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NON-CURRENT ASSET INVESTMENT AND FINANCIAL PERFORMANCE OF LISTED AGRICULTURAL FIRMS IN NIGERIA: MODERATED ANALYSIS

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ABSTRACT
This study determined the effect of non-current asset investment and financial performance of listed agricultural firms in Nigeria between 2015 and 2024. Three research questions and three hypotheses guided the study. The study was an ex post facto research design. The population of the study was five (5) listed agricultural firms in the Nigeria Exchange Group and the sample size of the study were the same five (5) listed agricultural firms using census sampling technique. The data used in this study were sourced from annual reports and statement of accounts of the selected companies. Plant and Equipment, land and building were employed as the independent variables while net profit margin was employed as the dependent variables whereas firm size was employed as moderating variable. This study employed descriptive statistics and Panel Least Square (PLS) estimate using panel data from 2014 to 2023 covering a period of ten (10) years for ten listed agricultural firms. Findings of the study discovered that there is positive and significant effect of plants and equipment on net profit margin, there is negative and insignificant effect of land and building on net profit margin, there is a positive and significant moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria. Based on the findings, the study generally concluded that, there is a positive and significant effect of non-current assets investment on financial performance of listed agricultural firms in Nigeria. It was suggested amongst others that, since plant and equipment of the listed agricultural firms is positively and significantly related with net profit margin, this study therefore recommends that listed agricultural firms in Nigeria should increase their investment in plant and equipment when evaluating net profit margin.

Keyword: Non-current asset investment, Plant and Equipment, land and building and net profit margin

INTRODUCTION
In recent years, the inadequate production of food product in the country with regard to demand has caused high prices for foods and sometimes scarcity in the market. The problem of scarcity often leads to the importation of foods into the country, causing capital flight and foreign exchange. The inadequate plant and machinery create low production activities, while surplus investment land and buildings do not directly affect the production of foods in the country (Enekwe et al., 2023; Nwdighoha & Newstyle, 2024). The problem is to determine how the assets are performing or to identify specific assets or groups of assets that are idle or not performing in order to match the income to the specific assets (or groups of assets) that produce the income. Ashmarina and Zotova (2015) stated that non-current assets are tangible assets that are relatively permanent and are needed for the production or sale of goods or services. They are termed property, plant, and equipment (PP&E), or fixed assets. These assets are not held for sale in the ordinary course of business. The broad group is usually separated into classes according to the physical characteristics of the items, for example, land, buildings, machinery, and equipment. The

increased rate of failure and poor performance of agricultural firms in the sector are triggered by the minimal investment in noncurrent assets management, that is, the collateral used in settling financing obligation during crisis. Ofori (2020) mentioned that the underinvestment of noncurrent assets by firms was due to the effect of globalisation and advancements in technology in the changing economic environment. Raji et al. (2017) concluded that firms faced huge cost overruns in projects due to the ineffective management, including poor material control, poor site management and poor cash management which have caused a bad image to the industry. To determine which assets are underperforming in the business, the older machines and equipment look attractive and profitable because they have very low depreciation expenses. However, the outdated or run-down equipment may be costing more than it is worth if the necessary overhead to support those assets is considered, such as repair, maintenance, utilities, taxes, and lost productivity. It may be that the older, depreciated assets are using up too much energy, wasting resources, or causing bottlenecks in production (Enekwe et al., 2023).

Based on the problems enunciated above, prior researchers decided to examine the effect of non-current assets on the financial performance in different sector but no in agricultural. For instance, Enekwe et al. (2023) examined the effect of non-current assets on the financial performance of manufacturing firms in Nigeria. Tumuhimbise (2024) studied the effect of assets management and financial performance of Centenary Bank in Uganda. Olufunke et al. (2023) studied the correlation between assets management corporation and bank stability of listed deposit money banks in Nigeria. Abolo (2022) investigated the relationship between non-current assets investment and financial performance of listed insurance companies in Nigeria between 2015 and 2020. Okobo et al (2022) studied tangible non-current assets and financial performance of food manufacturing companies in Nigeria. bebe and Ali (2022) examine the effect of intangible assets on the financial performance and policy of 17 commercial banks in Ethiopia from the year 2017 to 2020. Mulualem (2022) studied the effect of asset and liability management on the financial performance of micro finance institutions: Evidence from sub-Saharan African region. Anuar et al (2021) investigated the impact of non-current assets on the performance of firms in Malaysian construction sector. Nur et al. (2021) examined the effect of intangible assets, financial resources, and regulations on the financial performance of small businesses firms in Balikpapan. Arianpoor (2021) investigated intangible assets' role in firm performance in the Tehran Stock Exchange's firm performance. Thankgod (2021) determined the relationship between financial assets and performance of deposit money banks in Nigeria. Nangih et al. (2020) examined the relationship between intangible non-current assets investment and profitability, using Guaranty Trust Bank Plc as a case study. Zaroug and Mawih (2020) examined the effect of calculated intangible assets, financial performance and financial policy on the firm value of Omani industrial companies listed in the Muscat Securities Market from 2010 to 2014.

From the above problems and prior studies, there is gap this study indentified. To the best of our knowledge, none of the prior studies has conducted non-current asset investment and financial performance of listed agricultural firms in Nigeria. Also, none of the prior studies have employed firm size in term sale turnover as moderating variable in carrying out moderated multiple regression analysis of listed agricultural firms in Nigeria. Therefore, this research study was designed to investigate the effect of non-current asset investment on financial performance of listed agricultural firms in Nigeria to bridge the gap that exist.

