Evaluation of Financial Determinants of Biological Assets of Agricultural Companies in Nigeria

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Abstract

This study examined the financial determinants of biological assets of agricultural companies in Nigeria. The specific objectives were to examine the effect of leverage, profitability, and firms size on the biological assets of quoted Agricultural firms in Nigeria. The study adopted *ex-post facto* research design and made use of secondary data collected from annual reports and accounts of the sampled agricultural firms for a period of ten (10) years (2011-2020). Ordinary Least Squares (fixed effect model) were applied to evaluate the determinants (leverage, profitability, & firm size) of biological assets of quoted agricultural firms in Nigeria. The result of the analysis showed that leverage has a significant effect on the biological assets of quoted agricultural firms in Nigeria. The other variables which include profitability measured by return on assets and firm size have an insignificant effect on biological assets. The implication is that only leverage can cause a significant increase or decrease in the biological assets of agricultural firms in Nigeria. The study conclude that leverage is the only financial determinant that have significant effect on biological assets of agricultural firms in Nigeria.

Keywords: Biological assets, Leverage, Profitability, Firm size, Agriculture, Return on asset, Agricultural firms in Nigeria, IAS 41

1. Introduction

Agriculture is the primary source of income for the majority of the population. It promotes economic activity and long-term employment in rural areas, boosting living standards and maintaining rural population density. Agriculture, according to the International Accounting Standard (IAS 41), is a little standard with a large impact on the businesses that fall under it. It is applicable to the vast majority (but not all) of entities that profit from the cultivation or

nurturing of biological assets. The underlying principle of the standard is that value gains are recognized as the asset matures rather than merely upon harvest or sale. "Agricultural operations are distinguished by the fact that management facilitates and supervises the biological transformation of biological assets (alive animals and plants) into agricultural output (the harvested result of the entity's biological assets).

Biological metamorphosis refers to a natural change of a biological asset. It includes the growth of living creatures or plants, the fall of output due to aging or illness, and the creation of new biological assets via a well managed reproduction program. The following are examples of biological assets: Sheep, pigs, beef cattle, poultry, and fish are examples of livestock. Cows that provide milk, A wooded area Plants that are ready to harvest (for example, wheat and vegetables). Agricultural items are made from trees, plants, and bushes (for example, fruit trees, vines and tea bushes). Biological transformation management often encompasses efforts aimed at improving, or at the very least stabilizing, the conditions required for the processes of development, degeneration, production, and procreation that result in qualitative or quantitative changes in a biological asset. Agricultural operations include raising livestock, fish, or poultry, stud farms (for example, breeding horses or cattle), forestry, developing vineyards, orchards, or plantations, and floriculture.

The term "biological assets," which distinguishes agricultural accounting from other sectors of the economy, is an important agricultural accounting technique (Ore, 2010). Animals or plants that a corporation grows to produce agricultural goods for sale or as extra biological assets are referred to as biological assets (Supreme Council of the Republic of Latvia, 1992a). The accounting for biological assets is intrinsically related to the inventory of agricultural produce harvested from plants and animals" (Kalnia, 2006).

Due to agriculture's dependency on agro-climatic conditions as well as an organization's geographic distance from its target markets, determining the value of biological assets is challenging. For long-term biological assets, where the fair value was decided over a longer period of time amid unstable market conditions, this is particularly true. When it comes to perennial plants and food-producing animals, the value of each depends on where they are located. This is connected to variances in risk tolerance as well as disparities in the price of production. It should be mentioned that the original plant and animal values alter with time when compared to the values of biological assets that are physically younger and more productive in terms of productivity (Jesemika, 2010b).

Agricultural firms' biological assets are being investigated as part of this study, which aims to identify the factors that have an impact on these assets. Because of the significance of the agricultural sector to the Nigerian economy, biological assets, which are one of the fundamental assets of agricultural firms, require special care. The characteristics of the company are examined as one of the probable elements impacting the biological assets of agricultural firms in this study. The goal of this study is to determine how financial leverage, profitability, and company size impact the biological assets of agricultural firms in Nigeria. The research will be conducted in two phases.

