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WORKING CAPITAL MANAGEMENT AND FINANCIAL PERFORMANCE OF LISTED AGRICULTURAL FIRMS IN NIGERIA

By

¹Dr. Ihenyen, J. Confidence, ²Mr. Dennis F. Adire, ³Miss. Didei Jennifer

¹Senior Lecturer, Department of Accounting, Niger Delta University, Amassoma, Bayelsa State,

^{2,3}Master's Student, Department of Accounting, Niger Delta University, Bayelsa State,



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Abstract

Between 2014 and 2023, this research looks at the financial performance of publicly listed agricultural enterprises in Nigeria and how their working capital is managed. The study uses a random effects model to examine the influence of working capital management components on profitability, as measured by return on assets (ROA), using panel data from 15 enterprises over a 10-year period (2011-2020). Some of the independent variables include the following: firm size, working capital investment policy, accounts receivable period, accounts payable period, current ratio, debt-to-total asset ratio, and inventory conversion period. With a current ratio of 1.21 suggesting adequate liquidity, descriptive data reveal that, on average, enterprises require 194 days to turn inventory into sales and 808 days to collect receivables. Although there is a modest positive link between ACPP and profitability, correlation research shows that ROA is negatively correlated with INVCP and ACRVP. According to the random effects model, WCIP has a marginally beneficial influence on profitability, but ACRVP and INVCP have a negative but statistically insignificant effect. The findings indicate that although working capital management does affect profitability, the relative importance of its components varies. These results show that, especially in developing nations like Nigeria, effective management of working capital is critical to increasing profits. Managers should optimize working capital components to increase business performance, according to the study, which adds to the current literature and offers sector-specific insights.

Keywords: Working Capital Management, Profitability, Agricultural Companies, ROA.

INTRODUCTION

A company's liquidity, financial health, and profitability are all affected by its working capital management (WCM). Making judgments about a company's short-term assets and liabilities is an important part of effective WCM. This is to make sure the company has enough money to pay for its daily operations and make the most of its return on assets (ROA). This is especially crucial for industries like agriculture, where organizations are always trying to maximize their performance by balancing inventory management, accounts receivable, accounts payable, cash conversion cycle, and more (Deloof, 2003).

Given Nigeria's sometimes unstable economic climate—marked by high inflation, changing currency rates, and restricted access to long-term capital—it is already difficult to manage working capital properly (Ayub & Ojeka, 2019).

Companies in Nigeria's agriculture industry, an important part of the country's industrial foundation, have difficulties that are distinct from those in industrialized nations. Some of these challenges include balancing short-term commitments with the high cost of capital, lengthy inventory conversion times, and longer accounts receivable collection periods. Reduced profitability, operational inefficiencies, and a lack of available funds might result from inefficient management of these components (Raheman & Nasr, 2007).

The value of WCM in enhancing company performance has been previously shown. For example, Deloof (2003) discovered that companies tend to be more profitable when they manage their working capital well. This includes minimizing the collection period and making the most of the inventory conversion phase. Unfortunately, there is a lack of data on the impact of WCM on profitability in emerging economies like Nigeria's because much of the previous study

*Corresponding Author: Dr. Ihenyen, J. Confidence.



has been on developed countries. Working capital management is especially important for agricultural enterprises because of the unpredictable nature of demand and the challenges they encounter in maintaining a steady supply.

Effective management of working capital is especially important for Nigerian businesses due to the prevalence of structural financial restrictions in the country. To meet their working capital requirements, many businesses take out short-term loans since they can't get reasonable long-term financing (Akinlo, 2012). When companies can't manage their accounts payable and receivable periods well, their dependence on short-term funding might hurt their profitability. As an example, if a company takes too long to collect payments from its customers or pay its suppliers, it can lead to cash flow issues. These difficulties, in turn, can make it harder for the company to invest in growth possibilities and stay profitable (Lazaridis & Tryfonidis, 2006). Hence, it is critical for practitioners and policymakers in Nigeria to comprehend the effect of WCM on company profitability.

Problem Statement

Many agricultural enterprises in Nigeria still have a hard time getting the most out of their working capital, even though research shows that doing so increases profits. The enterprises in question have considerable difficulties due to factors such as lengthy times for converting inventory, protracted periods for accounts receivable, and their dependence on short-term loan financing (Owolabi & Alu, 2012). A company's capacity to be profitable might take a hit if these working capital components aren't managed well, leading to liquidity difficulties.

According to the National Bureau of Statistics (2021), the agricultural sector plays a crucial role in Nigeria's economy by making substantial contributions to GDP and employment. But operational inefficiencies caused by bad management of working cash are a common problem for businesses in this industry. For example, businesses may encounter difficulties with meeting short-term obligations, paying suppliers on time, or investing in development possibilities if it takes too long to turn inventory into sales or if consumers wait too long to pay. These inefficiencies have the potential to reduce profits and threaten the company's viability in the long run (Gill, Biger & Mathur, 2010).