Conceptual Framework

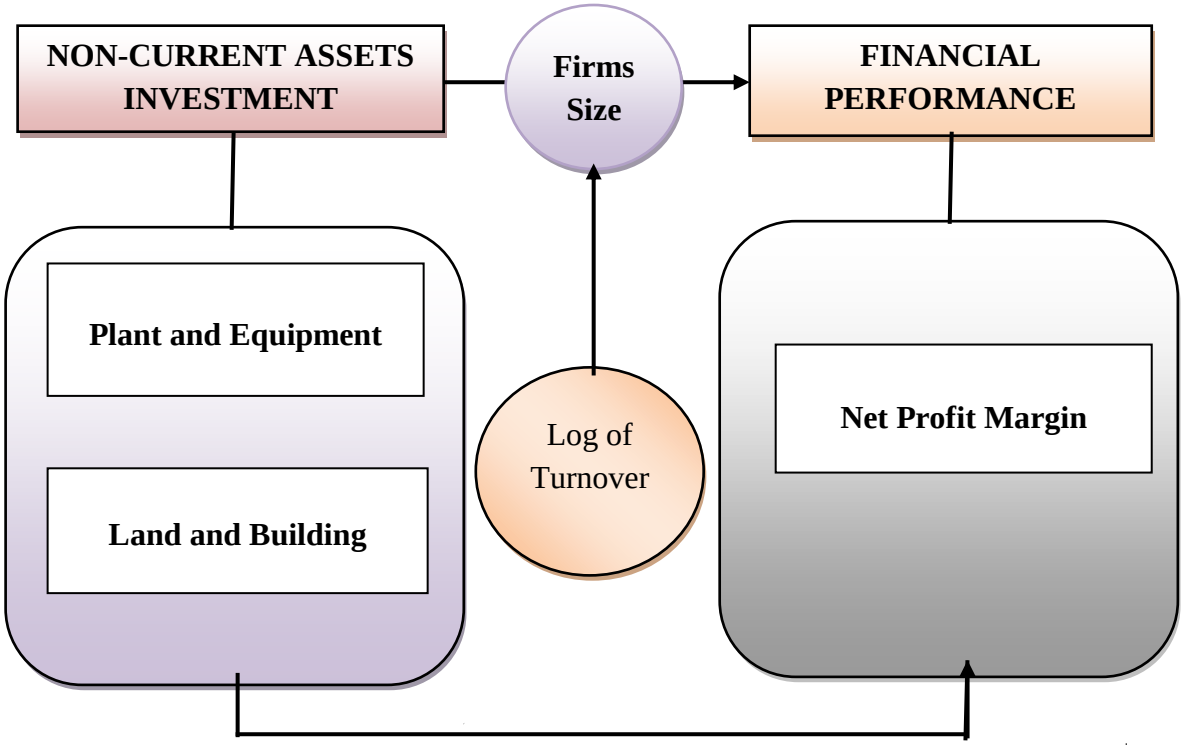

Figure 1 *Conceptual framework showing dimensions of non-current assets investment and financial performance measures of* listed agricultural firms in Nigeria.

Sources: Nwdighoha and Newstyle (2024), Enekwe et al (2023), Olufunke and Yunisa (2023), Abolo (2022), Okobo et al. (2022), Okoro and Charles (2019), Chukwu et al (2017) and Chukwu and Egbuhuzor (2017)

Aim and Objectives of the study

The aim of this study is determine the effect of non-current assets investment on financial performance of listed agricultural firms in Nigeria. The specific objectives of this study were to:

1. determine the effect of plant and equipment on net profit margin of listed agricultural firms in Nigeria.
2. evaluate the effect of land and building on net profit margin of listed agricultural firms in Nigeria.
3. determine the moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria.

Research questions

The following questions are raised for the study;

1. Is there any effect of plant and equipment on net profit margin of listed agricultural firms in Nigeria?
2. Is there any effect of land and building on net profit margin of listed agricultural firms in Nigeria?
3. Is there any moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria?

Research hypotheses

The following were the null research hypotheses formulated for the purpose of achieving the stated objectives of this study:

H_{01} There is no significant effect of plant and equipment on net profit margin of listed agricultural firms in Nigeria.

H_{02} There is no significant effect of land and building on net profit margin of listed agricultural firms in Nigeria.

H_{03} There is no significant moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria.

REVIEW OF RELATED LITERATURE

Conceptual Review

Non-current Assets Investment: Enekwe (2018) defines non-current assets are a company's long-term investments that have a useful life of more than one year. Noncurrent assets cannot be converted to cash easily. They are required for the long-term needs of a business and include things like land and heavy equipment. Nickolas (2022) describes non-current assets are reported on the statement of financial position at the price a company paid for them, which is adjusted for depreciation and amortization and is subject to being re-evaluated whenever the market price decreases compared to the book price. Non-current assets may include items such as land, property, plant, and equipment (PP&E); trademarks; long-term investments; and goodwill—when a company acquires another company. He further includes non-current assets that may be subdivided into tangible and intangible assets, such as fixed and intangible assets.

Plant and Equipment: Plants and equipment are assets that are not stock in trade, the business premises or parts of the business premises, but they are used for carrying on the business. The difference between plant and equipment is that generally, plants will not have moving parts, whereas equipment will have (Okobo et al., 2022). Abdi (2008) stated that the extent of production in most firms is affected by investment in plant and equipment and oftentimes, this is the only source of growth. Pakko (2002) affirmed this by asserting that the firms that invest in machinery and equipment are positively affected by technological development. Meliciani (2000) stated that investment in machinery and equipment has a positive effect on the performance of firms. When plants and equipment are used after their effective useful life, there will be over expenditure on repairs that will cause the expenditure to be more than the returns. If there are obsolete machines as a result of changes in technology and the design of new products, it will be imperative to replace such assets early enough in order to ensure that production and sales are not negatively affect (Okobo et al., 2022).

