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CASH MANAGEMENT AND FINANCIAL PERFORMANCE OF LISTED AGRICULTURAL FIRMS IN NIGERIA

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Abstract: This study investigated the impact of cash management on the financial performance of listed agricultural firms in Nigeria, focusing on the relationship between cash management variables and financial performance (return on assets [ROA]). A correlational research design was adopted to explore how cash and cash equivalents, cash turnover ratio, and the operating cash flow ratio influenced profitability within the sector. The study utilized secondary data collected from financial statements of listed agricultural firms from 2010 to 2023. The data was analyzed using panel least squares regression technique, and correlation analysis. Findings from the study revealed that cash and cash equivalents have a positive and statistically significant impact on ROA, with a coefficient of 0.062105 and a p-value of 0.0000. Similarly, the operating cash flow ratio was found to have a positive and significant relationship with ROA, with a coefficient of 0.067690 and a p-value of 0.0000. Furthermore, the cash turnover ratio also exhibited a positive and statistically significant impact on ROA (p-value = 0.000. In conclusion, the study underscored the importance of effective cash management strategies, particularly the accumulation of adequate cash reserves and operational efficiency in generating cash flow, as key drivers of profitability in agricultural firms. Based on these findings, it was recommended that agricultural firms maintain sufficient cash reserves, improve cash flow efficiency, and adopt comprehensive cash management policies to enhance profitability.

Keywords: Cash management, return on assets, cash and cash equivalents, operating cash flow, cash turnover ratio.

Introduction

Cash management plays a critical role in the financial performance of agriculture firms, particularly in emerging markets such as Nigeria. Effective cash management ensures that firms can maintain sufficient liquidity, meet operational obligations, and optimize profitability. This is especially important for agriculture firms, as they deal with the seasonality of production and fluctuating revenues from agricultural products (Abushammala & Sulaiman, 2024). Agriculture firms in Nigeria often experience variations in cash inflows due to factors such as crop seasons, unpredictable weather conditions, and market price fluctuations. Managing cash flow effectively enables these firms to meet their immediate financial obligations and reduce the risk of

financial distress (Akinyomi, 2024). A significant aspect of cash management is the effective handling of cash holdings, which are essential for liquidity and financial stability. Research emphasizes the importance of managing cash holdings to ensure that firms have sufficient liquidity to meet short-term obligations and capitalize on growth opportunities (Akinyomi, 2024). Effective cash flow management ensures that a firm has enough funds to cover operational costs and invest in growth opportunities (Dada, Malomo, & Ojediran, 2023). Firms with poor cash flow management may struggle to meet financial obligations, potentially causing operational delays or increased borrowing costs (Banafa et al., 2023). For agriculture firms, the unpredictability of cash inflows due to fluctuating agricultural yields makes cash flow management even more important. Timely payments from customers and managing credit terms with suppliers are necessary strategies for improving cash flow and ensuring liquidity (Amini, Setiono, Pangaribuan, & Princes, 2021). Poor cash flow management, on the other hand, could lead to financial instability and affect a firm's profitability (Dada et al., 2023). The impact of cash management on profitability is also evident in studies that show the direct relationship between cash flow and financial performance. Firms that manage their cash flow efficiently tend to experience higher profitability due to improved operational efficiency and reduced borrowing costs (Elkinawy & Stater, 2023). For agriculture firms, effective cash management enables them to invest in innovations, such as new farming technologies or expanded production capacity, which can directly enhance profitability (Chibuike & Celestine, 2022). On the contrary, poor cash flow management can hinder profitability by leading to increased operational costs and reduced capacity to invest in growth. Firms that fail to manage their cash flow effectively may face liquidity problems, leading to a vicious cycle of financial distress and declining performance (Abushammala & Sulaiman, 2024). The implementation of effective cash management strategies can also contribute to reducing the financial risks associated with agricultural production. Given the vulnerability of agriculture to external shocks, such as price volatility and adverse weather conditions, managing cash flows becomes even more important (Hossain & Ali, 2022). Agricultural firms with strong cash management systems can better weather the uncertainties of the agricultural sector, which are often outside their control, thus ensuring long-term sustainability (Akinyomi, 2024).