Another difficulty that businesses face is the use of short-term loans to fund their working capital requirements. Firms in Nigeria may find their cash flow even more constrained due to the high interest rates associated with short-term loans, which compounds the country's already high inflation and borrowing costs. Because paying down debt takes precedence over reinvesting in expansion or operations, companies with a high debt-to-total asset ratio may find it challenging to remain profitable (Akinlo & Olufisayo, 2011). This is why it's so important to look at the inventory conversion period, accounts receivable period, and accounts payable period as they pertain to working capital management and how they affect the profitability of listed agricultural firms in Nigeria.

Although working capital management plays a crucial role in increasing profitability, research on its effects on Nigeria's agriculture industry is few. We need more study to fill this gap in our understanding of the relationship between working capital management techniques and the profitability (ROA) of listed agricultural firms in Nigeria. Specifically, we are interested in how inventory conversion period, accounts receivable period, and accounts payable period impact ROA. If businesses want to know how to maximize their working capital management tactics and boost their profits, they need answers to this issue. Furthermore, it may educate regulators and lawmakers on how to build a hospitable financial climate that helps Nigeria's manufacturing sector thrive.

Study Objectives

Examining the financial performance and working capital management of listed agricultural enterprises in Nigeria is the overarching goal of this study. The following are the specific goals of the study:

1. To investigate the effect of the inventory conversion period (INVCP) on the return on assets (ROA) of listed agricultural companies in Nigeria.
2. To assess the influence of the accounts receivable period (ACRVP) on the ROA of listed agricultural companies in Nigeria.
3. To determine the impact of the accounts payable period (ACPP) on the ROA of listed agricultural companies in Nigeria.
4. To examine the effect of the current ratio (CURR_RATIO) on the ROA of listed agricultural companies in Nigeria.
5. To evaluate the relationship between the working capital investment policy (WCIP) and ROA of listed agricultural companies in Nigeria.
6. To assess the influence of the working capital financing policy (WCFP) on the ROA of listed agricultural companies in Nigeria.
7. To analyze the impact of firm size and the debt-to-total-assets ratio (DEBTAR) on the profitability of listed agricultural companies in Nigeria.

Research Hypotheses

The study will test the following null hypotheses (H₀):

1. **H₀₁:** The inventory conversion period (INVCP) has no significant effect on the return on assets (ROA) of listed agricultural companies in Nigeria.
2. **H₀₂:** The accounts receivable period (ACRVP) has no significant effect on the ROA of listed agricultural companies in Nigeria.
3. **H₀₃:** The accounts payable period (ACPP) has no significant effect on the ROA of listed agricultural companies in Nigeria.
4. **H₀₄:** The current ratio (CURR_RATIO) has no significant effect on the ROA of listed agricultural companies in Nigeria.
5. **H₀₅:** The working capital investment policy (WCIP) has no significant relationship with the ROA of listed agricultural companies in Nigeria.

6. **H0₆:** The working capital financing policy (WCFP) has no significant effect on the ROA of listed agricultural companies in Nigeria.
7. **H0₇:** Firm size and the debt-to-total-assets ratio (DEBTAR) have no significant impact on the ROA of listed agricultural companies in Nigeria.

LITERATURE AND THEORETICAL REVIEW

Working Capital Management

An integral part of every company's financial management strategy, working capital management (WCM) looks at the company's liquidity and operational efficiency in the short term. While lowering the cost of financing, effective WCM guarantees that a business has sufficient liquidity to satisfy its operating demands. Cash, inventory, receivables, and payables are all part of a company's current assets and liabilities that must be managed. Striking a balance between profit and risk is the primary objective (Deloof, 2003).

Since WCM has an effect on the firm's liquidity and profitability, it is significant. Improving a company's cash flow via better management of working capital opens up additional chances for investment and growth. Contrarily, liquidity issues caused by ineffective WCM could eventually lead to insolvency (Lazaridis & Tryfonidis, 2006). In countries like Nigeria, where interest rates are high, businesses that don't have enough operating capital may have to resort to expensive external borrowing (Akinlo, 2012).

Components of Working Capital Management

Three parts make up WCM: the accounts receivable period (ACRVP), the accounts payable period (ACPP), and the inventory conversion period (INVCP). These parts are essential for keeping the business running effectively and controlling its liquidity.

Inventory Conversion Period (INVCP)

The time it takes for a company to turn its inventory into sales is called the inventory conversion period. A shorter INVCP means that a company may start making money off of its inventory more quickly. Proper inventory management is essential to avoid stockouts and lost revenues due to insufficient inventory or excessive holding costs due to obsolescence (Deloof, 2003).