Land and Building: Land is an essential tool for the development of the agricultural and related sectors of a given economy. Nigeria has a total area of roughly 924,768 square kilometers with a growing population of about 200 million people (Oluwatayo et al., 2019). Oladapo and Olajide (2005) assert that the availability of land in Nigeria, given the state of agricultural development, determines the security of food and livelihood. Land or, more generally, natural resources represents the gift of nature to our productive processes. It consists of the land used for farming or for underpinning houses, factories, and roads; the energy resources that fuel our cars and heat our homes; and the non-energy resources like copper and iron ore and sand. In today's congested world, we must broaden the scope of natural resources to include our environmental resources, such as clean air and drinkable water. In other building are structures which firms operate (Elmualim et al, 2010).

Financial Performance: Dinh and Pham (2020) said it is widely accepted that the financial performance is the effect of mobilizing, using and managing capital in an enterprise. Karamoy and Tulung (2020) observed that financial performance is one of the factors showing the effectiveness and efficiency of an organization in achieving the goals. It is effective when the management is able to select appropriate goals or proper instruments to achieve it. Meanwhile, efficiency means the ratio between the input and output, in that particular income produces optimal outcome. Almagtone and Abbas (2020) sees financial performance as the management of proper utilization of the assets in a firm based on its mode of operation and how it generates revenue for the firms. Mutegi (2016) stated that financial performance is how current assets of a firm can be utilized optimally in the course of normal business activities and raise income for the business. It provides a guideline that gives way for future decisions relating to business developments, assets acquisitions and managerial control. It tries to review the achievements made by the management of firm in monetary terms for certain period of time and see how it had fared competitively with other firms within the same industry for the reviewed period, this will also provide focus on future prospects of the firm. Financial performance is a measure of how well an enterprise used it assets and other resources from its business in order to generate revenues.

Net Profit Margin: Net profit margin is the percentage of revenue remaining after all operating expenses, interest, taxes and preferred stock dividends (but not common stock dividends) have been deducted from a company's total revenue (Vuong et al, 2017). The net profit margin, also known as net margin, indicates how much net income a company makes with total sales achieved. A higher net profit margin means that a company is more efficient at converting sales into actual profit. Net profit margin analysis is not the same as gross profit margin. Net profit margin (NPM) is one of the most closely followed numbers in finance. Shareholders look at net profit margin closely because it shows how good a company is at converting revenue into profits available for shareholders (Ogbodo & Osisioma, 2020). Under gross profit, fixed costs are excluded from calculation (Abiodun, 2012). With net profit margin ratio all costs are included to find the final benefit of the income of a business. Similar terms used to describe net profit margins include net margin, net profit, net profit ratio, net profit margin percentage, and more (Omaliko & Okpala., 2020). As a result, this depends on the size and complexity of the company.

Firm Size: Niresh and Velnampy (2014) stated that a firm is represented by the amount and variety of its production capacity and the number of services it can currently offer to its customers. The size of a firm is a primary factor used in determining the performance of a company's activities because of the concept of economies of scale, which can be found in the traditional neoclassical view of the firm. Firm size is very important for investors and potential investors because company size can measure how high or less the total sale, total assets and market share value of the company is presented. This implies that if the company firm size is high, the level of satisfaction of investors will be expected to be higher. If the company size is low, the level of satisfaction of investors will be expected to be lower. For the purpose of this study, firm size is measure by total assets (Fuadah & Kalsum, 2021; Hersugondo et al., 2021). The increase in company firm size reflects the company's performance which will have an impact on increasing investor confidence in the company. This causes many investors to invest in the capital market. Important company decisions can affect financial management which has an impact on company value including profitability, capital structure, dividend decisions, and investment decisions (Sudiani & Wiksuana, 2018; Suryadi et al., 2021)

The effect of non-current assets investment on financial performance

The the effect between noncurrent assets investment and financial performance have been identified and examined by previous studies. This relationship or effect differs from one study to

another. Some of the studies found a positive and significant effect or relationship between noncurrent assets investment and financial performance while some finding disclosed negative or insignificant effect or relationship. For instance, Enekwe et al. (2023) examined the effect of non-current assets on the financial performance of manufacturing firms in Nigeria. The independent variable is non-current assets, proxied by the log of non-current assets, with two control variables (firm size and leverage), while the dependent variable is financial performance, proxied by return on assets (ROA). The regression result revealed that non-current assets (NCA) have a positive but insignificant effect on the return on assets (ROA) of listed consumer goods companies in Nigeria. Tumuhimbise (2024) studied the effect of assets management and financial performance of Centenary Bank in Uganda. From the findings, It was revealed that the bank has maintained adequate business stability through treasury management, corporate treasurers and chief financial officers who have effectively handled their responsibility for overall cash management strategies, cash related responsibilities and stability analysis. It was revealed in an interview session by one respondent that good management of disposals, whether they are scrapping or sales can help minimise losses and even make some profits, hence making a difference in the bank's profitability. Olufunke et al. (2023) studied the correlation between assets management corporation of Nigeria (AMCON) and bank stability was examined. The study used panel data collected from annual reports of five Deposit Money Banks (DMBs) for the period 2011 to 2020. The auto regressive distributed lag model (ARDL) was used to analyse data collected. Findings from the study revealed that bank's capital adequacy has positive and significant impact on DMBs' performance in Nigeria. Additionally, non-performing loans and liquidity ratio have positive and significant effect on DMBs performance in Nigeria. Abolo (2022) investigated the relationship between non-current assets investment and financial performance of listed insurance companies in Nigeria between 2015 and 2020. The study found that plant and machinery investment has positive and statistically significant relationship with return on capital employed of listed insurance companies in Nigeria. The study further found that investment properties has negative and significant relationship with return on capital employed of listed insurance companies in Nigeria. Finally, the study further found that intangible assets investment has negative and insignificant relationship with return on capital employed of listed insurance companies in Nigeria. Okobo et al (2022) finding revealed that tangible non-current assets play a very important role in the return on assets of food manufacturing companies in Nigeria. Specifically, the study revealed that changes in investment in land and buildings, plants and machineries and motor vehicles have a statistically significant influence on return on assets (ROA) of quoted food manufacturing companies (FMCs). Abebe and Ali (2022) result revealed that intangible asset has positive effect on the financial performance measured both by ROA and ROE at 5% significance level while, negative effect on the financial policy of commercial banks in Ethiopia at 1% significance level. Nur et al. (2021) result show that intangible assets and regulations affect financial performance while financial resources have no effect on financial performance. Arianpoor (2021) findings show that unrecorded and recorded intangible assets positively impact firm performance (return on assets, return on equity, net profit, and profit margin). The authors also find that last year's recorded intangible assets and performance (return on assets, return on equity, net profit, and profit margin) are related positively.