While a substantial body of literature has examined cash management in various sectors, there remains a notable gap in research focusing on listed agricultural firms in Nigeria, a key sector in the country's economy (Abushammala & Sulaiman, 2024). Existing studies primarily focus on cash management in banking or manufacturing sectors, with limited emphasis on the unique challenges faced by agriculture firms in emerging markets like Nigeria (Attayi et al., 2022). This lack of focus on agricultural firms is a critical gap that must be addressed; as agriculture plays a pivotal role in Nigeria's GDP and provides employment for a significant portion of the population (Akinyomi, 2024). Moreover, studies such as those by Mmaduka et al. (2022) and Efuntade and Akinola (2020) have explored cash conversion cycles in manufacturing firms, but similar research in agriculture is limited. Furthermore, while general research on cash management highlights the importance of liquidity, cash conversion cycles, and profitability (Dada et al., 2023), the specific application of these practices to agriculture firms in Nigeria has been underexplored. For example, studies such as those by Chibuike and Celestine (2022) provide insights into cash flow management, but they do not specifically examine how cash management practices, such as cash holding and the cash turnover ratio, influence the performance of agricultural firms in Nigeria. There is an urgent need to address this gap by exploring how agricultural firms listed in Nigeria optimize their cash management strategies to improve financial performance, reduce financial distress, and promote sustainability. The specific objectives of this study are to:

i. Examine the impact of cash and cash equivalents on the return on assets (ROA) of listed agricultural firms in Nigeria.
ii. Assess the influence of cash turnover ratio on return on assets (ROA) of listed agricultural firms in Nigeria.
iii. Determine the impact of operating cash flow ratio on return on assets (ROA) of listed agricultural firms in Nigeria.

The Hypotheses for the study will test whether Cash and cash equivalents, cash turnover ratio, and operating cash flow ratio have no significant impact on return on assets (ROA) of listed agricultural firms in Nigeria.

Conceptual Review

Financial Performance

Financial performance refers to the ability of a company to generate profit from its operational activities. It is typically measured by various financial indicators, such as profit margins, return on assets (ROA), return on equity (ROE), and net income, which help determine the efficiency and profitability of a business (Chibuike & Celestine, 2022). Essentially, financial performance reflects how effectively a company manages its resources to achieve profitability, which is central to its long-term sustainability and growth. According to Chibuike and Celestine (2022), financial performance encompasses both profitability and the effective utilization of a company's assets. The authors stress that a company's performance can be evaluated through ratios that illustrate how efficiently a firm converts its resources into profits. This approach is supported by several other authors, such as Efuntade and Akinola (2020), who argue that financial performance metrics such as ROA and profitability ratios provide a clear picture of a company's operational success. However, using specific indicators like ROA can be limited due to their narrow scope. Return on assets (ROA), for example, focuses primarily on the firm's ability to generate profits from its assets but does not account for factors such as market conditions, competition, or external economic variables that may affect profitability (Dada et al., 2023). Additionally, it may not capture non-financial aspects of performance, such as employee satisfaction or customer loyalty, which can contribute significantly to long-term success. Financial performance is highly relevant to this study as it is a key determinant of the profitability and sustainability of agricultural firms. In agriculture, where profitability is subject to fluctuations in seasonal production cycles, market prices, and external economic factors, measuring financial performance accurately is crucial for evaluating business success and sustainability (Amini et al., 2021). However, challenges arise in accurately measuring financial performance in agricultural firms due to factors such as seasonal variability, unpredictable crop yields, and fluctuating market demand (Hossain & Ali, 2022). These factors can lead to significant variations in the financial outcomes of agricultural firms, making it difficult to assess their true financial performance over time.

Profitability in Agricultural Firms

Profitability refers to a firm's ability to generate profit after covering all its expenses, indicating the efficiency with which the firm converts its revenue into profit. In an agricultural context, profitability is a crucial indicator of the firm's financial health and sustainability, highlighting the firm's capacity to generate returns from its activities. It is typically calculated as net income divided by revenue or total assets (Ndubuisi et al., 2019). Profitability allows stakeholders, such as investors and managers, to assess the financial viability of an agricultural firm and its ability to reinvest for future growth. According to Ndubuisi et al. (2019), profitability in agricultural firms is determined by various factors, including revenue generation, cost control, and efficient resource management. In agricultural businesses, profitability is often linked to the ability to manage

operational costs while maximizing output during favorable periods. Effective cash management practices, such as controlling the cash conversion cycle and managing operating costs, are vital for maintaining profitability (Chibuike & Celestine, 2022). However, profitability in the agricultural sector can differ significantly from other industries due to specific challenges that are unique to agriculture. Agricultural firms often experience seasonality, where profitability may fluctuate based on planting and harvest cycles. For instance, a farm may generate significant profits during harvest seasons but incur losses during periods when crops are growing or when adverse weather conditions affect yields. In addition, market access plays a crucial role in agricultural profitability. Limited access to markets or unfavorable trade policies may reduce revenue, even in times of abundance (Amahalu & Ezechukwu, 2023). The impact of these sector-specific dynamics means that profitability in agriculture is often more volatile compared to other sectors that do not rely on such external factors. The relevance of profitability to this study lies in its direct connection to cash management in agricultural firms. Effective cash management enables agricultural firms to manage their resources and finances in such a way that they can withstand periods of low profitability, ensuring long-term sustainability. Cash reserves, liquidity management, and efficient use of working capital are necessary to support ongoing operations during off-seasons or periods of market downturns (Banafa et al., 2023). One limitation of measuring profitability in agricultural firms is the impact of external factors, such as climate change or policy changes. Variations in weather patterns, changes in government policies, and fluctuating market conditions can severely impact agricultural productivity and, in turn, profitability (Attayi et al., 2022). Such external influences can make it difficult for firms to predict profitability accurately and maintain steady cash flows.