Companies with a shorter INVCP are more likely to be profitable, according to the studies. This is because they are able to turn their assets into cash faster, which allows them to reinvest it in the business. Firms that decrease their INVCP typically see an increase in profitability, according to research by García-Teruel and Martínez-Solano (2007). A similar negative correlation between INVCP and profitability was shown by Raheman and Nasr (2007), suggesting that companies holding inventory for longer periods of time are less likely to turn a profit.

Problems with the supply chain, high inflation, and unpredictable demand make effective inventory management in the Nigerian environment an uphill battle. Holding costs

rise when businesses fail to manage their inventories well, cutting into their profits (Owolabi & Alu, 2012).

Accounts Receivable Period (ACRVP)

The time it takes for a company to get paid by its customers following a transaction is called the accounts receivable period. Companies that offer credit to their clients usually have to wait for payment to arrive after the sale has already been made. A company's liquidity may be affected by the accounts receivable period, which is the time it takes for sales to be turned into cash (Lazaridis & Tryfonidis, 2006).

Giving customers more time to pay raises the possibility of bad debts and payment delays, but it may also boost sales—especially in highly competitive sectors. Companies need to strike a balance between extending loans to clients in order to attract them and maintaining liquidity. If a company can turn its sales into cash faster, it would likely have a shorter accounts receivable period and be more successful overall, according to studies. Companies with shorter ACRVP were more profitable, according to Deloof (2003). Profitability was found to have a negative correlation with ACRVP, according to García-Teruel and Martínez-Solano (2007).

Accounts receivable management is notoriously difficult in underdeveloped economies like Nigeria's, where cash transactions are common and there are weak legal mechanisms for enforcing credit agreements. Delays in client payment collection put a pressure on cash flow and cut into profitability for many Nigerian businesses (Akinlo & Olufisayo, 2011).

Accounts Payable Period (ACPP)

The time it takes for a company to pay its suppliers after making credit purchases is called the accounts payable period. With a lengthier ACPP, the company can tap into the supplier's credit for short-term funding, which helps boost liquidity. Long payment delays, however, can damage supplier relationships and result in fines or supply interruptions (Gill, Biger & Mathur, 2010).

The correlation between ACPP and financial success has been the subject of conflicting research. Some research indicates that a longer payment term might boost profitability by giving the company more cash on hand, while other research suggests that the opposite is true—that postponing payments can hurt profitability owing to the possibility of damaged relationships with suppliers or missed discounts for early payments. For instance, ACPP was found to have a positive correlation with profitability by Lazaridis and Tryfonidis (2006) but a negative correlation by Deloof (2003).

With borrowing costs so high and cheap credit so hard to come by in Nigeria, accounts payable management takes on added significance. Companies can boost their liquidity and profits by delaying payments to suppliers without damaging relationships (Owolabi & Alu, 2012).

The Role of Current Ratio in Profitability

One common way to look at a company's liquidity is to divide its current assets by its current liabilities. This is called the current ratio. One measure of a company's liquidity is its

current ratio; a higher number means that its assets are sufficient to meet its short-term obligations. If a company has a high current ratio, it means it can pay its short-term bills without taking out a loan, which means it can be more profitable (Lazaridis & Tryfonidis, 2006).

The management of working capital may be inefficient if the current ratio is quite high, though. A company's profitability can take a hit if it hoards too much cash or inventory, even though its current ratio would be high. This is because there's an opportunity cost associated with keeping these assets inactive. As a result, while controlling their current ratio, businesses should aim for a balance between liquidity and profitability (Deloof, 2003).

Companies that have a reasonable current ratio are able to pay their short-term bills without hoarding too much cash in idle assets, which leads to higher profits, according to the studies. As an illustration, one study by García-Teruel and Martínez-Solano (2007) indicated a positive correlation between profitability and current ratio, whilst another study by Raheman and Nasr (2007) indicated a negative correlation between excessive liquidity and profitability.

Working Capital Investment Policy (WCIP)

The way a company handles its current assets is called its working capital investment policy. Companies have the option to take a cautious or bold approach to their investment strategy. A cautious strategy would have the company have a lot of cash on hand in relation to its sales, which would provide it a lot of liquidity but might hurt its profits. Contrarily, a more aggressive strategy would have the company keep a smaller amount of current assets on hand, which might boost profits but also raise liquidity risk (Akinlo & Olufisayo, 2011).

Research shows that companies which are proactive with their working capital investment plans are more likely to earn a profit. This is because these companies are able to reduce their spending on current assets while increasing their return on investment. Akinlo (2012), for instance, discovered that companies' profitability increased when their working capital practices were more aggressive. In a similar vein, Raheman and Nasr (2007) discovered that aggressive working capital practices lead to higher profits.