Okoye, et al (2019) examined the effect of intangible assets on performance of quoted companies in Nigeria. They revealed that goodwill has a significant effect on return on capital employed of quoted companies in Nigeria. Their findings were in line with the study of Ofurum et al (2018) who used human capital investment as proxy for intangibles; Chukwu and Salifu (2018); Zhang (2017) who focused on telecommunication firms; Rezaie and Salehi (2015) using ANOVA and multiple regression then Mendoza (2017) in the Philippines which showed that intangible assets impact significantly on total cash flow. Although, Nnado and Ozouli (2016) revealed that intangible assets and financial performance proxied by EVA is very significant and negative. Bassi et al.

(2002) suggested that a firm's profitability is associated with human resource management in which employee training is a key element of a firm's economic value. Intangible assets investment makes the firm's success more believable in the market, which is important for branding and reputation (Montresor & Vezzani, 2016). Chen and Waters (2017) demonstrated that advertising positively affects profits. According to Ruigi et al. (2017), R&D investment is positively related to financial performance. Joshi and Hanssens (2010) showed a positive relationship between advertising expenditure and firm value, and firm value is shown to be affected by organizational capital such as human capital in Miles and Van Clieaf 's (2017) study. Financial performance is positively associated with intangible assets (Añón et al, 2017). The accounting standard-setter for the U.S Government (2011), in its statement of Federal Financial Accounting standard 40, states that any activity aimed at keeping noncurrent assets in good and acceptable condition is referred to as maintenance and repairs. Among these activities are replacements of parts, systems or components; preventive maintenance and all other activities required to keep the assets in acceptable condition. Olatunji et al (2014) opines that proper analysis of noncurrent assets will help managers to identify underused assets and determine if the noncurrent assets with low usage should be reallocated, sold or used.

Theoretical Review

The Capital Asset Pricing Theory (CAPT)

The CAPT was developed by Treynor, Sharpe, Lintner and Mossin in the early 1960's and was refined further for a few years. The capital asset pricing theory (CAPT) is an extension of Markowitz mean-variance theory. CAPT was base on three major concepts. The first concept is of a risk-free investment, secondly a notion of market portfolio is used and thirdly an efficient Market is assumed to exist. The model predicts the relationship between the risk and equilibrium expected returns on assets (Abolo, 2022). According to Bode et al (2003), CAPT required rate of return for a security to its risk as measured by beta. Beta measures the contribution of a single asset to the risk of a diversified portfolio.

The theory was relevant to this research because, the theory predicts the relationship between risk and equilibrium expected involves in investment of assets. The theory was helpful in explaining and understanding the impact of non-assets investment and financial performance variables.

Empirical Review

Adeyefa and Adeyefa (2025) investigated the effect of asset management on the financial performance of listed consumer goods firms in Nigeria from 2015 to 2024. The study specifically aimed at determining the effect of current asset to total asset ratio, net fixed asset ratio, total asset turnover and tangibility ratio on return on asset as a proxy for financial performance of listed consumer goods firms in Nigeria. Data were secondarily sourced from the audited annual reports of the five (5) selected listed consumer goods firms in Nigeria. The formulated hypotheses for the study were analysed with the aid of random effect panel data regression. Other analytical techniques employed in the study for the pre-test were descriptive statistics, correlation test, panel unit root test, Hausman test and Kao Residual Panel Co-Integration test to prevent spurious results. Findings showed that current asset to total asset ratio has a direct and significant effect on return on asset, net fixed asset ratio has a direct and significant effect on return, total asset turnover has a direct and significant effect on return on asset, and the tangibility ratio has a direct and significant effect on return on asset. The study, therefore, recommended that consumer goods firms should ensure the acquisition and use of tangible assets that support business operations, reduce idle time, and implement maintenance schedules to drive revenue growth. Also, the management of consumer goods firms should optimise inventory management by

reducing inventory levels, implementing just-in-time systems, and improving supply chain efficiency.

Okolie (2025) examined the effect of asset management on the firm value of listed industrial firms in Nigeria. The specific objectives are to: examine the extent to which current asset turnover ratio affects the Tobin's Q of listed industrial firms in Nigeria; and determine the extent to which fixed asset turnover ratio affects the Tobin's Q of listed industrial firms in Nigeria. The ex-post facto design was adopted in examining the effect of asset management on the firm value of listed industrial firms in Nigeria. A sample of nine industrial goods was used for the study. Data were extracted from the annual reports and accounts of the sampled firms from 2013 to 2023. Data were gathered and input into E-View 9.0 software for the computation of both independent and dependent variables. The analysis was conducted using descriptive statistics and ordinary least squares (OLS) regression. The findings revealed that Fixed Asset Turnover Ratio (FITR) has a positive but statistically insignificant effect on Tobin's Q; Current Asset Turnover Ratio (CUTR). Based on the findings, the study recommended among others that management teams of listed industrial firms enhance their current asset management practices to improve efficiency by adopting more sophisticated inventory management systems and optimizing working capital, thereby driving higher revenue generation from current assets.