Nigeria, after China and India, has the world's third-largest impoverished population, behind the United States and China. A total of over 70 million Nigerians live on less than $1.25 per day, with a per capita income of approximately US$ 350. Nigeria's high poverty rate is a result of the country's over-reliance on oil production, as well as a lack of interest in a vital sector of the economy that may assist the country in achieving food security: agricultural output (Agriculture). Farming's contribution to GDP is minimal, and in the future, fuel will be obtained from its component (biological assets), indicating the urgent need to concentrate and intentionally develop its operations in order to generate considerable revenues. Any business owner has the ability to acquire and manage biological assets. But because of their nature, they are typically of the highest significance to farmers or anybody whose primary source of income comes from cultivating, marketing, and exporting agricultural products. The asset of an agricultural firm is one of the most significant assets of the company. These agricultural firms are profitable as a consequence of the biological transformation of their assets, which has made them more productive.

In Nigeria's agricultural sector, poor management and accounting of assets has remained a problem due to the agricultural industry's relative insignificance in the global economy. Prior to the creation of International Accounting Standards 41 (IAS 41), accounting scholars and regulators paid little attention to this branch of accounting practice. Financial managers' inability to prepare for and manage the biological assets of their diverse firms has been blamed for a considerable share of corporate bankruptcies, according to some estimates. Because of inadequate exploitation of their biological assets, several agricultural firms in Nigeria that had some tempting investments with a high rate of return have turned out to be failures, disillusioned, and out of business as a result of their poor management.

In light of the increasing number of agricultural companies going out of business, the internal and external challenges that have impacted their performance over time, and the low level of investor support for agricultural biological companies, it has become imperative to advocate for improved financial reporting quality and stronger management control over the firms' biological assets. As a result, it is vital to investigate the factors that influence the biological assets of agricultural enterprises in Nigeria. Only a few of the factors that can have an influence on the value of a business's biological assets include financial leverage, profitability, and the size of the organization itself. Following this conclusion, the study investigated the factors that influence the value of biological assets in publicly listed Nigerian agricultural enterprises.

1.1 Objectives of the Study

The primary goal of this research is to investigate the financial factors that determines biological assets in publicly traded Nigerian agricultural firms. The specific objectives of this research work are to;

    i.   Evaluate the effect of leverage measured by debt-to-equity ratio on the biological assets of quoted Agricultural firms in Nigeria.

ii.   Ascertain the relevance of firms' profitability measured by return on assets on biological assets of quoted Agricultural firm in Nigeria.

iii. Determine the effect of firms' size on biological assets of quoted Agricultural firms in Nigeria.

2. Review of Related Literature

2.1 Biological Assets

Plantations and bred animals are two examples of biological assets that may vary over time, most notably in terms of development, and are worth considering (Sanja, Ivana, & Mateja, 2016). In the case of agricultural operations, one of the objectives of adopting IAS 41 Agriculture is to evenly distribute revenue recognition over a number of different time periods. IAS 41 controls the accounting treatment of agricultural operations, as well as the presentation of financial statements and disclosures in financial statements. Agricultural activity is defined as the process of biological assets (live animals or plants) being biologically altered and harvested for the purpose of sale or conversion into agricultural produce or additional biological assets. IAS 41 specifies the accounting technique for biological assets during their growth, degeneration, production, and reproduction, as well as the initial estimation of agricultural yield at harvest, as well as the initial estimation of agricultural yield at harvest. This has absolutely nothing to do with the post-harvest processing of agricultural products (for example, processing grapes into wine, or wool into yarn). IAS 41 assesses the following financial reporting requirements: In accordance with IAS 16, bearer plants are evaluated at fair value, whereas other biological assets are assessed at cost. Changes in the fair value of biological assets are included in profit or loss, whereas biological assets that are not tied to land (for example, trees in a plantation forest) are valued separately from the land and included in profit or loss.

