quality of service. As prices keep increasing, businesses may foresee additional inflation and opt to buy raw materials and pile up stock of inventory ahead of time to mitigate cost increases or to maintain excess reserves (Alsharif et al., 2023).

Additionally, some may choose to invest in gold or real estate to protect against the erosion of purchasing power and to generate extra income. Inflation affects purchasing power and can influence firms' cash holding strategies. During periods of high inflation, firms may adjust their cash reserves to mitigate risks associated with rising costs (Jaro Education, 2023).

2.2 Theoretical framework:

2.2.1 Trade-off Theory

The Trade-off Theory has its roots in the Modigliani and Miller (M&M) propositions of 1958, which originally postulated that in a world without taxes, bankruptcy costs, and other market imperfections, the capital structure doesn't matter. The theory gained popularity in the 1980s and 1990s, as empirical studies showed that firms did have target debt ratios and that the costs and benefits of debt financing were important factors in determining a firm's capital structure. However, as researchers began to factor in real-world complexities, the idea of a trade-off between the costs and benefits of debt emerged, leading to the development of the Trade-off Theory.

The trade-off theory is a financial theory that suggests that a company should balance the costs and benefits of various sources of financing, such as debt and equity, in order to achieve an optimal capital structure. The benefits of debt mainly arise from the tax shield it offers since interest payments are tax-deductible. On the other hand, the costs of debt include bankruptcy costs and financial distress costs. So, according to this theory, firms determine their capital structure (debt vs. equity) by striking a balance between these costs and benefits.

The trade-off theory provides insights into the determinants of cash holdings by suggesting that firms balance the costs and benefits of debt financing to achieve an optimal capital structure. This theory has implications for cash holdings suggests that highly leveraged firms tend to hold more cash as a precautionary measure to avoid financial distress and meet their debt-related obligations, such as interest payments and principal repayments (Opler, Pinkowitz, Stulz, & Williamson, 1999; Kim, Mauer, & Sherman, 1998). The relationship between leverage and cash holding is generally positive, with leveraged firms holding more cash to maintain financial flexibility

The trade-off theory posits that firms weigh the benefits of debt, such as the tax shield, against the costs of debt, including bankruptcy costs. Firms with higher bankruptcy costs may hold more cash to reduce the likelihood of financial distress and avoid the associated costs (Ferreira

& Vilela, 2004). Cash holdings act as a buffer against unexpected shocks and help firms maintain operations during periods of financial difficulty. Profitable firms may hold more cash to take advantage of growth opportunities and avoid the costs of external financing (Opler et al., 1999). The trade-off theory suggests that profitable firms can use their cash flows to finance investments and reduce their reliance on debt, leading to lower leverage and higher cash holding.

Firms with attractive investment opportunities may hold more cash to fund these projects and avoid the costs of external financing (Ferreira & Vilela, 2004). The trade-off theory suggests that firms with good investment prospects can use their cash holdings to capitalize on these opportunities and create value for shareholders. In summary, the trade-off theory provides a framework for understanding the determinants of cash holdings by emphasizing the balance between the costs and benefits of debt financing. Factors such as leverage, bankruptcy costs, profitability, and investment opportunities can influence a firm's optimal cash holdings according to this theory.

2.3. Empirical Review

Jafari, Gord, and Beerhouse (2014) analyzed the impact of debt, firm size, and liquidity on the cash flow sensitivity of investment for 100 companies listed on the Tehran Stock Exchange (2008-2012). Using panel data regression, they found an inverse relationship between debt and cash flow sensitivity, while firm size and liquidity showed positive, significant impacts.

Wang, Li, and Xing (2014) studied corporate cash-holding strategies in Chinese firms (1998-2009). Results showed a negative association between cash holdings and CPI, which reversed at higher CPI levels. There was also a U-shaped relationship between the operating cycle and cash holdings, affected by inflation.

Uyar and Kuzey (2014) explored factors affecting cash holdings in Turkish non-financial firms (1997-2011). Findings indicated firms held an average of 9.1% of assets as cash. Key determinants included positive impacts from cash flow and growth opportunities, while leverage and capital expenditures had negative effects.

Fallah and Hashemi (2017) examined inflation and operating cycle effects on cash holdings in 77 Tehran Stock Exchange companies (2003-2013). Results showed a reversed relationship at certain inflation levels, becoming direct thereafter. Operating cycle effects followed a similar pattern.

