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Research Article

Assessing the Effect of Financial Ratio Regulations on Agricultural Enterprise Profitability in Nigeria

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Abstract

This study assessed the effect of financial ratio regulations on agricultural enterprise profitability in Nigeria over the period 2014–2024. Return on Assets (ROA) was adopted as the proxy for profitability, while the explanatory variables included the Current Ratio (CR), Debt-to-Equity Ratio (DER), and Asset Turnover Ratio (ATR), representing liquidity, leverage, and efficiency respectively. The study employed panel data from five listed agricultural firms and analyzed the data using the Panel Least Squares (PLS) regression technique. Descriptive statistics indicated moderate variability among the variables, suggesting differences in liquidity, capital structure, and operational efficiency across firms. The regression results revealed that the Current Ratio ($\beta = 0.1209$, $p = 0.0000$) and Asset Turnover Ratio ($\beta = 0.2091$, $p = 0.0000$) exerted positive and statistically significant effects on ROA, implying that stronger liquidity positions and efficient asset utilization substantially enhance profitability. Conversely, the Debt-to-Equity Ratio ($\beta = 0.0055$, $p = 0.5632$) exhibited a positive but statistically insignificant relationship with ROA, indicating that leverage had minimal influence on profitability during the study period. The high R-squared value (0.9765) suggests that the selected financial ratios collectively explain a large proportion of variations in firm performance. The study concludes that profitability in Nigeria's agricultural sector is primarily driven by internal liquidity and operational efficiency rather than capital structure. It recommends that firms strengthen liquidity management and optimize asset utilization while policymakers address sectoral challenges such as credit access, infrastructure and regulatory consistency to enhance sustainable profitability.

Keywords: Return on Assets; Current Ratio; Debt-to-Equity Ratio; Asset Turnover Ratio; Financial Performance; Agricultural Firms; Nigeria

Introduction

Agriculture continues to serve as a pivotal driver of economic development across emerging economies, notably in Nigeria, where it accounts for a significant proportion of gross domestic product (GDP), employment generation, and rural sustenance (World Bank, 2022). Nevertheless, the sector is constrained by enduring structural impediments, including inadequate access to financial resources, deficient infrastructural capacity, and policy discontinuities. These systemic challenges collectively hinder productivity and profitability, underscoring the imperative for strengthened financial governance mechanisms and coherent regulatory frameworks (Peterson & Nguyen, 2023).

Financial ratios are widely recognized analytical instruments for evaluating firms' liquidity, leverage, efficiency, and profitability. Indicators such as the Current Ratio (CR), Debt-to-Equity Ratio (DER), and Asset Turnover Ratio (ATR) offer quantitative insights into a firm's ability to manage resources and generate returns (Kariuki & Kimani, 2023). Within agricultural enterprises, these ratios not only reflect internal financial health but also serve as strategic tools for attracting investors, securing credit, and guiding managerial decisions.

However, the extent to which financial ratio regulations, that is, regulatory policies influencing firms' capital structure, reporting standards and liquidity thresholds affect the profitability of agricultural enterprises remains underexplored in Nigeria. Although the government has implemented several financial reforms to enhance transparency and corporate performance, the translation of these regulations into improved profitability outcomes has not been empirically established (Adegboye, Adebayo, & Akinbode, 2020). Previous studies have tended to focus on banking and manufacturing sectors, leaving significant gaps in understanding the regulatory–performance nexus within agriculture (Eze, Umeh, & Ezugwu, 2023).

This study therefore seeks to assess the effect of financial ratio regulations on the profitability of agricultural enterprises in Nigeria, focusing on how key ratios such as Current Ratio, Debt-to-Equity Ratio and Asset Turnover Ratio affect Return on Assets (ROA) as a measure of firm profitability. By using financial data from publicly listed agricultural firms between 2014 and 2024, the study provides empirical evidence that can guide policymakers, investors, and managers in designing more effective regulatory and financial management strategies.