Cash Management

Cash management refers to the process of managing a firm's cash inflows and outflows to ensure that it has sufficient liquidity to meet its short-term obligations while minimizing costs and maximizing operational efficiency (Amini et al., 2021). It involves a range of activities, such as cash forecasting, liquidity management, and investment of surplus funds, all aimed at maintaining a balance between having enough cash on hand and optimizing returns (Abushammala & Sulaiman, 2024). Cash management is critical in ensuring the smooth functioning of a business, as it enables firms to cover operational expenses and invest in growth opportunities without relying on excessive borrowing or external financing. Several authors have defined cash management in the context of financial practices. For instance, Abushammala and Sulaiman (2024) emphasize that cash management involves efficiently coordinating cash inflows and outflows to support business operations and ensure financial stability. Similarly, Amini et al. (2021) define it as the strategic handling of cash to maximize profitability and minimize liquidity risks. Despite these definitions, cash management practices can be challenging, particularly in the agricultural sector, where cash flow is often unpredictable due to factors like seasonal production cycles and fluctuating market prices (Ndubuisi et al., 2019). The relevance of effective cash management in agricultural firms cannot be overstated, as it directly influences their financial stability and operational success. In agriculture, where income generation is often seasonal and affected by external factors such as weather conditions and market demand, managing cash efficiently is essential for maintaining liquidity and enabling timely payments (Hossain & Ali, 2022). However, assessing the impact of cash management in agricultural firms in developing economies like Nigeria is challenging due to factors such as limited access to financial resources, poor infrastructure, and irregular income patterns (Chibuike & Celestine, 2022). Therefore, while cash management is a critical practice, its true effectiveness in agricultural contexts remains difficult to measure and implement.

Cash and Cash Equivalents

Cash and cash equivalents refer to liquid assets that are easily convertible to cash, typically within a short time frame, such as three months or less. These assets are essential for ensuring a firm's liquidity and its ability to meet immediate financial obligations without incurring significant losses (Amahalu & Ezechukwu, 2023). In practice, cash equivalents include items like bank balances, short-term investments, and marketable securities that can be quickly converted into cash without substantial risk of loss. Amahalu and Ezechukwu (2023) define cash and cash equivalents as assets that are readily available for use in day-to-day operations. These assets provide a buffer for firms, allowing them to maintain operational stability and meet both short-term and long-term financial needs. This definition is in line with financial reporting standards, where cash and cash equivalents are distinguished from other financial assets based on their high liquidity and low risk. However, managing cash reserves effectively can be particularly challenging in the agricultural sector. Agricultural firms often face significant variability in cash flow due to seasonality, unpredictable weather patterns, and fluctuating commodity prices (Attayi et al., 2022). This makes it difficult to maintain adequate cash reserves, as income is often concentrated in particular seasons or harvest cycles. Furthermore, these firms may struggle with the timing of cash inflows and outflows, making it harder to manage liquidity efficiently (Banafa et al., 2023). Cash and cash equivalents are critical for ensuring liquidity and supporting business continuity in agricultural firms. Having adequate cash reserves allows these firms to handle unforeseen expenses, invest in growth opportunities, and weather financial crises. As such, effective management of cash and cash equivalents is fundamental for sustaining operations, especially in industries like agriculture, where profitability can be highly volatile (Amini et al., 2021). However, smaller agricultural firms face limitations in maintaining optimal levels of cash reserves. Due to constraints in financial resources, these firms may struggle to build and maintain sufficient reserves, which could hinder their ability to respond to market changes or cover unexpected costs (Chibuike & Celestine, 2022). This issue is exacerbated by limited access to financial markets and external capital, making it even more challenging for smaller firms to maintain the necessary liquidity for smooth operations.