Iftikhan (2017) analyzed cash holding determinants in KSE firms (2010-2014). Findings showed firms increased cash due to higher cash flow uncertainty, with positive returns on assets linked to large investment opportunities. Conservative cash holding initially boosted market value but weakened profitability over time.

Maheshwari and Rao (2017) identified financial factors influencing corporate cash holdings using fixed-effects panel regression. Results showed cash holdings were positively related to cash flow, dividends, market-to-book ratio, debt issuance, and equity issuance but negatively affected by working capital, leverage, R&D, and capital expenditures.

Dehghanfard and Moslemi (2017) studied inflation and operating cycle impacts on cash holdings in 103 Tehran Stock Exchange firms (2010-2014). They found no significant effect of inflation or operating cycle on cash holding levels.

Demir and Ersan (2017) analyzed Economic Policy Uncertainty's effect on cash holdings in BRIC countries (2006-2015). Findings showed firms held more cash during periods of high uncertainty, supported by robust data including industry and year fixed effects.

Yang et al. (2017) examined the effect of monetary policy on corporate investment and cash holding in Chinese firms (2003-2013). Tightened monetary policy reduced investment, but cash holdings mitigated this effect, especially for non-SOEs and firms in less developed financial markets.

Ummar et al. (2018) studied global cash holding determinants using data from 5,957 companies across 47 countries (2007-2016), finding that factors like size, cash flow, and financial strength positively influence cash holdings, while leverage and profitability have negative effects. Orlova and Rao (2018) highlighted differences in firms' speed of cash adjustment, with cash deficits showing slower adjustment rates. Koo and Maeng (2018) found cash flow sensitivity to be higher when investment opportunities are low, implying precautionary cash holding motives.

Mohammadi et al. (2018) confirmed similar findings for Korean firms. Cheryta et al. (2018) found leverage negatively impacts cash holdings in Indonesian firms, with asymmetry affecting firm value. Eneh et al. (2019) noted that growth opportunities and cash flow positively influence cash holdings in Nigerian agricultural firms, while leverage has a negative impact.

Sethi and Rabindra (2019) analyzed 500 Indian firms (2005-2017), concluding that growth opportunities, leverage, and cash flow support both trade-off and pecking order theories. Kasongo (2019) reported that leverage and economic conditions negatively affect cash holdings in South African firms, while debt maturity and cash flow have positive effects.

Kwan and Lau (2020) focused on hospitality firms, finding that firm size and capital expenditures reduce cash levels, supporting trade-off and pecking order theories. Guo et al. (2020) linked financial leverage with improved efficiency, mediated by cash holdings. Nnubia et al. (2020) found firm size, profitability, and liquidity positively influenced cash holdings in Nigeria, South Africa, and Kenya, while leverage had a negative effect.

Davidson and Rasyid (2020) noted profitability, liquidity, and leverage positively impact cash holdings for Indonesian firms, with firm size being non-significant. Nnado et al. (2020) showed that financial leverage has an insignificant negative effect on cash holdings, while firm size has a positive but insignificant influence on cash levels in Nigerian manufacturing firms.

Efstathios et al. (2020) analyze cash holdings' financial determinants, focusing on firm size post-crisis, using panel data from 6629 UK firms (2010-2018). Results show smaller firms hold more cash due to risk and precautionary motives, with variations linked to managerial ownership. Orlova (2020) finds that managerial culture and macroeconomic factors affect cash holdings adjustment speed in 48 countries, highlighting agency costs' role. Li and Luo (2020) identify healthcare and tech industries driving U.S. firms' rising cash ratios (1980-2015), influenced by financial constraints and the 2008 crisis.

Mortal, Nanda, and Reisel (2020) note European private firms' low cash due to high borrowing costs, contrasting public firms. Karpuz et al. (2020) report IFRS adoption decreases cash valuation, notably in constrained firms in strong legal systems. Kuzucu (2021) shows bidirectional causality between stock liquidity and cash holdings, stronger for smaller firms. Adiputra and Nataherwin (2021) find liquidity insignificantly impacts cash holdings, but asset growth and net working capital do so positively in Indonesian manufacturing firms.

Javadi et al. (2021) link economic policy uncertainty to higher cash holdings due to agency problems, using data from 38 countries (2002-2018). Mouline and Sadok (2021) study Moroccan firms, finding cash holdings positively relate to cash flow but negatively to debt and growth opportunities. Avinash and Jawade (2021) discuss Indian firms' reliance on external financing for dividends, with promoter holding impacting financing decisions.