According to the International Accounting Standard, the fair value of the vast majority of biological assets may be confidently assessed with reasonable accuracy (IAS 41.30). IAS 41.30 (International Accounting Standards) When a biological asset does not have a published market price in an active market at the time of its initial identification and alternative fair value evaluations are revealed to be inaccurate, this presumption can be overturned. A cost less accumulated depreciation and impairment losses is used to determine the asset's worth in this situation. Although this will result in higher selling costs, the corporation must nevertheless value all of its other biological assets at fair market value in order to prevent increased selling costs. A move to fair value with lower selling costs may be necessary if conditions change and it is possible to properly estimate fair value in the future.

2.2 Leverage

The pace at which agricultural enterprises employ debt and equity to run their businesses and increase profits is referred to as leverage. Using these ratios, you can see how assets and activities are financed (via debt or equity) and how borrowed funds are utilized. When a corporation is highly leveraged, it signifies that its debt surpasses its capital and reserves. A business is considered highly leveraged if its debt-to-equity ratio exceeds 50 percent, while it is

considered low-leveraged if its debt is less than its share capital and cash on hand. A low gearing ratio is one in which the ratio is less than 50%.

A high-leveraged agricultural firm may be saddled with a significant amount of debt, making it difficult to get further financing when needed. It may also imply the possibility of not being able to pay creditors when they are due. According to Omondi and Muturi, financing or leverage decisions are significant managerial decisions since they impact shareholder return and risk, as well as the value of the company (2013). According to Njeri and Kagiri (2013), leverage increases the amount of debt in the capital structure as well as the amount of revenue and profit generated by the firm, hence increasing the returns to the owners. Furthermore, they assert that higher interest rates will result in less borrowing, higher interest expenses, and, as a result, worse returns for company owners.

According to Gitman and Zutter (2015), debt ratio is defined as the proportion of total assets funded by creditors. Leverage is a measure of how much debt a company has taken on to support its business activities. The amount of borrowed capital that a firm or investor employs is referred to as leverage. Leverage is a measure of how much stock and debt a corporation is using to support the purchase of assets. Debt raises the amount of financial leverage available. Leverage is defined as the use of debt to get an economic advantage.

Leverage is a tool that may be used to analyze a corporation's capital structure. The term "leverage" refers to the ratio of total debt to total book value of assets (Azlina, 2010; Mahawyahrti, & Budiasih, 2017). The debt-to-equity ratio (Total Debt divided by Total Equity) will be used to assess leverage in this study. A high debt-to-equity ratio indicates that a firm is unable to earn enough cash to meet its commitments, and that it is not taking enough risk by obtaining further debt in order to operate on the additional profit that financial leverage often delivers.

2.3 Profitability

Profitability is defined as a corporation's capacity to generate profits over a period of time. Due to the fact that it may be used to anticipate the business's future financial condition, the capacity of the firm to generate profits from running activities is the major focus of the company's performance review (fundamental analysis). According to Gitman, a company's ability to obtain outside capital is dependent on its ability to generate earnings (2015). The market places great value on profits, and as a result, all parties involved, including owners, creditors, and managers, are motivated to maximize profits.

Profitability, according to Ahmed, Naveed, and Usman, is the most important and reliable indicator of company development (2011). A major objective of financial management is to increase the wealth and profitability of the company's owner, which translates into improved financial performance (Malik, Waseem & Kifayat, 2011). A company's capacity to generate profits is vital to its existence. Managers should strive for a reasonable profit margin in order to enhance shareholder value.

Considering the concept of profit and its link to other components that have a direct impact on it, profitability is a relative term to use. Profitability is defined as the ratio of net income to

total assets on the balance sheet, which reflects the relative capacity to generate revenue from assets. The ability to generate income is critical in the capital-intensive agriculture sector since the company's long-term survival is dependent on it. As a result, the investors continue to invest in the company. The market places great value on profits, and as a result, all parties involved, including owners, creditors, and managers, are motivated to maximize profits. Profitability can be measured based on sales, assets, or the amount of money invested by the owner.

The return on assets ratio, as a measure of profitability, indicates how well a firm uses its assets to create earnings. The return on assets (ROA) measures how well management uses assets to create profits. The ratio of profit after tax to total assets is calculated by dividing profit after tax by total assets. The profitability ratio is a measure of a company's ability to generate profit from its assets and other available resources.