Cash Turnover Ratio

The cash turnover ratio is a financial metric that measures how efficiently a firm uses its cash to generate sales. It essentially shows how many times a firm can turn over its cash in a given period, indicating the effectiveness of its cash utilization in driving revenue (Major & Azali, 2022). This ratio helps assess the liquidity management of a company and its ability to generate sales relative to its cash reserves. According to Major and Azali (2022), the cash turnover ratio is calculated by dividing net sales by average cash and cash equivalents. The interpretation of this ratio is straightforward: a higher ratio signifies that the firm is effectively utilizing its cash to generate sales, while a lower ratio suggests inefficiencies in cash usage. This definition aligns with conventional financial management practices, where optimizing cash turnover is crucial for maintaining operational efficiency. However, the cash turnover ratio might not fully reflect the specific dynamics of agricultural firms. In the agricultural sector, sales cycles can be highly irregular, driven by seasonal factors, market demand fluctuations, and harvest schedules (Chibuike & Celestine, 2022). For instance, agricultural products are often sold in bulk after harvest periods, resulting in irregular cash inflows. Therefore, the cash turnover ratio may not capture these fluctuations accurately, leading to misleading conclusions about a firm's efficiency in cash utilization. This ratio is highly relevant to the study of agricultural firms, as it directly impacts their operational efficiency and ability to manage liquidity. Agricultural firms must ensure that their

cash is used effectively to support the long production and sales cycles typical in this industry (Amini et al., 2021). By assessing the cash turnover ratio, these firms can identify areas where their cash management practices may need improvement, potentially enhancing their profitability and sustainability. However, a key limitation of using the cash turnover ratio in agricultural contexts is the difficulty in applying it to industries with long production cycles, such as agriculture. These firms often experience extended periods between investment in inputs and the generation of revenue from sales, making it challenging to obtain a meaningful measurement of cash turnover over short periods (Attayi et al., 2022). Therefore, this ratio may not provide a comprehensive view of cash efficiency in agricultural firms, particularly in those with irregular or long-term sales cycles.

Operating Cash Flow Ratio

The operating cash flow ratio is a financial metric that compares a firm's operating cash flow to its current liabilities. It is a measure of a company's ability to cover its short-term obligations with the cash generated from its regular business operations (Dada et al., 2023). This ratio helps assess the liquidity position of a firm and is an indicator of its ability to meet immediate financial obligations without relying on external financing. Dada et al. (2023) define the operating cash flow ratio as operating cash flow divided by current liabilities. A higher ratio indicates that the company is generating sufficient cash from its operations to cover its short-term liabilities, whereas a lower ratio suggests potential liquidity problems. The operating cash flow ratio, therefore, offers insights into a company's operational efficiency and financial health, especially regarding its ability to manage cash inflows and outflows effectively. However, the operating cash flow ratio is often limited in explaining the financial health of seasonal and capital-intensive sectors like agriculture. In these industries, cash flows tend to be uneven, with significant inflows occurring during harvest periods and reduced activity during off seasons (Amahalu & Ezechukwu, 2023). As such, the ratio may not accurately reflect the liquidity situation of agricultural firms during periods of low activity, leading to misleading interpretations of their financial stability. Agricultural firms often face challenges related to the timing of cash inflows, which can cause fluctuations in operating cash flow that are not reflective of the firm's long-term viability. Despite these limitations, the operating cash flow ratio is relevant to the study of agricultural firms as it plays a crucial role in assessing the day-to-day operational efficiency of these firms. For agricultural companies, maintaining positive operating cash flow is vital to ensuring that they can cover essential expenses such as wages, input costs, and maintenance of equipment (Amini et al., 2021). By evaluating this ratio, agricultural firms can better understand their liquidity position and identify areas for improvement in their cash management practices. One of the limitations of this ratio in the agricultural sector is the difficulty in establishing a universal benchmark for operating cash flow ratios. The agricultural industry varies widely depending on crop types, regional conditions, and market access, making it challenging to compare the ratios of different firms (Attayi et al., 2022). Thus, while the operating cash flow ratio can provide valuable insights, it is not always a definitive measure of financial health for agricultural firms, especially in the context of diverse market and production conditions.

Theoretical Framework

Theory of Cash Management

The Theory of Cash Management, proposed by Miller and Orr in 1966, emphasizes the importance of managing cash flow to optimize both liquidity and profitability in firms. According to the theory, firms should maintain a balance between holding sufficient cash to meet immediate obligations and investing excess cash to generate

returns. This balance is critical for managing liquidity effectively while also ensuring that cash is available when needed without unnecessarily tying up funds that could be used for investment opportunities (Miller & Orr, 1966). One of the primary strengths of the theory is its support for the notion that firms need to manage their cash flow strategically to ensure both liquidity and profitability. By using cash management techniques, firms can avoid the risk of running out of cash during periods of high demand while also taking advantage of investment opportunities when cash reserves exceed immediate operational needs. This approach can help firms maintain a healthy cash position, improve profitability, and reduce the likelihood of financial distress (Miller & Orr, 1966). The Theory of Cash Management is relevant to this study as it provides a framework for understanding how agricultural firms can manage their cash flow to ensure financial stability. By applying this theory, agricultural firms can develop strategies to optimize liquidity, especially during the off-season or in times of low cash inflow, ensuring they have sufficient funds to continue operations and invest in growth opportunities.