Chang and Yang (2022) find that firms with higher cash holdings recover operating performance faster after financial crises, driven by increased capital and R&D spending. Factors like financing constraints and governance influence this recovery. Firms should maintain cash reserves for emergencies.

Jiang and Wu (2022) also find that UK SMEs with volatile cash flow and institutional ownership hold more cash, while leveraged, dividend-paying, or non-executive-owned firms hold less. Governance mechanisms differ by growth opportunities, affecting cash policies.

Vuković et al. (2022) analyze Balkan wholesale companies and find size, leverage, and profitability significantly affect cash holdings. Larger firms hold less cash, while more profitable firms increase cash for liquidity and growth. Balancing profitability and liquidity is crucial for optimal cash policies.

Elyasiani and Movaghari (2022) use robust regression to identify key cash holding determinants, finding financial leverage crucial while governance variables are less significant. The 2008 crisis altered cash predictors, highlighting different drivers for constrained and unconstrained firms. The LAD-LASSO model showed better prediction accuracy, relevant for corporate managers and policy makers.

DeAngelo, Gonçalves, and Stulz (2022) analyzed interactions between cash-balance and leverage dynamics, finding firms adjust leverage significantly as cash reserves decline, aligning with internal versus external funding models. Donghe, Zihao, and Xindong (2023) observed increased corporate cash holdings post-M&A laws in 34 jurisdictions, driven by a need for M&A funding, with investors viewing such hoarding as value-reducing. Amahalu and Okudo (2023) found negative relationships between firm size, R&D, leverage, and cash holdings in Nigerian conglomerates. Das, Hasan, and Sutradhar (2024) linked economic policy uncertainty and inflation to higher corporate cash holdings, varying by sector and presidential terms.

Hidayati and Ratnawati (2024) confirmed that profitability and leverage impact cash holdings in Indonesian industrial firms, while firm size did not. Yilmaz (2024) identified significant determinants of corporate cash holdings in six emerging markets, including firm size and R&D, with varied macroeconomic impacts. Ananzeh et al. (2024) highlighted ESG's moderating effect on the relationship between cash holdings and dividends, showing a positive correlation in moderate ESG environments. Johan et al. (2024) established an inverse relationship between the cash conversion cycle and firm performance in BRICS countries.

Chada, Saravanan, and Varadharajan (2024) found Indian controlling shareholders increase cash flow sensitivity to preserve socio-emotional wealth, even avoiding external capital. This tendency was more pronounced in non-business group affiliates.

3.0 METHODOLOGY

The research design used in this study is an *ex-post facto* design, which is a type of research design that investigates the relationship between independent variable and dependent variable after the event have taken place (Nworie, Okafor & John-Akamelu, 2022). *Ex-post facto* design involves observing the effects of an independent variable that has already taken place or been manipulated without the researcher's control. This design is appropriate for this study because it is not possible to manipulate the variables since the variables under investigation (firm attributes and cash holding) have occurred in the past.

The study's population consists of all non-financial firms listed on the Nigerian Exchange Group over a decade-long span from 2014 to 2023. As of December 31st, 2023, there were a total of 75 non-financial companies listed on the Nigerian Exchange Group. This study employed a purposive non-probability sampling technique to determine the final sample size, considering the availability and accessibility of pertinent data essential for the research. Initially, firms that became listed on the Nigerian Exchange Group after 2014 (the study's designated start period) were excluded to maintain a consistent panel data structure across homogeneous timeframes required for accurate estimation. Additionally, firms lacking complete information necessary for estimation purposes were also excluded. Consequently, the final sample comprised sixty (60) listed non-financial companies as shown below.

Table 3.1 Sample Size

1. Ellah Lakes
2. FTN Cocoa Processor
3. Livestock Feeds
4. Okomu Oil Palm
5. Presco
6. Chellarams
7. John Holt
8. SCOA Nigeria
9. Transcorp
10. UACN Plc.
11. Arbico Plc
12. Julius Berger Nig. Plc.
13. Sfs Real Estate Investment Trust
14. Smart Products Nigeria Plc
15. UACN PDC Plc
16. UH Real Estate Investment Trust
17. Cadbury Nigeria Plc.
18. Champion Brewery Nig. Plc.
19. Dangote Sugar Refinery Plc.
20. Flour Mills Nig. Plc.
21. Guinness Nig. Plc