2.4 Firm Size

The entire worth of a firm's assets or the total amount of sales can be used to determine the size of the company. Anthony (2012) argues that assets are economic resources that are within the authority of a company and whose purchase cost (or fair value) can be assessed objectively, as opposed to liabilities. According to Kartikasari and Merianti (2016), the natural logarithm of total assets or total revenues is used to determine the size of a business. Total assets are all of the resources that the firm has acquired as a consequence of past transactions and that are projected to provide potential economic advantages for the company in the future. Total assets include both current and future cash flows. The greater the size of a corporation, the greater the amount of attention it receives from external parties, such as the government, investors, creditors, and economic experts. The total value of the company's assets will be used as a proxy for the size of the company in this study.

As defined by Maggini and Tsaklanganos (2012), assets are the economic resources of a corporation that are meant to be used to enhance future operations. Some assets, such as cash and accounts receivable, are monetary in nature, whilst others, such as inventory, are non-monetary in nature. Assets are divided into three categories: current, non-current, and intangible. Instead of being acquired for resale, these non-current assets are obtained for running purposes (Singh and Pandey, 2008).

Cooper, Gulen, and Schill assert that the asset growth rate is a statistically significant predictor of the performance of the stock market in the United States (2008). Chen, Yao, and Zhang (2008) discovered that there is a negative relationship between company asset growth and stock returns in China. The rise of bank assets has an impact on the development and output of the bank.

2.5 Theoretical Framework

The study was anchored on Pecking Order Theory by Myers & Majluf, (1984) and supported by Signaling theory by Michael Spence (1973).

2.5.1 Pecking Order Theory

It is based on the pecking order theory of capital structure developed by Myers and Majluf in 1984. This theory runs counter to the notion that a company's unique mix of debt and equity financing decreases its cost of capital. Whenever a business decides to finance long-term investments, it has a clear preference for the sources of funds that it will employ. It argues that a firm should employ internal money first, then debt, and finally external equity as a means of financing operations. The more profitable firms borrow less since they have the internal cash to fund their investment aspirations. Furthermore, when internal money is insufficient, a corporation should look for external capital in the form of bank loans or corporate bonds, according to him. After exhausting all internal and external bank borrowing options, as well as corporate bonds, the final and least desirable alternative is to raise additional equity capital through the issuance of new stock capital.

As stated in the Pecking Arrange Theory, organizations order their sources of money (from internal to external) based on the concept of least effort or resistance, with equity as a last option. Therefore, internal funds are used first, followed by debt, and lastly equity when debt is no longer a viable option. Pecking Order Theory (Myers and Majluf, 1984), on the other hand, asserts that there is no clearly defined target debt ratio for a country. Investors believe that management have more access to price sensitive information than they do. When investors believe risky assets to be costly, managers are more likely to issue them. Due to investor perception, new stock issuance is underpriced at the time of issue. Existing investors may suffer significant losses as a result of this undervaluation. To avoid the problem of information asymmetry, firms usually fund their operations through retained earnings first, then debt, and eventually external stock financing.

2.5.2 Signaling Theory

Michael Spence introduced signalling theory in 1973 based on observed knowledge gaps between individuals in the organization. Underpricing signaling theories indicate issuing corporate management know more about their firms' quality than outside investors. This study implies that investors in Nigeria's agriculture industry cannot discern between high-quality and low-quality firms owing to inadequate information. As a result, excellent publishers prefer to underprice new issues to indicate their actual worth.

Signalling theory is concerned with a firm's signals to others. In this view, a signal is an activity conducted by a business that indicates its intent, motive, and goals. (Porter, 1980). The firm's performance or worth is reported to persuade the financial statement user celebration (Connelly, Certo, & Ireland, 2011). To deal with information asymmetry, Akerlof, Levin, Morris, and Ross (1970) developed signalling theory. Making information more available to investors or the financial market might aid minimize information asymmetry. Management is informing investors to aid them make investment selections and eliminate ambiguity. Awuy et al. (2016), Cornnell et al. (2011). A favorable signal that symbolizes a good firm's performance may attract investors, increasing the firm's reputation (Verechia, 1983).