Empirical Review

Abushammala and Sulaiman (2024) conducted a quantitative study using a correlational methodology to examine the relationship between cash holdings and corporate profitability in Jordanian firms. The data were analyzed using regression analysis, which helped assess the statistical significance of cash holdings on profitability. Their findings revealed that adequate cash holdings positively influenced profitability, highlighting the importance of balancing liquidity and profitability for sustainable growth. The study emphasized that firms with sufficient cash reserves were better positioned to meet short-term obligations while also having the capacity to invest in growth opportunities. This is particularly relevant for agricultural firms, where cash flow volatility and market unpredictability can negatively affect financial stability. Akinyomi (2024) evaluated a quantitative study using a descriptive research design to explore the impact of cash management on firm profitability in Nigerian manufacturing firms. Data were analyzed using regression techniques, which evaluated the relationship between cash management practices and profitability. The study found that effective cash management significantly influenced profitability, demonstrating how strategic cash management contributes to operational efficiency and financial performance. It highlighted that firms with efficient cash management systems experienced improved liquidity, enabling them to meet their obligations and invest in growth. The research further emphasized that in emerging markets like Nigeria, effective cash management is critical for firms to navigate economic instability and market volatility. Banafa et al. (2023) examined a quantitative study using a correlational research design to examine the role of liquidity management in the financial performance of non-listed financial firms in Kenya. The data were analyzed using regression analysis to identify the relationship between liquidity levels and financial stability. The study found that effective liquidity management significantly contributed to the financial stability of these firms, highlighting its importance in maintaining operational efficiency. The research suggests that for agricultural firms, managing liquidity is essential to ensuring consistent cash flow and avoiding financial distress, particularly in environments characterized by fluctuating revenues and seasonal challenges. These findings underscore the necessity for agricultural firms to adopt sound liquidity management practices to safeguard their operations and promote long-term sustainability. Deb et al. (2023) investigated a quantitative study using a descriptive research design to examine cash management practices in micro and small enterprises in Barak Valley, India. The authors utilized statistical techniques, including descriptive statistics and correlation analysis, to analyze data on cash flow management strategies. The study found that small enterprises faced significant challenges in

managing cash, particularly due to limited access to financial resources and fluctuating income streams. The research emphasized the importance of implementing robust cash flow management systems to ensure financial stability and operational continuity. This underscores the need for agricultural firms to adopt comprehensive cash management strategies for improved financial performance. Attayi et al. (2022) conducted a quantitative study using a cross-sectional research design to assess the impact of cash management strategies on the sustainable growth of Nigerian SMEs. Data were analyzed using descriptive statistics and correlation analysis to examine the relationship between cash management practices and firm growth. The study found that effective liquidity management was crucial for ensuring business continuity in Nigerian SMEs, particularly those in sectors with unpredictable income streams, such as agriculture. The authors highlighted that cash management practices, such as maintaining optimal cash reserves and managing cash flow cycles, played a significant role in sustaining growth despite market volatility. These findings have important implications for agricultural firms in Nigeria, where income fluctuations and seasonal variations can threaten financial stability. The study emphasizes that SMEs, especially in agriculture, must implement robust cash management strategies to navigate financial challenges and secure long-term sustainability. Chibuike and Celestine (2022) investigated a quantitative study using a cross-sectional research design to analyze the effect of cash flow management on the financial performance of pharmaceutical companies in Nigeria. Data were analyzed using regression analysis to assess the relationship between cash flow management practices and profitability. The study found that effective cash flow management positively impacted the profitability of pharmaceutical firms, emphasizing the need for careful cash flow oversight to maintain financial stability. The research suggests that agricultural firms can benefit from similar cash flow management practices to optimize their financial performance, as efficient cash flow directly correlates with increased profitability. This insight is particularly valuable for firms in the agricultural sector, where cash flow can be unpredictable due to external factors such as seasonal cycles. The findings underline the importance of robust cash management strategies for ensuring the operational success and long-term financial stability of agricultural firms. Liman and Mohammed (2018) explored the relationship between operating cash flow and corporate financial performance of six (6) listed conglomerate companies in Nigeria for the period of ten (10) years from 2005 to 2014. Operating cash flow was measured using net cash flows from operating activities of firms while corporate financial performance was captured using return on assets (ROA) and return on equity (ROE). The study employed firm size and financial leverage as control variables and the data assembled were analysed using panel regression technique. The study found a positive but insignificant relationship between operating cash flow and corporate financial performance (ROA), but a positive and significant relationship with ROE in Nigeria. Amah et al. (2016) surveyed the link between cash flow and financial performance of four (4) listed banks in Nigeria for the period of nine (9) years from 2005 to 2013. Cash flow was measured as cash flows from both investing and financing activities of the firms while financial performance was captured as net profit margin. The data gathered were analysed using regression technique and showed a positive and significant relationship between cash flow from operating activities and financial performance. However, the study found a negative and significant relationship between cash flows from financing activities and financial performance of listed banks in Nigeria. Nwanyanwu (2015) studied the nexus between cash flow and organizational performance of forty-five (45) hospitality and print media enterprises in Nigeria. Cash flow was measured as the net cash flows from operating activities of firms while organizational performance was measured using net profit margin. The data sourced were analysed using Pearson product moment regression technique through the SPSS software. The study found a positive and