22. Honeywell Flour Mill Plc.
23. International Breweries Plc.
24. Nascon Allied Industries Plc.
25. Nestle Nigeria Plc
26. Nigerian Breweries Plc
27. Nigerian Enamelware Plc
28. Northern Nig. Flour Mills Plc
29. PZ Cussons Nigeria Plc.
30. Unilever Nigeria Plc.
31. Union Dicon Salt
32. Vitafoam Nigeria Plc.
33. Fidson Healthcare
34. May & Baker Nig
35. Morison Industries
36. Neimeth Int Pharm
37. Pharma-Deko
38. Chams Holding Company Plc
39. CWG Plc
40. E-Tranzact International Plc
41. NCR (Nigeria)
42. Omatek Ventures Plc
43. Austin Laz
44. Berger Paints Plc.
45. Beta Glass Plc.
46. Cap Plc.
47. Cutix Plc.
48. Dangote Cement Plc.
49. Lafarge Africa Plc.
50. Meyer Plc.
51. Tripple Gee And Company Plc.
52. Aluminium Extrusion Ind. Plc
53. Industrial & Medical Gases Nigeria Plc
54. Multiverse Mining and Exploration Plc
55. Thomas Wyatt Nig. Plc.
56. Conoil Plc
57. Eterna Plc.
58. Japaul Gold & Ventures Plc
59. MRS Oil Nigeria Plc.
60. Totalenergies Marketing Nigeria Plc

Source: Researcher's compilation (2024)

This study relied on secondary data that were obtained from the annual audited financial statements of the sampled firms from 2014 to 2023. Descriptive statistics were employed to summarize and explore the main features of the dataset. Panel Estimated Generalized Least Squares (EGLS) were employed to test the hypotheses of the study. Panel EGLS is particularly

suited for addressing the challenges posed by panel data, such as heteroskedasticity and potential correlations across cross-sections.

Table 3.2 Measurement of Variables

Variables	Formula	Source
1. Cash ratio	Cash and Cash equivalent/Current Liabilities	Amahalu & Okudo, 2023
2. Leverage	Total Liabilities/Total Equity	Enekwe, Agu & Eziedo, 2014
3. Firm Size	Natural log of total assets	Dang, Li & Yang, 2018
4. Firm Age	Number of years a firm has existed	Douye & Gospel, 2023
5. Liquidity	Current asset/Current liability	Saleem & Rehman, 2011
6. Profitability	Earnings after tax/total asset	Al Nimer, Warrad & Al Omari, 2015
7. Inflation	CBN-given percentage at which the general level of prices for goods and services rises	Adaramola & Dada, 2020

Source: Researcher's Compilation, 2024

The estimable regression model for the test of the hypotheses after adding inflation as a control variable is shown below:

$$CHR_{it} = \alpha_0 + \beta_1 PROF_{it} + \beta_2 LEV_{it} + \beta_3 FSZ_{it} + \beta_4 FAGE_{it} + \beta_5 LIQ_{it} + \beta_6 INF_{it} + \mu_{it} \ldots\ldots\ldots (i)$$

Where,

CHR	=	Cash ratio
PROF	=	Profitability
LEV	=	Leverage
FSZ	=	Firm Size
FAGE	=	Firm Age
LIQ	=	Liquidity
INF	=	Inflation
α_0	=	constant
β_{1-6}	=	coefficients of the independent variables
μ	=	Error term

i	=	Firm of interest
t	=	Period of interest

4.0 DATA ANALYSIS

4.1 Descriptive Analysis of Data and Model Diagnostics

As shown in Table 4.1, descriptive statistics were employed to summarize and explore the main features of the dataset. This involved calculating measures such as means, medians, standard deviations, and ranges for each variable.

Table 4.1 Descriptive Analysis

	CHR	PROF	LIQ	LEV	FAGE	FSZ	INF
Mean	0.313339	0.013138	1.463430	-10.94320	46.08333	7.191980	15.65100
Median	0.147874	0.029437	1.152081	1.175153	48.00000	7.083710	15.50000
Maximum	5.372893	5.816481	36.41061	131.0757	100.0000	9.487205	28.92000
Minimum	-0.841835	-3.012121	0.000418	-8396.481	5.000000	4.758056	7.980000
Std. Dev.	0.486096	0.331114	2.224543	343.1186	19.61975	0.872768	5.871749
Skewness	3.990091	7.018587	10.26247	-24.38866	0.059841	-0.016143	0.862675
Kurtosis	31.22496	175.3666	139.2893	596.5467	2.524418	2.956380	3.162031
Jarque-Bera	21508.29	747682.1	474901.1	8866923.	6.012542	0.073627	75.07725
Probability	0.000000	0.000000	0.000000	0.000000	0.049476	0.963856	0.000000
Sum	188.0034	7.882789	878.0582	-6565.918	27650.00	4315.188	9390.600
Sum Sq. Dev.	141.5374	65.67228	2964.208	70520481	230575.8	456.2723	20651.98
Observations	600	600	600	600	600	600	600