2.6 Empirical Review

Echobu, Okika, and Mailafia (2017) evaluated the factors that influence the financial reporting quality of publicly traded Natural Resources and Agriculture companies in Nigeria. The population consisted of nine publicly traded enterprises, five of which were in agriculture and four of which were in natural resources. A sample of seven organizations from the target market was employed in the study. Data was obtained as a secondary source from financial companies and so spans the years 2008 to 2015. According to the study, leverage has a significant positive impact on the quality of financial reporting.

Onyekwelu, Nwajei, and Ugwu (2017) examined the impact of business factors on the financial performance of Nigerian oil and gas enterprises using multiple regression. Leverage has a negative and insignificant impact on Return on Assets. As a result, it recommends businesses to aim for sales growth that improves Return on Assets and to control leverage firms so that charges do not erode returns.

Onyenwe and Ivie (2017) investigated the impact of financial leverage measures on company performance. From 2006 to 2015, thirteen deposit-money banks listed on the Nigerian Stock Exchange floor were analyzed using the ordinary least squares period. Financial leverage improves profitability and efficiency, but there are no significant effects on liquidity, size, or market capitalization value when utilizing the multiple regression technique. According to experts, debt should be used in such a way that the costs do not outweigh the benefits. Financial decisions should also be made with the shareholders' wealth maximization objectives in mind, which include the firm's profit maximization goal.

Charles, Ahmed, and Joshua (2018) investigated the impact of business characteristics on the profitability of Nigerian publicly traded consumer products firms. Multiple regressions were utilized as an analysis method in the study, and the results demonstrated that leverage had a considerable impact on profitability. As a result, the study suggested that consumer goods companies in Nigeria perform comprehensive evaluations and consider the firm characteristics leverage that influences the company's profits before making key business decisions, as this will help them increase their profitability.

Dioha, Ahmed, and Okpanachi (2018) examined the impact of company characteristics on the profitability of twenty-two (22) Nigerian publicly traded consumer products companies. The study employed multiple regressions as an analytical method, and the findings indicate that firm size, sales growth, and leverage have substantial influence on profitability, however firm age and liquidity had no significant effect on the profitability of Nigerian listed consumer goods companies.

In Nigeria, Ezuwore, Ojiakor, and Alio (2018) investigated the impact of fair value accounting on biological assets. The study discovers, using Simple Percentages and Multiple Regression, that the market value of the building has a significant effect on the biological assets of the Nigerian Agricultural sector, that the market value of machines and equipment influences the biological assets of Nigerian agricultural firms, and that the current market

price of motor vehicle and tractor has a significant effect on the biological assets of Nigerian agricultural firms.

Nyamiobo, Muturi, Okibo, and Olwenyi (2018) investigated the impact of firm characteristics on the financial performance of Nairobi Securities Exchange NSE-listed companies. The study employed multiple linear regression analysis. Leverage, according to the data, has a direct impact on the financial performance of NSE-listed enterprises. The study suggests that policymakers and other stakeholders in the institutions under investigation concentrate on the discussed business characteristics, which were found to have a substantial impact on the financial performance of Kenyan listed enterprises.

Farouk, Magaji, and Egga (2019) investigated the impact of company characteristics such as firm structure, board structure, performance structure, and ownership structure variables on the quality of financial reporting in Nigerian listed industrial goods companies. As an analysis tool, multiple regression techniques were employed. Firm leverage has a considerable and harmful impact on the manipulation of real earnings by Nigerian listed industrial products companies. The study advises that management of publicly listed industrial products businesses focus greater emphasis on structures other than ownership structure to ensure ongoing improvement in financial reporting quality while reducing management's manipulative accounting practices.

Carolina, Kusumawati, and Chamalinda (2020) studied business characteristics and biological asset declaration on agricultural firms registered on the Indonesia Stock Exchange (IDX) between 2016 and 2018. Multiple linear regression research found that biological asset intensity effects biological asset disclosure but not leverage, profitability, liquidity, firm growth, biological asset intensity, firm size, auditor type, or listing status.