Working Capital Financing Policy (WCFP)

An organization's strategy for funding its short-term assets is known as its working capital financing policy. To meet their working capital requirements, businesses can get either short-term or long-term loans. A cautious approach to funding assets, whether long-term or short-term, means utilizing long-term financing. This strategy lowers the firm's liquidity risk but might lead to higher financing costs. Using short-term loans to finance current assets is an aggressive financing strategy that can lower financing costs but puts the company at greater risk of liquidity issues (Gill, Biger & Mathur, 2010).

Because they may lower their liquidity risk with long-term financing, companies with more conservative strategies for working capital financing are more likely to be profitable,

according to studies. Conservative finance practices are positively correlated with profitability, according to García-Teruel and Martínez-Solano (2007). But companies that put all their eggs in the short-term funding basket are more likely to face liquidity problems down the road, even if they could be more profitable up front (Raheman & Nasr, 2007).

Firm Size

A company's capacity to control its working capital and turn a profit is heavily influenced by its size. Profitability is often higher for larger enterprises due to advantages such as larger supplier negotiating power, easier access to finance markets and larger economies of scale. The ability to better manage working capital is a key factor in the higher profitability of larger enterprises compared to smaller ones, according to studies (Akinlo, 2012).

For instance, Deloof (2003) discovered that larger businesses often had higher profitability, suggesting a positive link between company size and profitability. Likewise, the favorable influence of business size on profitability was discovered by García-Teruel and Martínez-Solano (2007).

Debt-to-Total-Assets Ratio

A company's financial leverage may be found by dividing its total debt by its total assets. This ratio is known as the debt-to-total-assets ratio. Businesses that rely more on debt finance to run their operations are more likely to be financially risky. Although taking on debt might help fund expansion, doing so to an excessive degree can hurt a company's liquidity and bottom line (Akinlo & Olufisayo, 2011).

Companies that have a lower debt-to-total-assets ratio are more likely to have a positive cash flow and lower interest expenditures, which leads to higher profits, according to studies. Firms with lower levels of debt tend to be more lucrative, according to Raheman and Nasr (2007), who discovered a negative link between debt and profitability. Companies with lower debt-to-total-assets ratios also tended to be more profitable, according to Deloof (2003).

Theoretical Framework

Cash Conversion Cycle Theory

One of the most popular models for analyzing the connection between efficient management of working capital and financial success is the cash conversion cycle (CCC) hypothesis. How long does it take for a company to turn its inventory and other resources into cash from sales? That's what the CCC measures. The accounts payable term is subtracted from the sum of the inventory conversion period and accounts receivable period. Working capital management is more efficient when the CCC is shorter (Deloof, 2003).

Companies that have shorter CCCs are more likely to be profitable, as they can turn their investments into cash faster and make better use of their resources, according to the CCC hypothesis. Research shows that companies with shorter CCCs are more likely to be profitable. Firms with shorter CCCs typically have higher profitability, as demonstrated by a negative correlation between CCC and profitability discovered by García-Teruel and Martínez-Solano (2007).

Pecking Order Theory

According to the pecking order principle, companies would rather support their activities with retained earnings than with debt or equity. Firms that are adept in managing their working capital are less likely to need to go outside sources for funding, as this theory states (Myers & Majluf, 1984).

In order to minimize the expenses associated with external funding, businesses that are good at managing their working capital internally are more likely to be profitable, according to studies. Companies that had better working capital management were more profitable and had more internal money, according to Deloof (2003).

Trade-off Theory

It is suggested by the trade-off hypothesis that companies need to weigh the pros and cons of keeping working capital. More working capital on hand has the dual benefit of increasing liquidity and decreasing the likelihood of financial trouble. However, when money becomes stuck in unproductive assets when there is an excess of working capital, profitability suffers (Deloof, 2003).

The trade-off hypothesis states that in order for businesses to maximize profits while still meeting their liquidity needs, they need to determine the ideal level of working capital. Companies that achieve this sweet spot are more likely to see increased profits, according to research. As an illustration, the research conducted by García-Teruel and Martínez-Solano (2007) indicated that companies that maintained an ideal amount of working capital were more profitable.

Empirical Review

Working capital management has an effect on the financial performance of agricultural firms listed on the Nairobi Securities Exchange from 2016 to 2022, according to Githiga and Koori (2023). The influence of AR collection, creditor payments, operational cash flow, and inventory turnover on the organizations' bottom lines was the primary aspect of their investigations. Additionally, the relationship between firm size and working capital as well as financial performance was investigated. Various statistical methods were utilized in the investigation, including panel regression, descriptive statistics, and correlation analysis. Financial outcomes are inversely related to the time required to collect accounts receivable. A positive but statistically insignificant link was discovered between the time it took for creditors to pay and the firm's performance, but there was a big association between cash flows and financial performance.