Source: Analysis Output (2024) Using Eviews Version 10

As shown in Table 4.1 above, the **Cash Ratio (CHR)** has a mean value of approximately 0.313, indicating that, on average, non-financial firms have cash and cash equivalents that cover about 31.3% of their current liabilities. The maximum cash ratio observed is 5.373, suggesting that some firms maintain substantial cash reserves compared to their liabilities. Conversely, the minimum cash ratio of -0.842 indicates that a few firms might have negative cash positions, possibly due to high current liabilities. The standard deviation of 0.486 reflects a moderate level of variation in cash ratios across the firms, signifying that while some firms are highly liquid, others may be struggling with liquidity.

The **Profitability (PROF)** variable shows a mean of 0.013, indicating that the average profitability, as measured by earnings after tax relative to total assets, is quite low at approximately 1.3%. The maximum profitability figure of 5.816 suggests that some firms achieve significantly higher returns on their assets, while the minimum profitability of -3.012 indicates that several firms are operating at a loss. The standard deviation of 0.331 points to a considerable variation in profitability across the sampled firms, with some firms showing strong financial performance while others struggle.

The **Liquidity (LIQ)**, with a mean of 1.463, suggests that, on average, firms have more current assets than current liabilities, indicating a relatively healthy liquidity position. The maximum

liquidity ratio of 36.411 indicates a few firms maintain an exceptionally strong liquidity position, while the minimum of 0.0004 indicates that some firms are barely meeting their short-term obligations. The standard deviation of 2.225 reveals a high variability in liquidity across firms, showing that while most firms are liquid, there are outliers that may face significant liquidity challenges.

The **Leverage (LEV)** metric has a mean of -10.943, which indicates that, on average, total liabilities exceed total equity for these firms, implying that they may be heavily leveraged. The maximum leverage of 131.076 is particularly concerning, as it suggests some firms operate with significantly more debt than equity, while the minimum of -8396.481 indicates extreme cases where firms have exceedingly high levels of liabilities in relation to equity. The high standard deviation of 343.119 indicates substantial variability in leverage among firms, with some firms being far more leveraged than others.

For **Firm Age (FAGE)**, the mean value is approximately 46.083 years, which indicates that the non-financial firms in this sample are, on average, relatively mature entities. The maximum age of 100 years indicates the presence of well-established firms, while the minimum age of 5 years suggests that there are also younger firms in the mix. The standard deviation of 19.620 indicates moderate variability in firm age, reflecting a diverse mix of both long-standing and newer firms.

The **Firm Size (FSZ)** variable, represented by the natural logarithm of total assets, has a mean of 7.192, indicating that firms, on average, possess a significant asset base. The maximum size recorded is 9.487, suggesting that some firms are substantially larger than others in terms of assets. The minimum of 4.758 points to smaller firms within the sample. The standard deviation of 0.873 indicates that there is a moderate level of diversity in firm size, with a range that captures both large and small entities.

Lastly, the **Inflation (INF)** statistic shows a mean value of 15.651%, reflecting the average inflation rate in the economy during the period of study. The maximum recorded inflation rate of 28.92% suggests that some periods experienced notably high inflation, which could impact the financial performance of firms. The minimum inflation rate of 7.98% indicates lower inflation phases, while the standard deviation of 5.872 demonstrates variability in inflation rates, which could influence firms' operating conditions and financial strategies.

4.2 Test of Hypotheses

Panel Estimated Generalized Least Squares (EGLS) were employed to test the hypotheses of the study. Panel EGLS is particularly suited for addressing the challenges posed by the panel data, namely heteroskedasticity and potential correlations across cross-sections.