Nwdighoha and Newstyle (2024) investigated the effect of assets investment on financial performance of listed insurance companies in Nigeria. The study employed an ex-post facto research design. The population of the study was fifteen (15) listed insurance companies in the Nigerian Exchange Group were sampled to five (5) using purposive sampling technique. The data used in this study was sourced from annual reports and statement of accounts of the selected companies between 2014 and 2023. The method of data analysis is descriptive statistic and multiple regression of Ordinary Least Square (OLS) with the help of SPSS. The study finding indicated that there is a significant effect of non-current assets investment on net profit margin, and there is an insignificant effect of current assets investment on net profit margin. Based on the findings, the study concludes that, there is a positive and significant effect between non-current assets investment and financial performance of listed insurance companies. It was suggested amongst others that, since non-current assets of the listed insurance companies have significant effect on net profit margin, this study therefore recommends that insurance companies in Nigeria should sustain their investment in non-current assets to enhance profitability.

Tumuhimbise (2024) studied the effect of assets management and financial performance of Centenary Bank in Uganda. Financial statements for Centenary Bank spanning 2017 to 2021 were obtained from the bank's annual reports and analyzed to extract trend data on key performance indicators like return on assets, return on equity, net interest margins, cost-toincome ratios and non-performing loan levels. Quarterly regulatory prudential returns submitted by Centenary Bank to Bank of Uganda between Q3 2019 to Q2 2022 provided further granular insights. Descriptive statistics were used to analyze survey data in SPSS while interviews underwent thematic analysis. Pearson's correlation and regression analyses were then conducted to determine significance and direction of relationships between assets management variables and financial performance indicators. From the findings, It was revealed that the bank has maintained adequate business stability through treasury management, corporate treasurers and chief financial officers who have effectively handled their responsibility for overall cash management strategies, cash related responsibilities and stability analysis. It was revealed in an interview session by one respondent that good management of disposals, whether they are scrapping or sales can help minimise losses and even make some profits, hence making a difference in the bank's profitability. The cash

management in the bank should also be upheld as a key financial management practice that ought to enhance the finance independence of the bank.

Enekwe et al. (2023) examined the effect of non-current assets on the financial performance of manufacturing firms in Nigeria. The independent variable is non-current assets, proxied by the log of non-current assets, with two control variables (firm size and leverage), while the dependent variable is financial performance, proxied by return on assets (ROA). The ex-post facto research design made use of secondary data drawn from the annual reports and accounts of four (4) companies in the listed consumer goods sector of the Nigerian economy, covering a period of ten (10) years from 2010 to 2019, both years inclusive. The multiple regression model was applied to determine the extent of the effect of the independent variable (non-current assets) on the dependent variable (financial performance) of the companies under investigation. The E-Views version 9.0 software statistical package was used to run the panel ordinary least squares (OLS) for the study. The regression result revealed that non-current assets (NCA) have a positive but insignificant effect on the return on assets (ROA) of listed consumer goods companies in Nigeria. Based on the findings, the researchers recommended that management ensure that the amount spent on acquiring non-current assets for the company is monitored and controlled in order to increase their financial performance (profit). Also, the government regulatory body for companies (CAMA) should make sure that only a small part of the profit generated will be used in the acquisition of property, plant, and equipment (PP & E) for the company.

Abolo (2022) investigated the relationship between non-current assets investment and financial performance of listed insurance companies in Nigeria between 2015 and 2020. The study was an ex post facto research design. The population of the study was 13 listed insurance companies in the Nigeria Exchange Group were sampled to 8 using purposive sampling technique. The data used in this study were sourced from annual reports and statement of accounts of the selected companies. Plant & machinery investment, investment properties and intangible assets investment were employed as the independent variables while return on capital employed was employed as the dependent variables. Descriptive statistics, unit root test and ordinary least Square multiple regression were employed in analyzing the data with the aid of E-View 10. The study found that plant and machinery investment has positive and statistically significant relationship with return on capital employed of listed insurance companies in Nigeria. The study further found that investment properties has negative and significant relationship with return on capital employed of listed insurance companies in Nigeria. Finally, the study further found that intangible assets investment has negative and insignificant relationship with return on capital employed of listed insurance companies in Nigeria. Based on the foregoing, the study concluded that non-current assets investment has negative and significant relationship with financial performance of listed insurance companies in Nigeria. The study recommended amongst others that insurance companies in Nigeria should sustain their investment in plant and machinery to enhance profitability.

METHODOLOGY

The research design use for this study was ex-post-facto research design. An ex-post-facto deals with the determination, evaluation and explanation of past events essentially for the purpose of gaining a better and more reliable prediction of the future. The targeted population of this study consists of all the listed five (5) agricultural firms in the Nigerian Exchange Group (NGX) and the time frame consider for this study is 2015-2024 for the purpose of secondary data collection.

Table 3.1 Listed Agricultural Firms in the Nigeria Exchange Group.

S/N	Agricultural Firms
1.	Ellah Lakes Pc
2.	FTN coca processors Plc

3. Livestock Feeds Plc
4. Okomu Oil Plam Plc
5. Preco Plc

Source: *www.ngx.com.ng*

The study use secondary data for the analysis. Secondary data will be collect from published annual reports of the selected sample size of listed agricultural firms in the Nigerian Exchange Group. The secondary data provide a reliable source of information required by the researcher to investigate the phenomenon and sort efficient methods for solving problems arising from situations.