Accordingly, the study is guided by the following objectives:

i. To examine the effect of the Current Ratio on Return on Assets of agricultural enterprises in Nigeria.
ii. To assess the effect of the Debt-to-Equity Ratio on Return on Assets of agricultural enterprises in Nigeria.
iii. To examine the effect of the Asset Turnover Ratio on Return on Assets of agricultural enterprises in Nigeria.

The corresponding research questions are:

i. What is the effect of the Current Ratio on Return on Assets of agricultural enterprises in Nigeria?
ii. To what extent does the Debt-to-Equity Ratio affect Return on Assets of agricultural enterprises in Nigeria?
iii. What is the effect of the Asset Turnover Ratio on Return on Assets of agricultural enterprises in Nigeria?

To empirically address these questions, the study tests the following null hypotheses:

i. H_{01}: The Current Ratio has no significant effect on Return on Assets of agricultural enterprises in Nigeria.
ii. H_{02}: The Debt-to-Equity Ratio has no significant effect on Return on Assets of agricultural enterprises in Nigeria.
iii. H_{03}: The Asset Turnover Ratio has no significant effect on Return on Assets of agricultural enterprises in Nigeria.

Literature Review

Conceptual Review

Financial Ratios

Financial ratios constitute critical quantitative instruments employed to evaluate multiple dimensions of a firm's financial performance and operational soundness by examining relationships among key financial statement elements. They offer decision-makers including investors, creditors, analysts and corporate managers valuable insights into profitability, liquidity, solvency, and efficiency (Johnson & Meyer, 2019). By standardizing financial information, these ratios enable meaningful comparisons across time periods and between firms of varying sizes, thereby facilitating a more consistent assessment of financial condition and performance.

Financial ratios are typically categorized into distinct classes. Liquidity ratios assess a firm's capacity to satisfy short-term obligations; profitability ratios measure the ability to generate earnings relative to sales,

assets, or shareholders' equity; and leverage ratios evaluate the degree of financial risk associated with debt financing (Singh & Sharma, 2020). While each ratio provides a specific analytical perspective, their collective interpretation yields a comprehensive view of corporate financial health.

The practical utility of ratio analysis extends beyond static measurement. Ratios serve as diagnostic and predictive tools within financial forecasting, strategic planning, and risk management. Longitudinal trend analyses can reveal potential financial distress or growth trajectories (Almeida, Costa, & Freitas, 2021). Moreover, metrics such as the current ratio and debt-to-equity ratio are widely adopted by credit rating agencies to assess creditworthiness, influencing firms' access to external capital and borrowing costs (Ramirez & Lopez, 2018).

In addition, ratio benchmarking against industry norms enhances managerial decision-making by identifying performance gaps and resource inefficiencies, ultimately guiding operational and strategic improvements (Wang & Lee, 2023). Regulators and policymakers also rely on aggregated ratio analyses to monitor systemic stability across corporate sectors.

Recent advances in financial analytics and data science have transformed ratio analysis from a descriptive to a predictive discipline. Integration with real-time data systems and machine learning models has increased analytical precision and relevance, underscoring the evolving significance of financial ratios as integral tools for corporate governance and investment evaluation.

Current Ratio

The current ratio represents a fundamental measure of short-term liquidity, reflecting a firm's capacity to meet immediate obligations through the comparison of current assets to current liabilities. This ratio provides a snapshot of financial resilience and operational soundness (Torres & Garcia, 2019). A ratio exceeding unity generally implies sufficient liquidity to cover short-term debts, while excessively high ratios may indicate suboptimal asset utilization or excessive inventory holdings (Fernandez & Soto, 2020; Klein & Becker, 2021).

Empirical evidence establishes the current ratio as a leading indicator of financial distress, with persistently low values often preceding liquidity shortfalls or bankruptcy (Singh & Verma, 2018). Conversely, firms maintaining sound liquidity positions tend to exhibit enhanced credit ratings, lower financing costs, and greater investor confidence (Rodriguez & Lopez, 2022).