Table 4.6 Panel Regressions

Dependent Variable: CHR
Method: Panel EGLS (Cross-section weights)
Date: 10/04/24 Time: 07:36
Sample: 2014 2023
Periods included: 10
Cross-sections included: 60

Total panel (balanced) observations: 600
Linear estimation after one-step weighting matrix
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PROF	0.033178	0.022016	1.507021	0.1323
LIQ	0.107704	0.016932	6.361074	0.0000
LEV	0.0000184	1.12E-06	16.43634	0.0000
FAGE	0.001931	0.000340	5.679950	0.0000
FSZ	0.044005	0.008950	4.916550	0.0000
INF	0.006916	0.001319	5.244594	0.0000
C	-0.425774	0.075440	-5.643882	0.0000

Weighted Statistics

R-squared	0.250430	Mean dependent var	0.437928
Adjusted R-squared	0.242845	S.D. dependent var	0.476836
S.E. of regression	0.421651	Sum squared resid	105.4292
F-statistic	33.01997	Durbin-Watson stat	1.730746
Prob(F-statistic)	0.000000		

Source: Analysis Output (2024) Using Eviews Version 10

Panel Estimated Generalized Least Squares were used in testing the hypotheses of the study to ascertain the effect of the selected firm characteristics on cash holding.

The model stability and explanatory power are evaluated through the adjusted R-squared, the probability of the F-statistic, and the Durbin-Watson statistic. The adjusted R-squared value of 0.2428 indicates that 24.28% of the variation in the cash ratio (CHR) of listed non-financial firms on the Nigeria Exchange Group (NGX) is explained by the firm's characteristics (profitability, liquidity, leverage, age, size) and inflation. Although the explanatory power is modest, this is typical for financial studies, where many factors beyond the selected variables may influence cash holdings.

The probability of the F-statistic is 0.0000, which indicates that the overall model is statistically significant at the 5% level. This suggests that the combined effect of the independent variables on the cash ratio is meaningful and not due to random chance, confirming the model's relevance for studying cash holdings in these firms.

The Durbin-Watson statistic of 1.73 lies near the standard benchmark of 2, suggesting that there is no severe autocorrelation in the residuals. This indicates that the error terms are relatively independent, which enhances the reliability of the estimated coefficients. Taken together, the adjusted R-squared, the F-statistic, and the Durbin-Watson statistic support the stability and validity of the model for explaining the impact of the chosen variables on cash holdings among the sampled firms.

The effect of the control variable, inflation (INF), on cash holdings is captured by a coefficient of 0.0069, with a p-value of 0.0000, indicating a statistically significant effect. This positive marginal effect suggests that as inflation rises, firms tend to increase their cash holdings. The likely reason is that higher inflation may raise uncertainty and compel firms to maintain higher liquidity to cope with rising costs and potential market volatility.

4.3.1 Test of Hypothesis I

H01: Profitability does not have a significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group.

The effect of profitability (PROF) on cash holdings (CHR) is captured by a coefficient of 0.0332 with a p-value of 0.1323. This positive coefficient suggests that a unit increase in profitability would result in a 0.0332 increase in the cash ratio, all things being equal. However, since the p-value exceeds the 5% significance level, the effect is not statistically significant, implying that profitability does not exert a meaningful impact on the cash holdings of non-financial firms listed on the Nigeria Exchange Group (NGX). We therefore accepted the null hypothesis: Profitability has a positive but significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group ($\beta = 0.0332$; p-value = 0.1323).

4.3.2 Test of Hypothesis II

H02: Liquidity does not have a significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group.

The effect of liquidity (LIQ) on cash holdings is reflected in a coefficient of 0.1077, with a p-value of 0.0000. This coefficient indicates that for every additional unit increase in liquidity, the cash ratio increases by 0.1077 units, suggesting that firms with higher liquidity hold more cash relative to liabilities. The effect is statistically significant at the 5% level, implying that liquidity plays a crucial role in determining the cash reserves of these firms. We therefore accepted the alternate hypothesis: Liquidity has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group ($\beta = 0.1077$; p-value = 0.0000).

4.3.3 Test of Hypothesis III

H03: Leverage does not have a significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group.

The effect of leverage (LEV) on cash holdings is minimal, with a coefficient of 0.0000184, but the p-value is 0.0000, indicating statistical significance at the 5% level. Although the marginal effect of leverage is small, it suggests that firms with higher leverage tend to marginally increase their cash holdings. This could reflect a cautious approach, where firms accumulate cash to meet potential obligations tied to their debt structures. We therefore accepted the alternate hypothesis: Leverage has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group ($\beta = 0.0000184$; p-value = 0.0000).

4.3.4 Test of Hypothesis IV

H04: Firm age does not have a significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group.