The data was analyzed using an OLS regression model, and the results demonstrated that financial performance of agricultural firms in Nigeria was significantly impacted by the accounts receivable period (with a coefficient of 2.49, $P=0.017 < 0.05$). The results demonstrate that these companies stand to gain monetarily from enhancing their accounts receivable management. Accordingly, the study recommended continuously adjusting the accounts receivable term to mitigate the impact of past-due debtors on the business. Furthermore, the impact of accounts receivable management on the financial performance of agricultural firms listed on the

Nairobi Securities Exchange was investigated by Nyantika et al. (2022) using a descriptive method.

According to Ayunku and Johnny (2020), who used data from Livestock Feeds Plc (2002-2018) and Okomo Oil Company Plc (2007-2018), two agricultural firms listed on the Nigerian stock exchange, studied the relationship between working capital management and performance. They examined metrics like inventory turnover, accounts payable and receivable, and the cash conversion cycle using earnings per share (EPS) as the dependent variable. The ADF unit root test, descriptive statistics, and regression analysis were all employed. Both firms' accounts receivable and EPS were positively and statistically significantly correlated, whereas accounts payable and EPS were negatively and statistically insignificantly correlated. The cash conversion cycle and earnings per share showed a favorable and statistically significant correlation for both organizations. The impact of inventory management on profits per share (EPS) for Livestock Feeds Plc was almost nonexistent, whereas, for Okomo Oil Company Plc, it was almost nonexistent. The study concluded that accounts receivable and payable have an effect on business success, hence financial managers should check these metrics often.

According to Kpanga et al. (2020), listed Agro-allied enterprises in Nigeria were studied for their working capital management and financial performance. Financial information from five agricultural firms covering the years 2008-2017 were culled from secondary data sources, which the researchers analyzed using descriptive and inferential statistics.

Research Gap and Summary

The literature is in agreement that effective management of working capital is important to a company's profitability. Time spent converting inventory, AR, and AP may have a major influence on profitability and liquidity if not handled efficiently. The size of the business, the debt-to-total-assets ratio, and the rules around working capital also have a role in determining financial success. Implementing solid working capital practices may help businesses enhance their bottom line and remain afloat.

No study in Nigeria has extended beyond 2020 to incorporate 2022, according to Ayunku and Johnny (2020), Githiga and Koori (2023), Ali (2019), Kpanga et al. (2020), Luchinga (2014), and a few others. Despite focusing on the years up to 2022, Githiga and Koori (2023) conducted their investigation in Kenya. Because of this void in the current literature, our investigation is essential.

METHODOLOGY

This research details the methods used to determine how listed agricultural firms in Nigeria fared financially as a result of their working capital management practices. The research methodology, study population, sample size, data-gathering procedures, variables, and analytical approaches are all covered in this section.

Using panel data regression analysis, this study takes a quantitative approach to research. Working capital

management's effect on profitability throughout time and among companies may be better understood with the use of panel data, which permits both cross-sectional and time-series research. The selected profitability metric, return on assets (ROA), and its relationship to certain working capital components are the primary areas of investigation.

Nigerian Stock Exchange (NSE) listed agriculture enterprises make up the study's population. We chose these companies because we could easily access their data, they are leaders in Nigeria's manufacturing industry, and they make products that everyone needs. The sample size is comprised of fifteen enterprises spanning a decade (2014–2023). To guarantee the analysis's robustness, firms were removed if their financial data was inadequate or if they were delisted during the research period.

Data from the Nigerian Exchange Group (NEG) and the chosen companies' annual reports and financial statements are the secondary sources used in this study. Key financial indicators pertaining to working capital management and profitability are included in the data collected, which spans a decade from 2014 to 2023. We used EViews 9.0 to do the analysis, and Microsoft Excel for data extraction and computation.

Variables and Measurement

The profitability metric used in the study is return on assets (ROA), which is the dependent variable. One measure of a company's asset utilization efficiency is its return on assets (ROA), which is calculated as net income divided by total assets.

Aspects of working capital management are reflected in the independent variables:

- The time it takes for inventory to be turned into sales is known as the inventory conversion period (INVCP). The formula is the average cost of goods sold (in inventory) over 365 days.
- Accrual Credit Relationship Value Period (ACRVP): The typical duration required to retrieve funds from clients following a transaction. This is the result after 365 days of accounts receivable sales.
- The typical amount of time it takes for a company to pay its vendors is known as the accounts payable period (ACPP). This is the amount that has to be paid out in 365 days' worth of goods sold.

Other control variables included in the study are:

- A liquidity ratio, the current ratio (CURR_RATIO) indicates whether or not a business can meet its short-term obligations with the funds on hand.
- The degree of aggressiveness or conservatism in the management of current assets is indicated by the Working Capital Investment Policy (WCIP).
- The Working Capital Financing Policy (WCFP) assesses how much a business relies on short-term loans to fund its operations.