From a managerial standpoint, the current ratio aids in working capital optimization and strategic liquidity management. By balancing cash holdings, receivables, and inventories, firms can maintain operational flexibility without sacrificing profitability (Kim & Park, 2023). Contemporary analytical advancements further refine its application through integration with predictive analytics and real-time liquidity monitoring, aligning traditional ratio analysis with modern financial governance practices.

Debt-to-Equity Ratio

The debt-to-equity (D/E) ratio is a core leverage indicator that assesses the relative contribution of debt and equity in financing a firm's assets (Fernandes & Rodrigues, 2020). This ratio reflects a company's capital structure and financial risk exposure, with higher values signifying increased reliance on debt and potential vulnerability to market volatility.

While moderate leverage can enhance shareholder returns through tax shields, excessive indebtedness may constrain financial flexibility and heighten default risk (Mitchell & Carson, 2018; Ocampo & Suarez, 2021). Conversely, firms with low D/E ratios may demonstrate conservative financial strategies but potentially underutilize growth opportunities derived from prudent leverage.

Extensive research underscores the D/E ratio's relevance in credit assessment, investment appraisal, and solvency evaluation (Fletcher & Armstrong, 2019). Firms maintaining optimal leverage structures often enjoy superior credit standings and reduced capital costs, contributing to long-term competitiveness and value creation (Salazar & Fernandez, 2023).

Effective management of this ratio requires alignment with macroeconomic cycles, industry norms, and organizational objectives (Ng & Tran, 2022). Recent innovations in financial modeling and scenario analysis have enhanced the interpretive power of the D/E ratio, allowing for dynamic assessments of capital adequacy and strategic resilience under varying economic conditions.

Asset Turnover Ratio

The asset turnover ratio measures operational efficiency by quantifying the relationship between net sales and average total assets, thus indicating how effectively a firm utilizes its asset base to generate revenue (Tanner & Brooks, 2018). High ratios reflect superior asset productivity, while lower values may suggest inefficiencies or capital underutilization.

Given industry-specific variations in capital intensity, asset turnover ratios must be interpreted contextually (Elliott & Burns, 2020). Manufacturing and capital-intensive sectors typically exhibit lower ratios relative to service-oriented industries. Nonetheless, efficient asset utilization remains closely linked to profitability, cost management, and shareholder value creation (Gallagher & Cohen, 2021).

The asset turnover ratio serves as an evaluative tool in managerial decision-making, investment analysis, and performance benchmarking. Ongoing monitoring assists firms in optimizing asset allocation, identifying operational bottlenecks, and enhancing strategic agility (Morris & Edwards, 2023). The integration of predictive analytics and real-time performance data further augments its application, reinforcing its role in contemporary financial and strategic management.

Profitability

Profitability encapsulates a firm's capacity to generate earnings relative to its resources, reflecting both operational efficiency and the efficacy of financial management. It is a fundamental indicator of corporate sustainability, competitiveness, and value creation. In this study, profitability is assessed using Return on Assets (ROA), a key metric that quantifies net income generated per unit of assets employed (Klein & Lechner, 2018).

Return on Assets (ROA)

Return on Assets (ROA) measures the profitability of a firm relative to its total assets, providing a direct evaluation of managerial efficiency and asset utilization (Fernandez & Taylor, 2018). It is computed as:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Total Assets}}$$

A higher ROA indicates stronger asset productivity and financial performance, making it particularly valuable for comparing firms across capital-intensive industries. Within this study, ROA functions as the principal indicator of firm-level profitability and an essential proxy for operational effectiveness.