significant nexus between cash flows from operating activities and organizational performance (net profit margin). Thus, cash flow activities regulate the extent of net profit performance of organizations in the hospitality and print media. Frank and James (2014) investigated the link between cash flow and corporate performance in the food and Beverages sector of Nigeria for the period of five (5) years from 2007 to 2011. Cash flow was measured using cash flows from operating activities, investing activities, and financing activities of firms while corporate performance was measured using ROA. The data gathered were analysed using multiple regression technique and found a positive and significant link between operating and financing Cash flow and corporate performance. However, the study revealed a negative and significant link between investing cash flow and corporate performance in Nigeria. Guda (2013) examined the relationship between cash flow and profitability of small and medium enterprises in Nairobi, Kenya for the period of five (5) years from 2008 to 2012. The study employed a descriptive design and the data sourced were analysed using panel regression technique. The study found a positive and significant link between cash flows and profitability of small and medium enterprises in Kenya.

Methodology

Research Design

The research design adopted for this study is correlational**.** This design is chosen because it allows for the exploration of the relationships between cash management and financial performance without necessarily establishing cause-and-effect relationships. A correlational design is appropriate because the study aims to investigate how cash management practices influence the financial outcomes of agricultural firms, but it does not seek to manipulate or control the variables. The choice of a correlational design allows the researcher to understand the degree and nature of the relationship between the independent variable (cash management) and the dependent variable (financial performance).

Population of the Study

The population for this study consists of the five listed agricultural firms in Nigeria. These firms were selected because they operate in a regulated environment with publicly available financial data, making them ideal candidates for a study on financial performance and cash management. According to the Nigerian Exchange Group, there are five agricultural firms listed, and these companies represent a broad spectrum of the agricultural sector, including crop production, food processing, and other related activities.

Sample Size and Sampling Technique

Given the nature of the study, the study made use of the five listed agricultural firms in Nigeria. These firms meet the specific criteria relevant to the study. This criterion includes the availability of data for the period under study. The five selected firms for this study are: Presco Plc, Okomu Oil Palm Plc, Livestock Feeds Plc, Ellah Lakes Plc and FTN Cocoa Processors Plc.

Sources of Data Collection

The data for this study was obtained entirely from secondary sources particularly from the annual reports, audited financial statements, and corporate disclosures as well as the website of the Nigerian Exchange Group. These documents provide detailed insights into cash management practices, financial performance, and other financial metrics relevant to the study. The use of these multiple sources ensures that the data collected is both comprehensive and credible, forming a solid foundation for analyzing the relationship between cash management and financial performance among listed agricultural firms in Nigeria.

Model Specification

The study adapted the model of (Elkinawy & Stater, 2023) on the effect of cash flow on firm performance in selected sectorial industries in Nigeria. The model is hinged on pecking order theory.

The model was modified to suit the variables selected for this study, as follows

$ROA_{it} = \beta_0+\beta_1 CCE_{it}+\beta_2 CTR_{it}+\beta_3 OCFR_{it}+\epsilon_{it}$……(1)

Where:

ROA = Return on Assets for firm *i* at time *t* (dependent variable – proxy for financial performance)

CCE = Cash and Cash Equivalents; CTR = Cash Turnover Ratio; OCFR = Operating Cash Flow Ratio; β_0 = Intercept term; β_1, β_2, β_3 = Coefficients of the Independent Variables; ϵ = Error term representing unexplained variations.

a priori expectations are stated as follows:

$\beta_1>0$: an increase in cash and cash equivalent will increase financial performance.