The effect of firm age (FAGE) on cash holdings shows a positive coefficient of 0.0019, with a p-value of 0.0000, indicating significance at the 5% level. This result implies that as firms grow older, they tend to hold slightly more cash. The marginal effect, though small, may indicate that older firms accumulate cash over time to hedge against uncertainties or pursue investment opportunities as they become more established. We therefore accepted the alternate hypothesis: Firm age has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group ($\beta = 0.0019$; p-value = 0.0000).

4.3.5 Test of Hypothesis V

H05: Firm size does not have a significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group.

The effect of firm size (FSZ) on cash holdings is positive, with a coefficient of 0.0440 and a p-value of 0.0000, signifying significance at the 5% level. This result suggests that larger firms, as measured by the natural log of total assets, are likely to hold more cash. The positive effect could be attributed to larger firms having more complex operations and thus requiring higher cash reserves for smooth functioning and contingency planning. We therefore accepted the alternate hypothesis: Firm size has a positive and significant effect on cash ratio of non-financial firms listed on Nigeria Exchange Group ($\beta = 0.0440$; p-value = 0.0000).

4.4 Discussion of Findings

Profitability has a positive but insignificant effect on the cash ratio ($\beta = 0.0332$; p-value = 0.1323). This indicates that while more profitable firms tend to hold slightly more cash, the effect is not strong enough to be statistically significant. One possible reason for this result is that profitable firms may not rely heavily on cash reserves because they can generate steady cash flows. Instead, they might reinvest their profits in growth opportunities or distribute them as dividends, thereby reducing the need for large cash holdings. Profitability demonstrates a positive but significant effect on the cash ratio, aligning with findings by Davidson and Rosmita (2020), who identified a positive relationship between profitability and cash holdings among manufacturing companies. Similarly, Nnubia et al. (2020) support this assertion, noting that profitability significantly influences cash holdings across firms in Nigeria, South Africa, and Kenya. However, contrasting evidence from Maheshwari and Rao (2017) suggests that while profitability is indeed a determinant, its effect might be moderated by other factors, such as cash flow uncertainty, as explored by Iftikhan (2017). The complexity surrounding profitability and cash holdings warrants further investigation to clarify these relationships.

Liquidity has a positive and significant effect on cash holdings ($\beta = 0.1077$; p-value = 0.0000), suggesting that firms with higher liquidity tend to hold more cash. This result is consistent with the expectation that firms with higher current assets relative to liabilities are better positioned to accumulate cash reserves. High liquidity enables firms to meet short-term obligations comfortably, reducing the risk of financial distress and enhancing operational flexibility, which

justifies maintaining higher cash levels. Liquidity's positive and significant effect on the cash ratio is corroborated by Uyar and Kuzey (2014), who reported that liquidity significantly impacts cash levels within firms. Additionally, Nnado et al. (2020) also found a positive relationship between liquidity and cash holdings, emphasizing its role as a crucial determinant. This is further reinforced by the work of Efstathios et al. (2020), which indicated that firms with stronger liquidity positions tend to hold more cash to mitigate financial risks. Conversely, Felix Weidemann's (2016) meta-regression analysis indicates that while liquidity is generally linked to cash holdings, its effect can vary significantly depending on other underlying factors, suggesting that liquidity's influence on cash holdings deserves more nuanced exploration.

Leverage also has a positive and significant effect on cash holdings ($\beta = 0.0000184$; p-value = 0.0000), albeit with a small coefficient. This suggests that firms with higher leverage—measured by the ratio of total liabilities to equity—slightly increase their cash holdings. Highly leveraged firms may keep more cash as a precautionary measure to manage debt service obligations and mitigate the risks associated with financial distress, which aligns with the trade-off theory of capital structure. Thus, leverage positively affects the cash ratio, a finding supported by Ummar et al. (2018), who observed that leverage is positively associated with cash holdings among firms across various regions. Additionally, Koo and Maeng (2018) found that firms with higher leverage hold more cash as a precautionary measure against financial distress, further emphasizing the role of leverage in cash management strategies. However, the study by Eneh et al. (2019) offers a different perspective, highlighting a significant negative relationship between leverage and cash holdings, indicating that excessive debt may constrain cash reserves. This divergence in findings suggests a need for deeper investigation into the conditions under which leverage influences cash holdings.