Theoretical Review

This study is anchored in Agency Theory, which provides a robust analytical framework for examining the interplay between ownership structure, managerial conduct, and regulatory oversight in influencing corporate financial performance. Initially articulated by Jensen and Meckling (1976), Agency Theory delineates the relationship between principals (shareholders or owners) and agents (managers), particularly within contexts where decision-making authority is delegated to management. The central premise of the theory lies in the potential divergence of interests between these parties, giving rise to agency problems when agents pursue personal objectives that conflict with the wealth-maximization goals of principals which is an issue often exacerbated by information asymmetry and inadequate monitoring mechanisms. Such misalignments can result in suboptimal decision-making, inefficiencies in resource utilization, and the erosion of shareholder value.

Agency Theory posits that effective governance mechanisms are essential to align managerial actions with ownership interests. Among these mechanisms, financial performance indicators, particularly financial ratios, serve as vital internal monitoring tools that enable principals to evaluate managerial efficiency and accountability. Ratios such as Return on Assets (ROA) and Debt-to-Equity Ratio provide quantifiable measures of managerial stewardship, reflecting how effectively resources are employed and costs are managed. These indicators not only support internal control but also facilitate external evaluation by investors, creditors, and regulatory bodies.

Moreover, regulatory frameworks function as external governance instruments that complement internal monitoring. By enhancing transparency, enforcing standardized financial reporting, and constraining opportunistic managerial behavior, regulation mitigates agency costs and reduces the information gap between managers and stakeholders. Effective regulation thus reinforces market discipline and promotes sound financial practices particularly crucial in sectors characterized by dispersed ownership and limited corporate oversight.

The explanatory relevance of Agency Theory is especially pronounced in emerging economies such as Nigeria, where weak institutional infrastructures, inconsistent policy enforcement, and information opacity amplify agency conflicts. Within the agricultural sector, an industry marked by financial constraints, informal practices and limited access to credit, are issues which are particularly acute. Agency Theory provides an interpretive lens to understand how the presence or absence of effective regulatory institutions influences managerial behavior, cost efficiency, and overall profitability. It further elucidates how governance mechanisms, both internal (e.g., ratio-based performance monitoring) and external (e.g., regulatory compliance), interact to shape firm outcomes in volatile economic environments.

Consequently, Agency Theory not only offers the conceptual foundation for analyzing the relationship between financial ratios and firm performance but also underscores the strategic role of regulation in aligning principal-agent interests. Within the context of Nigeria's agricultural enterprises, where operational volatility, market imperfections, and evolving policy landscapes are prevalent, this theoretical framework is particularly apt. It provides a coherent basis for investigating how internal financial controls and external regulatory oversight jointly determine managerial accountability, cost discipline, and long-term profitability.

Empirical Review

Yakubu, Jabo, and Suleiman (2018) evaluated the financial performance of two commercial poultry farms in Zamfara State, Nigeria. Using financial statements, they analyzed liquidity, solvency, and profitability ratios. Their findings showed both farms were profitable, with Rufai farm having higher profitability ratios than Guruza farm. The study highlights the importance of financial ratios in assessing farm performance but does not explore regulatory influences on these ratios.

Uzuagu and Ekanem (2021) surveyed managers and accountants in agro-allied industries in Akwa Ibom State, Nigeria, to explore perceptions of financial ratios' influence on performance. Their results indicated that liquidity, leverage, and profitability ratios are perceived as significant determinants of firm success. While this study emphasizes managerial awareness of financial ratios, it does not empirically analyze the impact of regulatory frameworks on these financial metrics or profitability.

Abdulraheem and Adekunle (2022) examined the effect of risk management practices on the financial performance of small and medium-scale agricultural value chains in Kwara State, Nigeria. Using field surveys and logistic regression analysis, they found that financial and operational risk management practices significantly improved financial outcomes. While highlighting internal controls, the study did not explicitly investigate regulatory impacts on financial ratios within the agricultural sector.

Jimoh and Attah (2022) evaluated how firm-specific financial characteristics influence profitability in Nigerian agricultural companies. Their panel regression analysis on data from five listed firms between 2010 and 2020 revealed that liquidity, asset maturity, and dividend payout positively affect return on assets (ROA), while firm size negatively influences it. The study highlights financial ratios' crucial role in profitability but does not address the regulatory impact governing these ratios.