$\beta_2>0$: a rise in cash turnover ratio will increase financial performance.

$\beta_3>0$: a rise in operating cash flow ratio will increase financial performance.

Decision Rule

Accept the alternative hypothesis, if the probability value (p-value) of the test is less than 0.05 (5%), otherwise reject.

Additionally, the R-squared value was considered to evaluate the goodness of fit of the regression model. An R-squared value close to 1 indicates that the model explains a significant portion of the variation in the dependent variable, while a lower R-squared value suggests that other factors not included in the model may be influencing financial performance.

Descriptive Analysis

Table 4.1: Descriptive Statistics

	ROA	CCE	CTR	OCFR
Mean	0.207204	488.5961	1.674429	1.050857
Median	0.195250	481.2200	1.730000	1.090000
Maximum	0.351300	783.0700	2.910000	1.950000
Minimum	0.099900	203.0400	0.580000	0.110000
Std. Dev.	0.058881	182.6098	0.748670	0.556357
Skewness	0.409054	0.134133	0.098127	-0.034161
Kurtosis	2.497032	1.776217	1.640164	1.718263
Jarque-Bera	2.689974	4.578035	5.505702	4.805261
Probability	0.260543	0.101366	0.063746	0.090480
Sum	14.50430	34201.73	117.2100	73.56000
Sum Sq. Dev.	0.239224	2300898.	38.67493	21.35775
Observations	70	70	70	70

Source: Researcher's Computation (2025)

The result of the descriptive statistics is shown on Table 4.1 and financial performance (measured using return on assets [ROA]) is the main variable of interest as it is the regressed. The mean value serves as a tool for setting benchmark. Therefore, the mean value of ROA is 0.207204 which implies that the financial performance

of companies under investigation, on the average, is ₦0.207 million. The median value serves as a measure of central tendency for tool for ranking. Therefore, the median value is 0.195250 which suggests that on the median average, the financial performance of companies under investigation is ₦0.195 million. The maximum and minimum values help in detecting problem in a data set. Thus, the maximum and minimum values are 0.351300 and 0.099900 which shows that the financial performance of the companies under investigation is relatively impressive with the highest value of ₦0.351 million; however, some ascertained minimum financial value of ₦0.099 million due to high production costs as well as inflation effect. The standard deviation (SD) is a measure that summarizes the amount by which every value within a data set varies from the mean. It is the most robust and widely used measure of dispersion. Therefore, the SD of ROA is 0.058881 with a positive skewness of 0.409054 showing that ROA is geared to the right thus indicating high skewness.

4.2.2 Correlation Analysis

Table 4.2: Correlation Matrix

Probability	ROA	CCE	CTR	OCFR
ROA	1.000000			
CCE	0.459204	1.000000		
CTR	0.713131	0.313587	1.000000	
OCFR	0.610528	-0.058101	-0.018565	1.000000

Source: Researcher's Computation (2025)

The correlation matrix in Table 4.2 showed the degree of relationship between the independent variables and the dependent variable (measured using ROA). Certainly, the relationship between a variable and itself is one (1). In addition, Table 4.2 showed that the relationship between ROA and CCE is positive and strong based on a correlation coefficient of 0.459204. The relationship between ROA and CTR is positive and strong based on the correlation coefficient of 0.713131. Also, the relationship between ROA and OCFR is positive and strong based on a correlation coefficient of 0.610528. Multicolinearity may result to wrong signs or implausible magnitudes in the estimated model coefficients, and the bias of the standard errors of the coefficients. Based on these values, it is evidenced that there is no presence of multicollinearity in the model as no two independent variables were perfectly correlated. In terms of the relationship among the independent variables, the study observed that the strongest relationship is between CTR and CCE with correlation coefficient of 0.313587 while the least is between OCFR and CCE with correlation coefficient of -0.058101.

Panel Least Squares Regression Analysis

Table 4.7: Panel Least Squares Estimation Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.005913	0.004114	1.437360	0.1553
CCE	9.62E-05	6.24E-06	15.42065	0.0000
CTR	0.049662	0.001519	32.68662	0.0000
OCFR	0.067690	0.001945	34.80777	0.0000
R-squared	0.977791	Mean dependent var		0.207204
Adjusted R-squared	0.976782	S.D. dependent var		0.058881
S.E. of regression	0.008972	Akaike info criterion		-6.533966
Sum squared resid	0.005313	Schwarz criterion		-6.405481
Log likelihood	232.6888	Hannan-Quinn criter.		-6.482930
F-statistic	968.6108	Durbin-Watson stat		2.000000
Prob(F-statistic)	0.000000			