Table 1 Operationalization of study variables

Variables/Abriva	Type	Measurement	Source / reference	Apriori Expectation
Plant and Equipment (PE):	Independent variable	Extracted direct from note to the account and it was converted with natural log	Enekwe et al (2023), Olufunke and Yunisa (2023), Abolo (2022),	Positive
Land and Building (LB)	Independent variable	Extracted direct from note to the account and it was converted with natural log	Enekwe et al (2023), Olufunke and Yunisa (2023), Abolo (2022),	Positive
Net Profit Margin (NPM)	Dependent variable	Net Profit/revenue x 100	Okoro and Charles (2019), Chukwu et al (2017)	Positive
Firm Size (FS)	Moderating Variable	Natural log of turnover	Enekwe et al (2023),	Positive

Overall Source: Author's compilation (2025)

Method of data Analysis

This study employed descriptive statistics; unit root tests, Hausman Test and Panel Least Squares. The E-views version 12 was used for the descriptive statistics; unit root tests on the other hand were performed to ascertain the stationarity state of the dataset as well as the regression technique of Panel Least Squares (PLS).

Model Specification

The study adopts the multiple regression analysis valuation to examine the value relevance or degree of association between the stated variables. The empirical model is specified as follows: The independent variable is the non-current assets investment measured with plants and equipment (PE) and land and building (LB). This independent measure will function with financial performance measures of net profit margin (NPM) and return on assets (ROA)

NPM = f(PE, LB, FS) …….. equation 1

This can be written in Panel Least Square (PLS) form as:

$NPM_{it} = a_o + a_1PE_{it} + a_2LB_{it} + a_3FS_{it} + U$ …….. equation 2

Where: NPM = Net profit margin, as proxy for financial performance
PE = Plant and equipment as proxy for noncurrent assets investment
LB = Land and building as proxy for noncurrent assets investment
t = time period under study
a_o = constant
$a_1 – a_3$ parameter or coefficient of explanatory variable
u = error term

The research work also evaluated the moderation or interaction effect of firm size (FS) on the relationship between non-current assets investment and financial performance. The Moderated Multiple Regression (MMR) techniques was used and is specified by adding an interaction term to the unmoderated multiple regression model in equations ii and iv to arrive at the following MMR models viz:

$$NPM = a_o + a_1PE_{it} + a_2LB_{it} + a_3FS_{it} + a_4PE *FS + a_5LB *FS + U \ldots\ldots\ldots\ldots\ldots (v)$$

DATA ANALYSIS AND DISCUSSION OF FINDINGS

Table 2 Descriptive Statistics of the Variables

	PE	LB	NPM	FS
Mean	5.702921	5.620123	11233.28	7.385006
Median	5.669286	5.505662	209.8858	7.189261
Maximum	7.620900	7.858267	124052.3	9.079181
Minimum	2.041393	2.997386	1.007485	6.595983
Std. Dev.	1.356598	1.157059	25386.49	0.751236
Skewness	-0.865815	0.280334	3.145230	0.934075
Kurtosis	3.075712	2.992631	13.00735	3.005353
Jarque-Bera	1.258902	0.655005	291.0769	7.270853
Probability	0.053742	0.720721	0.000000	0.026373
Sum	285.1461	281.0061	561664.2	369.2503
Sum Sq. Dev.	90.17761	65.60052	3.16E+10	27.65340
Observations	**50**	**50**	**50**	**50**

Source: Generated by the Researcher's using Eview 12

The results in table 2 had demonstrated a descriptive statistics of the dependent variables which is net profit margin (NPM) with a total sampled N statistic (50) that had a positive growth rate between the Minimum to Maximum (1.007485 to 124052.3) with a Mean and Standard Deviation Statistics values of (0.095911; 25386.49). The useful information about the symmetry of the probability distribution of net profit margin (NPM) data set discovered a positive skewness statistic value (1.956) implied that NPM have a long right tail. The results in table 2 had also illustrated a descriptive statistics of the independent variables which are plant and equipment (PE), land and building (LB) with a total sampled N statistic (50) that had a positive growth rate between the Minimum to Maximum (2.041393 to 7.620900; 2.997386 to 7.858267) with a Mean and Standard Deviation Statistics values of (5.702921; 5.620123) respectively. The useful information about the symmetry of the probability distribution of land and building (LB) data set discovered a positive skewness statistic value (0.280334) implied that LB have a long right tail while plant and equipment (PE) discovered a negative skewness statistic value (-0.006) implied that IA have a short right tail.

The Jarque-Bera test statistic is used to ascertain the difference of the skewness and kurtosis of the series with those from the normal distribution. The null hypotheses of the Jarque-Bera test statistics disclosed that the variables net profit margin (NPM) and firm size (FS) are not normally distributed. This implied that their corresponding probability value was less than 5% significant level while plant and equipment (PE) and land and building (LB) are normally distributed which implied that their corresponding probability value was greater than 5% significant level.

Table 3: Results from the Unit Roots Test

	PE	LB	NPM	FS

ADF - Fisher Chi-square t	0.0225	0.0003	0.0445	0.0266
ADF - Choi Z-stat	0.0082	0.0040	0.0337	0.0497
Order of integration	1(0)	1(0)	1(0)	1(0)
Remarks	Stationary	Stationary	Stationary	Stationary

Source: Generated by the Researcher using Eview 12

The stationarity properties of the data were examined using Fisher-ADF. From table 3 above showed that all the variables PES, LB, ROA, NPM and FS were stationary at levels.