Osumuo Odinakachi (2023) examined the influence of corporate governance variables on profitability in Nigerian agricultural firms. Using an ex-post facto design and regression analysis on data from 2015 to 2022, the study found that board size, audit committee size, and gender diversity significantly improved financial performance. These findings emphasize governance structures as internal regulatory mechanisms that enhance profitability, although external regulatory policies were not specifically investigated.

Olanisebe, Abubakar, and Basakkwace (2023) analyzed the effect of board attributes such as independence, diversity, and size on profitability in Nigerian agricultural companies. Using regression on data from 2010 to 2023, they found board characteristics significantly impact profitability, suggesting governance mechanisms function as internal regulatory tools. This reinforces the importance of board composition in shaping firm success, but the study does not explore the role of external financial regulations.

Agboola and Ayo (2023) investigated how innovative pricing strategies affect profitability in agricultural small and medium-sized enterprises (SMEs) in Lagos State. Employing a cross-sectional survey of 190 Agri-SMEs, they found innovative pricing significantly enhances profitability. Though not directly related to financial ratio regulation, this study suggests pricing strategies operate within broader regulatory and economic contexts that may influence financial performance in agricultural enterprises.

Amibor and Olufemi (2024) examined the effect of working capital management on profitability across Nigerian non-manufacturing firms. Using panel regression on secondary data, they demonstrated that financial ratios such as current ratio and inventory turnover ratio significantly affect profitability. Their findings underline the importance of financial ratios in firm performance, suggesting implications for regulatory policies, though agriculture-specific regulation was not the focus of this research.

Alohan and Okpara (2025) studied the effect of cash management ratios on profitability in listed Nigerian agricultural firms. Analyzing panel data from 2010 to 2023 with least squares regression, they demonstrated that cash equivalents, operating cash flow, and cash turnover ratios significantly and positively influence return on assets (ROA). Their results highlight liquidity management as a key financial factor contributing to profitability, though regulatory frameworks surrounding cash management were not the focus.

Ijirshar, Udaah, Mile, and Vershima (2025) investigated how insecurity affects agricultural output in Benue State, Nigeria. Utilizing t-tests and structural equation modeling, they found insecurity negatively impacts crop and livestock production. Although focused on external challenges, the study indirectly emphasizes the need for strong financial ratios to measure agricultural enterprises' resilience against such disruptions and maintain profitability amid insecurity.

Methodology

Research Design

This study adopts an *ex post facto* research design, utilizing historical financial data to examine the effect of financial ratio regulations on the profitability of agricultural enterprises in Nigeria. The design is appropriate because it enables the assessment of relationships among financial performance indicators and regulatory influences without manipulating study variables. By analyzing observed financial data over time, the design supports causal inference grounded in real-world firm behavior.

Area of Study

The research focuses on the agricultural sector in Nigeria

Sources of Data

Data for this study were obtained exclusively from secondary sources, comprising the audited financial statements and annual reports of selected Nigerian agricultural firms. The dataset spans the period 2014–2024, capturing a decade characterized by significant regulatory and economic changes affecting corporate financial practices.

Population of the Study

The population comprises all agricultural firms listed on the Nigerian Exchange Group (NGX) or operating in Nigeria with publicly available financial statements as of 2024. These firms represent the formal agribusiness segment, where financial disclosure and compliance with corporate governance standards are enforced.

Sample Size and Sampling Technique

A purposive sampling technique was employed to select firms that met two key criteria:

Availability of consistent and complete audited financial data for the period 2014–2024.
Continuous operation within the agricultural value chain during the study period.