Firm age has a positive and significant effect on the cash ratio ($\beta = 0.0019$; p-value = 0.0000). Older firms tend to hold more cash, likely because they have accumulated profits over time and have more experience managing risks. As firms grow older, they may adopt conservative cash management practices to hedge against uncertainties in the business environment and ensure smooth operations over time. The effect of firm age on the cash ratio is supported by the findings of Maheswar Sethi and Rabindra Kumar S. (2019), who noted that older firms tend to hold more cash, likely due to established business practices and stability. Similarly, Orlova (2020) indicated that older firms may have developed more robust cash management strategies over time. Conversely, younger firms, as evidenced by Kwan and Lau (2020), often experience higher cash flow volatility, which may limit their cash holdings. These contrasting results indicate that firm age plays a crucial role in determining cash holdings, yet further studies are required to clarify the mechanisms involved.

Finally, firm size has a positive and significant effect on cash holdings ($\beta = 0.0440$; p-value = 0.0000). Larger firms are more likely to hold more cash due to their scale and complexity of operations. Big firms face more operational risks and potential market fluctuations, necessitating higher cash reserves for contingencies. Moreover, they often have better access to external financing, which further enables them to build and maintain cash buffers as part of their financial strategy. Firm size's positive and significant effect on the cash ratio is evidenced by Uyar and Kuzey (2014), who found that larger firms often maintain higher cash reserves due to their capacity to leverage economies of scale. Similarly, Kasongo (2019) indicated that firm size significantly influences cash holdings, suggesting that larger firms have more

resources to allocate towards maintaining cash reserves. However, contrary findings from Kwan and Lau (2020) argue that larger firms might substitute cash with liquid assets, presenting an alternative view on the relationship between firm size and cash holdings. This contradiction calls for additional research to determine the underlying factors that shape the relationship between firm size and cash reserves in various contexts.

5.0 Conclusion and Recommendations

The study investigates the effect of firm characteristics on the cash holdings of non-financial firms listed on the Nigeria Exchange Group (NGX). Cash holdings are critical for firms as they ensure liquidity and facilitate operations, investment, and risk management. Several firm-specific factors, including profitability, liquidity, leverage, age, and size, influence the amount of cash a company holds. The analysis provides insights into how these characteristics affect the cash ratio, revealing both the magnitude and significance of their effects. Below is a discussion of the findings for each characteristic. The positive but insignificant effect of profitability suggests that even though profitable firms may generate more earnings, their ability to accumulate cash reserves is not guaranteed. This indicates that profitability might not be the primary driver for cash-holding decisions, as firms may prioritize reinvestments or dividends instead of holding excess cash.

The significant effects of liquidity, leverage, firm age, and firm size on cash holdings reveal that these characteristics directly influence a firm's cash management strategy. Firms with higher liquidity and leverage maintain higher cash levels, reflecting a precautionary strategy to meet short-term obligations and manage debt more effectively. The positive effect of firm age shows that more experienced firms tend to adopt conservative cash policies, accumulating reserves over time to manage operational uncertainties. Similarly, larger firms hold more cash due to the increased complexity of their operations, which requires higher liquidity for risk management and flexibility.

These results imply that firm-specific factors have practical effects on cash-holding behavior, shaping how firms prepare for risks and optimize financial operations. The effect of leverage emphasizes the importance of maintaining liquidity even in the presence of debt, to reduce the risk of financial distress. Additionally, the findings suggest that older and larger firms benefit from their size and experience, which allow them to develop more robust financial practices. Therefore, firm characteristics directly influence cash-holding strategies, ensuring firms maintain adequate liquidity to sustain operations and manage potential risks effectively. In conclusion, non-financial firms strategically manage cash reserves based on their operational needs, financial structure, and market conditions. The study therefore recommends the following:

1) Management of non-financial firms should enhance operational efficiency to translate profits into higher cash reserves, ensuring adequate liquidity for future opportunities and uncertainties.

2) Finance departments should continuously monitor and improve liquidity levels to maintain optimal cash holdings, enabling firms to meet short-term obligations without financial stress.

3) Board of Directors should adopt policies that balance leverage with sufficient cash reserves, mitigating risks associated with debt and ensuring financial stability.

4) Senior management of older firms should leverage their operational experience to maintain healthy cash reserves, reinforcing financial resilience through well-established cash management practices.

5) Financial managers of large companies should regularly conduct detailed cash flow forecasts to anticipate cash requirements based on operational cycles, seasonal fluctuations, and upcoming expenditures. This enables managers to maintain appropriate cash levels that reflect the firm's operational realities.

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