Hausman Test

The summary result of multiple regression analysis is presented below. However, the study takes into cognizance the non-homogeneity nature of the selected firms used in the study, hence the need for testing its effect on the data. The study therefore used Hausman effect test to select between fixed and random effect that is best to be adopted in the study. Below is the summary of the Hausman test result, details of the result is presented in table 4

Table 4 Hausman Test for effect selection (NPM)

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	7.127690	3	0.0479

Cross-section random effects test comparisons:

Variable	Fixed	Random	Var(Diff.)	Prob.
PE	-0.166758	-0.149738	0.002717	0.7440
LB	0.285528	0.041816	0.015157	0.0478
FS	-0.350058	-0.309896	0.001129	0.2320

Source: Generated by the Researcher using Eview 12

The Hausman test result shows a chi-square value of 7.127690 and probability value 0.0479. Based on the result, the study reject the random effect and accepted the fixed effect, hence we use the fixed effect to correct the problem of the non-homogeneity in the panel data used.

Multivariate Data Analysis

Table 5 Regression Ananlysis for NPM Model

Dependent Variable: NPM
Method: Panel Least Squares
Date: 10/10/25 Time: 13:36
Sample: 2015 2024
Periods included: 10
Cross-sections included: 5
Total panel (balanced) observations: 50

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PE	0.550576	0.263201	2.091848	0.0442
LB	-0.145766	0.170141	-0.856738	0.3978

FS	0.588416	0.155968	3.772668	0.0006
C	-4.072683	2.297183	-1.772903	0.0855

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.917824	Mean dependent var	2.593441
Adjusted R-squared	0.877981	S.D. dependent var	1.380435
S.E. of regression	0.482203	Akaike info criterion	1.643582
Sum squared resid	7.673156	Schwarz criterion	2.293670
Log likelihood	-24.08955	Hannan-Quinn criter.	1.891139
F-statistic	23.03602	Durbin-Watson stat	1.485829
Prob(F-statistic)	0.000000		

Source: Generated by the Researcher using Eview 12

The results in table 5 discovered a linear regression coefficient of (R^2= 0.917824, Adjusted R^2= 0.877981, DW=1.485829. The R^2 value illustrated that strong positive relationship exist between independent variables plant and equipment (PE), land and building (LB) as well as firm size (FS) and dependent variable net profit margin (NPM). The coefficient of determination in the adjusted R Square represented the proportion of variance of dependent variable net profit margin (NPM) that has been explained by the independent variables (PE, LB and FS) in the model. This implied that 87.00% of the increase in net profit margin (NPM) is due to increase in plant and equipment (PE), land and building (LB) and firm size (FS) of the listed agricultural firms in Nigeria. The Durbin-Watson statistic test discovered that there is a positive evidence of autocorrelation in the time series data set. However, the remaining 13.0% of changes in the financial performance of net profit margin (NPM) in listed agricultural firms in Nigeria are caused by other factors that are not included in the model. Furthermore, the F-statistic was 23.03602 and the probability of not accepting the null hypothesis that there is no statistically significant relationship existing between the dependent variable and the independent variables is 0.0000 which was not greater than 0.05 thus implying that the model was significant and best suited for the regression analysis and that all the independent variables (PE, LB and FS) are jointly significant in causing variation in net profit margin (NPM).

Testing of Hypotheses

The Decision Rule: Reject H_O if sig **(**P-value) is less than 0.05 significant levels otherwise accepted the alternate hypotheses.

Statement of Hypothesis

H_{01} There is no significant effect of plant and equipment on net profit margin of listed agricultural firms in Nigeria.

Decision: Model one in Table 5 shows that plant and equipment has a positive and significant effect on financial performance (NPM)) with a coefficients value of 0.550576 and P-value of 0.0442. This implies that an increase in the plant and equipment by 1%, increases the financial performance (NPM) by 55%. Given the above result, the null hypothesis is rejected while the alternative hypothesis is accepted. This implied that there is a significant effect of plant and equipment on net profit margin of listed agricultural firms in Nigeria. This is in consonant with the work of Abolo (2022) who result of the regression analysis discovered that plant and machinery

investment has positive and statistically significant relationship with return on capital employed of listed insurance companies in Nigeria. Thankgod (2021) regression analysis showed positive and significant relationship between plant & equipment and profit after tax of listed deposit money banks in Nigeria. Also, Bagchi (2013) the study found that the effective management of accounts receivables has impact on the financial performance of firm in Bandeglish. Similarly, Okoye et al (2019); Lydia and Patrick (2018); Oliver et al.(2017); Olatunji et al (2014); and Mou (2014) etc they founds a positive and significant relationship between non-current assets management and firm performance in several business environments in the world. Others empirical findings that disagreed with the study includes; Marian and Ikpor (2017); Ikpefan and Owolabi (2014); Panigrahi (2013); Raji et al (2017); Korankye and Adarquah (2013); Mawih (2014); Khalid (2012) whose findings revealed a negative and insignificant relationship between non-current assets and firm financial performance.

H_{02} There is no significant effect of land and building on net profit margin of listed agricultural firms in Nigeria.

Decision: Model one in Table 5 shows that land and building (LB) has a negative and insignificant effect on financial performance (NPM)) with a coefficients value of -0.145766 and P-value of 0.3978. This implies that an increase in the land and building by 1%, decreases the financial performance (NPM) by -14%. Given the above result, the null hypothesis is accepted while the alternative hypothesis is rejected. This implied that there is no significant effect of land and building on net profit margin of listed agricultural firms in Nigeria. The findings concur with Thankgod (2021); Olaoye et al (2020); Okoye et al. (2019); Ullah and Ahmad (2019); Lydia and Patrick (2018); Oliver et al. (2017); Rindu (2016); Eniola and Florence (2016); Olatunji et al (2014); Ubesie and Eunice (2013); Bagchi (2013); whose results was discovered positive and statistically significant between investment land and building and financial performance for the firms under investigation in Nigeria. The findings of the study disagreed with Raji et al (2017); Ikpefan and Owolabi (2014); Mawih (2014); Panigrahi (2013); Korankye and Adarquah (2013); Khalid (2012) whose results discovered statistically not significant and negative relationship between land and building and financial performance for the firms under investigation in Nigeria.