Model Specification

$ROA_{it} = \beta_0 + \beta_1 CR_{it} + \beta_2 DER_{it} + \beta_3 ATR_{it} + \varepsilon_{it}$.....(i)

Where:
ROA_{it} = Return on Assets for firm i in year t (proxy for profitability)
CR_{it} = Current Ratio (liquidity indicator)
DER_{it} = Debt-to-Equity Ratio (leverage indicator)
ATR_{it} = Asset Turnover Ratio (efficiency indicator)
β_0 = Constant term
$\beta_1, \beta_2, \beta_3$ = Coefficients of explanatory variables
ε_{it} = Stochastic error term accounting for unobserved firm-specific factors

Method of Data Analyses

The study employs panel least squares (PLS) regression to estimate the model parameters, enabling the integration of cross-sectional and time-series dimensions of the data. Descriptive statistics including mean, standard deviation, minimum, and maximum values were computed to summarize the dataset.

Results and Discussion

Table 1: Descriptive Statistics

	ROA	CR	DER	ATR
Mean	0.165818	1.618545	1.256909	1.107636
Median	0.190000	1.800000	0.880000	1.150000
Maximum	0.310000	2.250000	2.350000	1.420000
Minimum	0.000000	1.000000	0.550000	0.650000
Std. Dev.	0.088290	0.419468	0.642938	0.230289
Skewness	-0.573033	-0.226818	0.450982	-0.899099
Kurtosis	2.218434	1.373049	1.380606	2.662018
Jarque-Bera	4.409887	6.537561	7.874110	7.671919
Probability	0.110257	0.038053	0.019506	0.021581
Sum	9.120000	89.02000	69.13000	60.92000
Sum Sq. Dev.	0.420938	9.501484	22.32197	2.863793
Observations	55	55	55	55

Source: *E-view 11.0 Statistical Output, 2025*

Table 1 presents the descriptive statistics for the key financial ratios of the sampled agricultural firms from 2014 to 2024. The mean return on assets (ROA) is 0.166, indicating that on average, the firms generate a 16.6% return on their total assets, reflecting moderate profitability. The average current ratio (CR) is 1.62, which suggests that firms generally maintain adequate liquidity to cover short-term obligations. The debt-to-equity ratio (DER) has a mean of 1.26, signaling a leveraged capital structure where debt financing

slightly exceeds equity. The mean asset turnover ratio (ATR) of 1.11 points to moderate efficiency in asset utilization for revenue generation.

Median values for ROA (0.19), CR (1.80), DER (0.88), and ATR (1.15) are close to their respective means, indicating relatively symmetrical distributions for most variables except DER, where the median is notably lower than the mean, suggesting some firms carry high leverage outliers. The maximum DER of 2.35 and minimum of 0.55 highlight wide variation in firms' capital structures.

Standard deviations reveal moderate dispersion: DER (0.64) shows the greatest variability among the ratios, whereas ROA (0.09) is comparatively more stable, indicating consistent profitability levels across firms. Skewness values demonstrate that ROA (-0.57), CR (-0.23), and ATR (-0.90) are moderately negatively skewed, reflecting longer left tails, while DER (0.45) is positively skewed, consistent with a few firms exhibiting high leverage.

Kurtosis values below 3 for all variables suggest platykurtic distributions with relatively light tails and fewer extreme outliers than a normal distribution.

The Jarque-Bera test results indicate non-normality for CR (p = 0.038), DER (p = 0.020), and ATR (p = 0.022), as their p-values are below the 5% significance threshold. ROA's p-value (0.110) does not reject normality at the 5% level but is borderline. These results imply caution in applying parametric tests without considering data transformations or employing robust estimation techniques to mitigate the effects of non-normality.