- Firm Size: Using the natural logarithm of total assets as a measure, this variable is used to represent the size of the business.
- Debt-to-Total-Asset Ratio (DEBTAR): The ratio of a company's total debt to its total assets.

Model Specification

This research used a random effects regression model to examine how working capital management affects profitability:

The equation for ROA is $\beta_0 + \beta_1 \text{IVCPit} + \beta_2 \text{ACRPit} + \beta_3 \text{ACPPit} + \beta_4 \text{CRQit} + \beta_5 \text{WCIPit} + \beta_6 \text{WCFPit}$.

The value of β_0 is a constant.

The return on investment (ROI) is equal to the dependent variable.

ICCP stands for Inventory Conversion Period, which is an independent variable.

Accrual Cash Flow Period (Independent Variable)

ACPP stands for Account Payable Period, which is an independent variable.

The current ratio is denoted as CR, while the independent variable is

Investment policy for working capital (WCIP) is the independent variable.

WCFP is the policy for investing working capital and is an independent variable.

COMPANY SIZE = (Variable for Control)

The debt-to-asset ratio is equal to the control variable.

The component error term is denoted as $\mu_i + \text{Vit}$.

Data Analysis Techniques

This research makes use of panel data regression analysis, namely the random effects and fixed effects models. We used the Hausman specification test to get the best model for the analysis. Since the random effects model is well-suited to panel data in which individual firm effects are uncorrelated with the independent variables, it was chosen for the study based on the Hausman test's results.

In order to summarize the data and analyze the correlations between the variables, the research also makes use of descriptive statistics and the correlation matrix. To guarantee the results were robust, diagnostic tests were run, including tests for heteroscedasticity and multicollinearity.

- Descriptive statistics: Gives a synopsis of the data, including the variables' standard deviations, maximums, minimums, medians, and means.
- Correlation analysis: Determines the direction and intensity of the correlations between the variables. It is useful for spotting multicollinearity, which can skew regression findings.
- Panel data regression analysis: Makes use of both fixed and random effects models to examine the

connection between profitability and working capital management.

Several diagnostic tests were performed to validate the reliability of the regression results:

- **Multicollinearity Test:** For the purpose of detecting multicollinearity among the independent variables, variance inflation factors (VIF) were computed. There may be problems with multicollinearity if the VIF is more than 10.
- **Heteroscedasticity Test:** To check for heteroscedasticity, the Breusch-Pagan/Cook-Weisberg test was utilized. If the result is statistically significant, then heteroscedasticity (a non-constant variance of errors) is present.

- **Hausman Test:** A decision between a random effects model and a fixed effects model was reached after this test. If the test result is significant, then the fixed effects model should be used, but if it is not, then the random effects model should be used.

RESULT AND DISCUSSION

Descriptive Statistics

Using Return on Assets (ROA) as the dependent variable and several measures of working capital management and financial structure as the independent variables, this study investigates the link between working capital management and company performance. Tables 4.1, 4.2, and 4.4 include the essential data used in the analysis, which encompasses descriptive statistics, correlation analysis, and a random effect model regression.

Table 4.1: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std. Dev.
ROA	0.032543	0.046096	0.297832	-0.1987	0.116684
INVCP	194.4444	153.0649	577.9477	52.22375	129.2836
ACRVP	808.3090	25.35050	36026.22	0.162491	5191.915
ACPP	336.8038	94.86977	3923.742	11.31320	620.4785
CURR_RATIO	1.206622	1.100068	3.248776	0.216268	0.783397
WCIP	0.341962	0.231691	0.924304	0.050573	0.287332
WCFP	0.538983	0.532515	1.000000	0.092548	0.280895
FIRM_SIZE	7.168457	7.167786	8.155812	6.191085	0.531064
DEBTAR	0.586181	0.576297	1.299719	0.177877	0.271498

Source Authors' Computation EViews 9.0 2024

Return on Assets (ROA): Companies typically get a return of 3% on their assets, as seen by the average ROA of 0.0325, which is 3%. Return on assets (ROA) can be anything from -0.1987 to 0.2978.

Inventory Conversion Period (INVCP): Companies take an average of 194 days to turn their inventory into sales, with a standard deviation of 129.3 days showing a lot of variety.

Accounts Receivable Period (ACRVP): A large standard deviation of 5,191 days indicates extremely outlying cases; on average, businesses take 808 days to recover money from clients.

Accounts Payable Period (ACPP): On average, it takes 336 days to pay suppliers.

Current Ratio: A current ratio of 1.2066 indicates that, on average, companies have enough liquid assets to meet their short-term obligations.

Working Capital Investment Policy (WCIP): With a WCIP of 0.342 on average, businesses put around 34% of their assets into working capital.

Working Capital Financing Policy (WCFP): Over half of a company's working capital comes from short-term debt.