Kartiningsih and Daryantom (2020) investigate, quantify, and uncover empirical data on the impact of company characteristics proxied by leverage on profitability proxied by return on sales. Using multiple linear regression analysis, observe the correlation and influence of dependent and independent variables. Leverage has a big and favorable effect on profitability, according to the researcher. To increase profits, the company should effectively and efficiently manage its assets, debt funds, and other resources by integrating experiences and knowledge with talents and capabilities.

The impact of firm characteristics on the financial performance of publicly traded Nigerian manufacturing enterprises is investigated by Efuntade and Akinola (2020). A panel least square regression model was utilized to evaluate the hypothesis. According to the findings, leverage was strongly associated to the dependent variable (Return on Asset). The study therefore suggests that manufacturing business management look for ways to improve and acquire the optimal use of their assets while making the most of their resources during the manufacturing processes and distribution of finished products, as this will help them improve their earnings.

Nikmah, Taufik, and Ilyas (2022) investigated the impact of biological asset intensity and profitability on the disclosure of biological assets by agricultural firms. This work was put to the test using multiple regression analysis. The agriculture companies in this study were listed

on the Indonesia Stock Exchange between 2018 and 2020. This study's data originated from a secondary source, notably www.idx.com. According to the findings of this study, the intensity of biological assets has a beneficial effect on biological asset disclosure, however profitability has no positive effect on biological asset disclosure.

There is a scarcity of research in this area, and we have yet to come across a study in Nigeria that dealt comprehensively with the effect of leverage and profitability on the biological assets of Nigerian listed firms. The majority of previous research was conducted in other countries. The studies conducted in Nigeria focused primarily on firm characteristics and performance. Furthermore, despite the benefits of agricultural produce to the Nigerian economy, researchers appeared to intentionally avoid the agricultural sector of the economy in the reviewed literature; thus, the current study drew its evidence from agricultural firms listed on the Nigeria Stock Exchange.

3. Methodology

3.1 Research Design

The study was based on an ex-post facto research design, ex-post-facto research design is used to identify after the event has occurred, the researcher used already available data therefore the use of an ex-post-facto research design. The analysis was undertaken on all the Biological Agricultural Companies traded on the Nigeria Stock Exchange. Agricultural and Agro-allied firms listed on the Nigeria Stock Exchange as of December 2020 are 5 companies. Firms that are dealing in biological assets within Nigeria's Agricultural sector are 3 companies, they are Ella Lakes PLC, Okomu Oil palm company plc and Presco Plc.

3.2 Model Specification

The paradigm for this study follows the work of Okoye and Nwakoby (2015). (2015). The study applied the ordinary least squares regression approach. The choice of the least-squares approach is to minimize the error sum of squares, keeping the property of the best unbiased linear estimator.

Explicitly, the model is specified thus:

$$Y_t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \cdots + \beta_k X_k + \varepsilon_t \quad \text{(Eq. 1)}$$

Where;

Y is the estimator for Biological Assets while X_1, X_2, and X_3, are random variables representing the independent variables under investigation, $\beta_j^{\prime s}$ are coefficients of $X_i^{\prime s}$ in the model.

Y_t	=	Dependent or Response variable
X_1, X_2, and X_3,	=	Independent or Explanatory variables.
β_0	=	Constant
β_1, β_2, and β_3,	=	Coefficients of the regression estimates.
ε_t	=	Error term

Such that explicitly we have;

$$\text{Log BIOA}_t = \beta_O + \beta_1 \text{LogDER}_t + \beta_2 \text{LogROA}_t + \beta_5 \text{LogTA}_t + \varepsilon_t \qquad - \qquad \text{(Eq. 2)}$$

LogBIOA_t	=	Biological Assets at time t (Dependent variable),
LogDER_t	=	Leverage at time t,
LogROA_t	=	Profitability at time t,
LogTA_t	=	Firms' Size at time t,
β_0	=	Constant/intercept of the regression model,
$\beta_1,\ \beta_2,\ and\ \beta_3$	=	Coefficients of DER, ROA, and TA
ε_t	=	Stochastic error (white noise) associated with the model

3.3 Method of Data Analysis

The researcher used descriptive statistics in the analysis which consists of techniques and measures that help researchers describe data (Osuala 2001). Multiple regression techniques (Ordinary Least Square) was used for the panel data analysis. The key benefits of using regression analysis are to indicate if independent variables have any effect on the dependent variable, indicate the relative strength of different independent variables and their effects on a dependent variable; also make predictions.