Table 2: Panel Regression Analysis Result of the Time Series Data

Dependent Variable: ROA
Method: Panel Least Squares
Date: 10/23/25 Time: 15:25
Sample: 2014 2024
Periods included: 11
Cross-sections included: 5
Total panel (balanced) observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CR	0.120962	0.013962	8.663448	0.0000
DER	0.005458	0.009381	0.581844	0.5632
ATR	0.209120	0.011444	18.27381	0.0000
C	-0.268453	0.036492	-7.356545	0.0000

R-squared	0.976513	Mean dependent var	0.165818
Adjusted R-squared	0.975131	S.D. dependent var	0.088290
S.E. of regression	0.013923	Akaike info criterion	-5.640582
Sum squared resid	0.009887	Schwarz criterion	-5.494594
Log likelihood	159.1160	Hannan-Quinn criter.	-5.584127
F-statistic	706.8065	Durbin-Watson stat	1.848767
Prob(F-statistic)	0.000000		

Source: E-view 11.0 Statistical Output, 2025

Table 2 presents the panel least squares regression results examining the effects of liquidity (CR), leverage (DER), and efficiency (ATR) on the return on assets (ROA) of five agricultural firms from 2014 to 2024. The current ratio (CR) has a positive and statistically significant impact on ROA, with a coefficient of 0.121 (p = 0.000). This indicates that firms with stronger liquidity positions tend to achieve higher profitability, reflecting the importance of short-term financial health in enhancing returns on assets. Similarly, the asset turnover ratio (ATR) shows a positive and highly significant effect on ROA, with a coefficient of 0.209 (p = 0.000). This suggests that greater efficiency in using assets to generate sales substantially improves firm profitability. In contrast, the debt-to-equity ratio (DER) has a positive but statistically insignificant coefficient of 0.005 (p = 0.563), implying that leverage does not have a meaningful effect on profitability

within this sample and period. The constant term is negative and highly significant (coefficient = -0.268, p = 0.000), indicating that when all explanatory variables are zero, the baseline ROA would be negative. This serves primarily as the model intercept and should be interpreted cautiously. The model exhibits excellent explanatory power, with an R-squared of 0.977 and an adjusted R-squared of 0.975, meaning that approximately 97.5% of the variation in ROA is explained by CR, DER, and ATR combined. The F-statistic (706.81, p = 0.000) confirms the overall statistical significance of the regression model. The Durbin-Watson statistic of 1.85 suggests no severe autocorrelation issues in the residuals, supporting the reliability of the model estimates.

Test of Hypotheses

Test of Hypothesis One

Restatement of the Hypothesis in Null and Alternate Forms:

H_{01}: Current Ratio has no significant effect on the Return on Assets (ROA) of agricultural firms in Nigeria.
H_{a1}: Current Ratio has a significant effect on the Return on Assets (ROA) of agricultural firms in Nigeria.

Statement of Decision Rule:

Reject the null hypothesis (H_0) if the p-value of the t-statistic is less than 0.05. Otherwise, accept the null hypothesis and reject the alternate hypothesis.

Decision:

From the regression result, the coefficient of the Current Ratio (CR) is 0.120962 with a t-statistic of 8.663448 and a p-value of 0.0000, which is less than 0.05.

Therefore, H_{01} is rejected, and the alternate hypothesis is accepted. This implies that the Current Ratio has a significant positive effect on the Return on Assets of agricultural firms in Nigeria during the study period.

Test of Hypothesis Two

Restatement of the Hypothesis in Null and Alternate forms:
H_{02}: Debt to Equity Ratio has no significant impact on the Return on Assets (ROA) of agricultural firms in Nigeria.
H_{a2}: Debt to Equity Ratio has a significant impact on the Return on Assets (ROA) of agricultural firms in Nigeria.

Statement of Decision Rule:

Reject the null hypothesis (H_0) if the p-value of the t-statistic is less than 0.05. Otherwise, accept the null hypothesis and reject the alternate hypothesis.

Decision:

The coefficient of the Debt to Equity Ratio (DER) is 0.005458 with a t-statistic of 0.581844 and a p-value of 0.5632, which is greater than 0.05.

Hence, H_{02} is accepted, and the alternate hypothesis is rejected. This indicates that the Debt to Equity Ratio does not significantly impact the Return on Assets of agricultural firms in Nigeria during the study period.

Test of Hypothesis Three

Restatement of the Hypothesis in Null and Alternate forms:

H_{03}: Asset Turnover Ratio has no significant relationship with the Return on Assets (ROA) of agricultural firms in Nigeria.