Moderated Multiple Regression (MMR)

H_{03} There is no significant moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria.

Table 6a Summary of Moderation Analysis of Firm Size in NPM Model

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.554[a]	.307	.277	1.17374	.307	10.388	2	47	.000	
2	.786[b]	.618	.593	.88099	.311	37.427	1	46	.000	.981

a. Predictors: (Constant), LB, PE

b. Predictors: (Constant), LB, PE, FS

c. Dependent Variable: NPM

Table 6 provides information on the unmoderated and moderated results obtained from net profit margin (NPM) model. The Durbin-Watson statistic value 0.981 affirmed that the problem of autocorrelation is unlikely to exist in the series. The unmoderated and moderated R^2 for the net profit margin (NPM) specifications are 0.618 and 0.307 respectively that accounted for only 61.8% and 30.7% of the variations in net profit margin (NPM) while 38.2% and 69.3% was explained by unknown variables that were not included in the Moderated Multiple Regression model in net profit margin (NPM). However, for purposes of testing the set hypothesis on the change statistics and other valuable information resulting from the interaction effect of firm size. The unmoderated and

moderated R^2 for net profit margin (NPM) model are 0.618 and 0.307 respectively resulting to R^2 change of 37.427. This indicated an increase of 37% in the variation explained by the addition of the interaction term in the net profit margin (NPM) model.

Table 6b ANOVA[a] of Firm Size in NPM Model

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.624	2	14.312	10.388	.000[b]
	Residual	64.751	47	1.378		
	Total	93.374	49			
2	Regression	57.672	3	19.224	24.769	.000[c]
	Residual	35.702	46	.776		
	Total	93.374	49			

a. Dependent Variable: NPM
b. Predictors: (Constant), LB, PE
c. Predictors: (Constant), LB, PE, FS

Table 6b provides information on the unmoderated and moderated results obtained from return on average assets model. The model has F-statistic values 10.388 and 24.769 in its unmoderated and moderated specifications with respective Prob. ** value 0.000[b] and 0.000[c] indicated that both the unmoderated and the moderated models are properly fitted since the Prob. ** value is less than the decision criterion of 5%.

Table 6c Coefficients[a] of Firm Size in NPM Model

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8.825	1.420		6.215	.000
	PE	-.579	.136	-.569	-4.253	.000
	LB	-.521	.160	-.437	-3.268	.002
2	(Constant)	.027	1.790		.015	.988
	PE	-.427	.105	-.419	-4.059	.000
	LB	-.501	.120	-.420	-4.179	.000
	FS	1.058	.173	.576	6.118	.000

a. Dependent Variable: NPM

Based on the results of the significant value from the above table 6c, it was disclosed that none of dimensions of the independent variables (non-current assets investment) plant and equipment (PE), land and building (LB) has significant effect on net profit margin (NPM) of financial performance since their sig values is lesse than 0.05 significant (0.000 and 0.002 for stepwise 1 and 0.000 and 0.000 for stepwise 2). Also, base on the overall significant value of firm size (FS) 0.000 which is less than 0.05 significant level. The study rejected the null hypothesis (**H_{05})** and concluded that there is a significant moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria. The findings concur with Okobo et al (2022) who finding revealed that tangible non-current assets play a very important role in the return on assets of food manufacturing companies in Nigeria. Abebe and Ali (2022) result revealed that intangible asset has positive effect on the financial performance measured both by ROA and ROE at 5% significance level. Nur et al. (2021) result show that intangible assets and regulations affect financial performance while financial resources have no

effect on financial performance. Arianpoor (2021) findings show that unrecorded and recorded intangible assets positively impact firm performance (return on assets, return on equity, net profit, and profit margin). The authors also find that last year's recorded intangible assets and performance (return on assets, return on equity, net profit, and profit margin) are related positively. Others includes Chukwu and Salifu (2018), Marian and Ikpor (2017), Raji et al (2017), Ikpefan and Owolabi (2014). However, the following findings disagreed with Abolo (2022), the study further found that intangible assets investment has negative and insignificant relationship with return on capital employed of listed insurance companies in Nigeria. Others includes Hyeon and YoungJun (2020), Olaoye et al 2020), Okoye et al (2019), Lydia and Patrick (2018) and Rindu (2016); whose study revealed a positive and significant relationship between non-current assets and financial performance of oil and gas firms in Nigeria.

Conclusions

This study investigated the effect of non-current assets on financial performance of listed agricultural firms in Nigeria. The study used plant & equipotent, land and building as measures of non-currents assets investment while net profit margin and return on assets was used as measures of financial performance. However, based on the data analysis and discussion of findings, the following summary of findings are made;

1. There is positive and significant effect of plants and equipment on net profit margin of listed agricultural firms in Nigeria.
2. There is negative and insignificant effect of land and building on net profit margin of listed agricultural firms in Nigeria.
3. There is a positive and significant moderating effect of firm size on the relationship between non-current assets investment and net profit margin of listed agricultural firms in Nigeria.

Therefore, the study generally concluded that, there is a positive and significant effect of non-current assets investment on financial performance of listed agricultural firms in Nigeria.

Recommendations

After investigating the effect of non-current assets investment on financial performance of listed agricultural firms in Nigeria, the following recommendations were made:

1. Since plant and equipment of the listed agricultural firms is positively and significantly related with net profit margin, this study therefore recommends that listed agricultural firms in Nigeria should increase their investment in plant and equipment when evaluating net profit margin.
2. Investment in land and building by companies in Nigeria should be guided by other considerations since it is positively and insignificant effect with net profit margin.
3. Adequate provision for depreciation should be made to enhance the ease of replacement as well as modernization of worn out plants and machinery to sustain steady service rending in order to avoid loss of investors.

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