Source: Researcher's Computation (2025)

The output of the panel least squares (PLS) regression revealed the relationship between cash management and financial performance of listed agriculture firms in Nigeria. Financial performance was measured using return on assets (ROA). The R-Squared of the model is 0.977791 (97.7%) with an adjusted R-Squared of 0.976782 (97.6%). This puts forward that the observed independent variables explained 97.6% systemic variation in the dependent variable (ROA). The F-statistic value of 968.6108 with an associated probability value (p-value) of 0.000000 is significant at 1%. It indicates that there is a significant linear relationship between the dependent variable (ROA) and the independent variables. The Durbin-Watson (D-W) statistics of 2.000000 revealed the absence of autocorrelation in the model. The coefficients and p-values of the three (3) independent variables (CCE, CTR, and OCFR) employed in the study are presented as follows: 0.062105 (0.000), 0.049662 (0.0000), and 0.067690 (0.0000) respectively. The result shows that CCE has a positive and significant relationship with ROA at 1%, CTR has a positive and significant relationship with ROA at 1%, and OCFR has a positive and significant relationship with ROA at 1%.

4.4 Test of Hypotheses

Hypotheses previously formulated were tested in this section. The decision rule is to accept the null hypothesis (H_0) if the P-value calculated is greater than P-value critical which stood at 5% level of significance, otherwise we reject. The hypotheses were tested as follows:

Test of Hypothesis One

i. Cash and cash equivalents have no significant effect on the return on assets (ROA) of listed agriculture firms in Nigeria.

ii. Test Statistic and Decision: Cash and cash equivalents (CCE) has a coefficient of 0.062105 with an associated p-value of 0.0000 that is not up to 5% significant level. The study therefore concludes that CCE has a positive and significant relationship with financial performance (ROA) therefore leading to the acceptance of the alternate hypothesis that cash and cash equivalents has a significant impact on financial performance of listed agriculture firms in Nigeria and rejection of the null hypothesis.

Test of Hypothesis Two

i. Cash turnover ratio does not significantly influence the return on assets (ROA) of listed agriculture firms in Nigeria.

ii. Test Statistic and Decision: Cash turnover ratio (CTR) has a coefficient of 0.049662 with an associated p-value of 0.0000 that is not up to 5% significant level. The study thus concludes that CTR has a positive and significant relationship with financial performance (ROA) thus leading to the acceptance of the alternate hypothesis that cash turnover ratio has a significant impact on financial performance of listed agriculture firms in Nigeria and rejection of the null hypothesis.

Test of Hypothesis Three

i. There is no significant relationship between the operating cash flow ratio and the return on assets (ROA) of listed agriculture firms in Nigeria.

ii. Test Statistic and Decision: Operating cash flow ratio (OCFR) has a coefficient of 0.067690 with an associated p-value of 0.0000 that is not up to 5% significant level. The study thus concludes that OCFR has a positive and significant relationship with financial performance (ROA) therefore resulting in the acceptance of the alternate hypothesis that operating cash flow ratio has a positive and significant impact on financial performance of listed agriculture firms in Nigeria and rejection of the null hypothesis.

Conclusion

The broad objective of the study was to examine the relationship between cash management and financial performance of listed agriculture firms in Nigeria. Incontestably, financial performance is a popular concept of discourse which will continue to draw the attentions of scholars as well as other stakeholders in the Nigerian economy as a result of its significance. Also, the relevant theories (theory of cash management and pecking order theory) reviewed have revealed the significance of financial performance to the interest of all stakeholders. Flowing from the various empirical reviews, results of analysis, interpretations and hypotheses tested, the study found that CCE, CTR, and OCFR have positive and significant relationships with financial performance (ROA) of listed agriculture firms in Nigeria. Following the empirical findings, the study concludes that the observed independent variables (CCE, CTR, and OCFR) are good predictors of financial performance of listed agriculture firms in Nigeria.

Recommendations

Based on the findings, the following recommendations were stated:

1. Agricultural firms in Nigeria are advised to maintain adequate level of investments in cash and cash equivalents as inadequate access to financial markets as well as external capital may make it more challenging for smaller firms to sustain the required liquidity for smooth operations.
2. Agricultural firms in Nigeria should maintain reasonable cash turnover ratio as sales cycles can be highly lopsided, determined by periodic market demand and supply variations, as well as harvest schedules of agricultural produce.
3. It is also recommended that agricultural firms should maintain financial metrics that compare firms' operating cash flows to its current liabilities as well as the ability of the firms to cover its short-term financial commitments with the cash generated from its consistent business undertakings.

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