Firm Size: The natural logarithm of total assets measures the average business size, which is 7.168, with little fluctuation.

Debt to Total Asset Ratio (DEBTAR): Firms finance 58.6% of their total assets with debt, according to the average ratio of 0.586.

Correlation Analysis

Table 4.2 Correlation Matrix

	ROA	ROE	NPM	INVCP	ACRVP	ACPP	CURR	WCIP	WCFP	FIRM_SIZE	DEBTAR
ROA	1.00	0.25	0.25	-0.36	-0.07	-0.16	0.58	-0.02	-0.10	0.61	-0.69
INVCP	-0.36	-0.16	-0.57	1.00	0.44	0.71	-0.47	-0.19	-0.10	-0.17	0.53
ACRVP	-0.07	-0.16	-0.95	0.44	1.00	0.86	-0.19	-0.13	-0.04	-0.14	0.19
ACPP	-0.16	-0.08	-0.88	0.71	0.86	1.00	-0.40	-0.28	-0.17	-0.01	0.42
CURR_	0.58	0.14	0.31	-0.47	-0.19	-0.40	1.00	0.25	-0.02	0.27	-0.60
WCIP	-0.02	-0.16	0.20	-0.19	-0.13	-0.28	0.25	1.00	0.83	-0.38	0.02
WCFP	-0.10	-0.41	0.13	-0.10	-0.04	-0.17	-0.017	0.82	1.00	-0.40	-0.06
FIRM_S	0.61	0.26	0.25	-0.17	-0.14	-0.01	0.29	-0.38	-0.40	1.00	-0.45
DEBTAR	-0.69	0.19	-0.40	0.53	0.19	0.42	-0.60	0.02	-0.06	-0.45	1.00

Source: Authors' Computational Output (EViews 9) 2024

The correlation matrix of the study's variables is shown in Table 4.2. Between ROA and INVCP, there is a moderate negative correlation of -0.359525. Additionally, there is a slight positive connection of 0.0212 between ROA and ACPP and a very weak negative correlation of -0.073324 between ROA and ACRVP. Return on investment (ROI) and the current ratio are positively correlated at 0.580156 and negatively correlated at -0.163043. with WCIP.

Using a correlation analysis, we can see how ROA relates to the other variables:

Negative Correlations:

- **Inventory Conversion Period (INVCP):** Longer inventory conversion durations diminish profitability, according to the moderate negative correlation of -0.36 between ROA and inventory turnover time.
- **Accounts Receivable Period (ACRVP):** Firms that take longer to collect receivables often have poorer profitability, according to a slight negative correlation of -0.07 between ROA and ACRVP.
- **Debt to Total Asset Ratio (DEBTAR):** There is a strong negative connection (-0.69) between ROA and total debt, suggesting that companies with a larger ratio of total debt to total assets often have inferior performance.

Positive Correlations:

- **Current Ratio:** There is a moderate positive association between ROA and liquidity (0.58), suggesting that improved profitability is linked to increased liquidity.
- **Firm Size:** A high positive association (0.61) between ROA and business size suggests that bigger companies tend to be more lucrative.

Panel Data Regression Analysis

Table 4.3 Hausman Specification Test ROA

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Correlated Random Effects - Hausman Test			
Period random	1.329659	8	0.9952

Source: Authors' Computational Output (EViews 9) 2023

Table 4.4 Random Effect Model ROA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
INVCP	-3.21E-05	0.000163	-0.197154	0.8448
ACRVP	-3.59E-06	6.41E-06	-0.559629	0.5792
ACPP	7.61E-05	7.08E-05	1.075593	0.2893

CURR_RATIO	0.015666	0.029262	0.535381	0.5957
WCIP	0.522168	0.264189	1.976492	0.0558
WCFP	-0.129796	0.112112	-1.157739	0.2546
FIRM_SIZE	-0.145649	0.088716	-1.641735	0.1094
DEBTAR	-0.135802	0.107091	-1.268095	0.2129
C	1.012215	0.590655	1.713715	0.0952
Effects Specification				
Period random			S.D.	Rho
			0.000000	0.0000
Idiosyncratic random		Weighted Statistics	0.078931	1.0000
R-squared	0.735341	Mean dependent var		0.032543
Adjusted R-squared	0.654474	S.D. dependent var		0.116684
S.E. of regression	0.068589	Sum squared resid		0.169360
F-statistic	9.093118	Durbin-Watson stat		1.643084
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.735341	Mean dependent var		0.032543
Sum squared resid	0.169360	Durbin-Watson stat		1.643084

Source: Authors' Computational Output (EViews 9) 2024

The study employs the random effect model, as the Hausman test revealed that this is the more appropriate model (p-value = 0.9952).