H_{a3}: Asset Turnover Ratio has a significant relationship with the Return on Assets (ROA) of agricultural firms in Nigeria.

Statement of Decision Rule:

Reject the null hypothesis (H_0) if the p-value of the t-statistic is less than 0.05. Otherwise, accept the null hypothesis and reject the alternate hypothesis.

Decision:

The coefficient of the Asset Turnover Ratio (ATR) is 0.209120 with a t-statistic of 18.27381 and a p-value of 0.0000, which is less than 0.05.

Therefore, H_{03} is rejected, and the alternate hypothesis is accepted. This implies that the Asset Turnover Ratio has a significant positive relationship with the Return on Assets of agricultural firms in Nigeria during the study period.

Summary of Findings

The key findings of the study are elucidated below:

i. The Current Ratio (CR) has a positive and statistically significant effect on Return on Assets (ROA), with a coefficient of 0.120962 (t = 8.6634, p = 0.0000). This indicates that better liquidity positions significantly improve the profitability of agricultural firms in Nigeria.
ii. The Debt-to-Equity Ratio (DER) shows a positive but statistically insignificant effect on ROA, with a coefficient of 0.005458 (t = 0.5818, p = 0.5632). This suggests that leverage does not have a significant impact on firm profitability during the period studied.
iii. The Asset Turnover Ratio (ATR) demonstrates a positive and statistically significant influence on ROA, with a coefficient of 0.209120 (t = 18.2738, p = 0.0000), indicating that efficient use of assets strongly enhances profitability among agricultural enterprises in Nigeria.

Conclusion

This study conclusively establishes that financial ratios play a pivotal role in explaining the profitability of agricultural firms in Nigeria, but with varying degrees of significance. The Current Ratio and Asset Turnover Ratio both demonstrated statistically significant positive effects on Return on Assets (ROA), underscoring the critical importance of liquidity management and efficient utilization of assets in enhancing firm profitability. Firms with stronger liquidity positions and higher asset efficiency tend to achieve better financial performance, which aligns with conventional financial theory and prior empirical studies.

In contrast, the Debt-to-Equity Ratio exhibited a positive but statistically insignificant relationship with ROA, suggesting that leverage may not be a primary driver of profitability within the agricultural sector in Nigeria during the study period. This finding implies that agricultural firms might rely less on debt financing or that the risks and costs associated with leverage offset its potential benefits, possibly due to the unique challenges in the sector such as credit constraints, regulatory factors, or market volatility.

The results reflect the complexity of profitability determinants in agricultural enterprises operating in an emerging economy context. While internal financial metrics such as liquidity and asset efficiency significantly influence profitability, the lack of impact from leverage highlights the potential role of external factors. These include infrastructural deficits, climatic uncertainties, regulatory inconsistencies, and broader economic challenges, which may overshadow the influence of capital structure on firm performance.

Therefore, although financial ratios remain essential tools for internal performance evaluation and managerial decision-making, relying solely on them to explain profitability may provide an incomplete picture. A more integrated analytical framework that incorporates financial indicators alongside external environmental, policy, and sector-specific variables would likely offer a richer understanding of profitability dynamics in the Nigerian agricultural sector.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

i. Agricultural firms should prioritize maintaining strong liquidity positions by optimizing current assets and managing short-term liabilities effectively. Improved liquidity will enable firms to meet operational needs promptly and capitalize on profitable opportunities, thereby boosting overall profitability.
ii. Firms should focus on strategies that enhance the efficient use of their assets, such as investing in modern equipment, adopting better inventory management practices, and streamlining operational processes. This will increase asset turnover, leading to higher returns on assets.
iii. Policymakers and firm managers should recognize the significant impact of external environmental, regulatory, and economic factors on profitability. Developing supportive policies, improving infrastructure, and fostering a stable regulatory environment will complement internal financial management efforts and create a more conducive environment for agricultural sector growth.

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