- **Inventory Conversion Period (INVCP):** A negative impact of INVCP on ROA of $-3.21E-05$ (p-value = 0.8448) is statistically negligible, indicating that the time it takes to turn inventory into sales has no substantial impact on profitability.
- **Accounts Receivable Period (ACRVP):** There is no statistically significant relationship between the time it takes to collect payments and ROA, as shown by the negative effect of $-3.59E-06$ (p-value = 0.5792).
- **Accounts Payable Period (ACPP):** With a coefficient of $7.61E-05$ and a p-value of 0.2893, the positive effect on ROA is not statistically significant, suggesting that extending payment terms to suppliers does not substantially boost profitability.
- **Current Ratio:** Liquidity appears to have little bearing on profitability, as the current ratio has a negligible positive influence on return on assets (ROA) (coefficient = 0.015666, p-value = 0.5957).
- **Working Capital Investment Policy (WCIP):** The effect of this variable on ROA is positive and statistically negligible (p = 0.0558). It appears that

increasing the investment in working capital might lead to better profitability.

- **Working Capital Financing Policy (WCFP):** Higher dependence on short-term debt to fund working capital does not significantly harm profitability, as indicated by the negative and negligible effect of WCFP on ROA (coefficient = -0.129796 , p-value = 0.2546).
- **Firm Size:** Although the correlation study indicated a positive association, the actual link between firm size and ROA is negative and statistically insignificant (coefficient = -0.145649 , p-value = 0.1094). Multicollinearity or any other variable could be at play here.
- **Debt to Total Asset Ratio (DEBTAR):** With a coefficient of -0.135802 and a p-value of 0.2129, DEBTAR has a negative and statistically negligible impact on ROA. The impact of increased debt on profitability is not statistically significant, however it does tend to decrease profitability.

Discussions

For the chosen agricultural manufacturing companies, statistical analysis shows a negative and insignificant relationship between INVCP and ROA. The fact that changes in inventory turnover do not considerably impact the firm's asset-producing capacity is indicated by this minimal negative effect. We are unable to reject the null hypothesis based on

these facts. Additionally, Githiga and Koori (2023) found that agricultural firms listed on the Nairobi Securities Exchange had a negative and modest effect from the inventory conversion period on their financial performance. We agree with their results. These results contradict those of Ali (2019), who discovered that IR had a little but positive impact on Nigerian companies' bottom lines. Also, they don't agree with Luchinga (2014), who found that days of inventory turnover had a negative effect on ROA.

Return on Assets (ROA) and the Accounts Receivable Period (ACRVP) are negatively correlated but not statistically significant for these companies either. The modest effect of ACRVP shows that increasing the time it takes to recover receivables has a little impact on profitability. But if this tendency keeps up, agricultural manufacturing businesses might not do so well. Like the INVCP research, this one also makes it impossible to reject the null hypothesis. Githiga and Koori (2023) found that the inventory conversion period had a negative and insignificant effect on financial performance, which is in contrast to Ali (2019) who found that the accounts receivable ratio (ARR) had a positive and substantial impact on the financial performance of Nigerian firms.

Although there was no statistically significant relationship between ROA and the Accounts Payable Period (ACPP), the research did show that it had a favorable effect. It seems that an increase in ACPP is associated with a rise in ROA, suggesting that ACPP increases corporate profitability. Since there is no statistical significance, it is possible that this link is coincidental. Consequently, the null hypothesis is still correct. Although these findings are in line with those of Githiga and Koori (2023), who found a weak positive correlation between the time it takes for creditors to pay and financial performance, they contradict the findings of Ali (2019), who found that the accounts payable ratio (APR) had a negligible and negative effect on the financial performance of agricultural firms.

Just one more thing: the current ratio somewhat improved ROA, which is great news before we close up. An increase in the current ratio, which measures the ability of a business to meet its short-term obligations, is typically indicative of better liquidity. A boost in profits, however, does not always indicate this expansion. If you put too much faith on short-term assets, you risk inefficient capital allocation and a decline in profitability. Too much focus on liquidity, rather than effective use of resources, might hurt return on assets.

CONCLUSION

Statistical analysis of the chosen Nigerian agricultural company enterprises' return on assets (ROA) shows that none of the working capital management variables—INVCP, ACRVP, ACPP, CURR_RATIO, WCIP, and WCFP—had a substantive effect. Furthermore, profitability is negatively affected by debt financing, and the link between business size and profitability is varied depending on the analytic approach. Statistical significance was not achieved in this dataset, according to the study's overall conclusions, even if there are connections between business features and profitability.

RECOMMENDATIONS

1. Even though there was no statistically significant effect of INVCP on profitability, companies may still gain by improving their inventory management and cutting holding expenses.
2. Companies should think about paying down their debt as a larger debt-to-asset ratio is associated with less earnings.
3. Additional firm-specific variables that may impact profitability might be investigated in future research, or a bigger sample size could be utilized.

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