4. Data Analysis

Table 1. Descriptive Statistic of the Industry Level Panel Data

	LOG(BIOA)	DER	ROA	LOG(TA)
Mean	21.62661	0.760601	0.180007	23.38775
Median	22.96395	0.646739	0.071957	24.12615
Maximum	25.14405	1.546262	3.041586	25.14405
Minimum	17.36550	0.216364	-0.193416	20.84545
Std. Dev.	2.771130	0.415646	0.569000	1.572594
Skewness	-0.666021	0.372056	4.586919	-0.783007
Kurtosis	1.684274	1.784582	23.68629	1.943810
Jarque-Bera	4.235775	2.454057	618.7658	4.311257
Probability	0.120285	0.293162	0.000000	0.115830
Sum	627.1717	22.05741	5.220189	678.2447
Sum Sq. Dev.	215.0165	4.837315	9.065310	69.24544
Observations	29	29	29	29

Source: Computed by Researcher Using Eviews 10.0 Statistical Software

Table 1 above shows the variable description of the 29 observations of the panel data of the Agricultural firms in Nigeria. The table reveals the industry minimum include; biological assets: 17.36550; leverage: 0,216364; profitability: -0.193416; and firm Size 20.84545. However, the industry's maximum includes; biological assets: 25.14405; leverage:1.546262; profitability:3.041586; 12; and firm Size: 25.14405. The means for the variables studied are biological asset: 21.62661; leverage: 0.760601; profitability: 0.180007; and firm size 23.38775.

The normality of the distribution of the data series is shown by the coefficients of Skewness, Kurtosis and Jarque-Bera Probability. From Table 1, the probability of the Jarque-Bera Statistics for all the variables (focal and explanatory) have a significant p-value except for leverage (0.293162) and firm size (0.115830). The rest of the variables are as follows: Biological assets (0.120285) and profitability (0.000000). The significance of the p-value depicts non-normal distribution for the variables studied except for leverage and firm size. This was further confirmed by the skewness coefficients which are greater than one in all the variables under study. The kurtosis coefficient provides a second level of confirmation that all the variables are not normally distributed with the following coefficients, biological assets (1.684274) and profitability (23.68629). This is the case of the data extracted from annual reports and accounts of the sampled companies from the Agricultural sector in Nigeria.

Table 2. Covariance Analysis Result of the Industry Level Panel Data

Covariance Analysis: Ordinary Date: 09/13/21 Time: 12:14 Sample: 2011 2020 Included observations: 29				
Covariance Correlation t-Statistic Probability	BIOA	DER	ROA	TA
BIOA	3.06E+20 1.000000 ----- -----			
DER	-2.30E+09 -0.321634 -1.765048 0.0889	0.166804 1.000000 ----- -----		
ROA	-2.91E+08 -0.029812 -0.154978 0.8780	0.032977 0.144418 0.758368 0.4548	0.312597 1.000000 ----- -----	
TA	2.58E+20 0.620627 4.112800 0.0003	5.94E+08 0.061150 0.318343 0.7527	-1.32E+09 -0.099217 -0.518103 0.6086	5.65E+20 1.000000 ----- -----

Source: Computed by Researcher Using Eviews 10.0 Statistical Software

Table 2 reveals that there is a weak (32% approx.) and negative relationship between biological assets and leverage, with t-statistic: -1.765048 and probability: 0.0889. Biological assets and profitability also share a negative and weak relationship (3% approx.) with t-statistic -0.154978 and probability: 0.8780. Biological assets and firm size also share a positive and strong relationship (62% approx.) with a t-statistic of 4.112800 and a probability: of 0.0003.

Table 3. Regression Analysis Result of the Industry Level Panel Data

Dependent Variable: LOG(BIOA)
Method: Panel Least Squares
Date: 09/13/21 Time: 12:53
Sample: 2011 2020
Periods included: 10
Cross-sections included: 3
Total panel (unbalanced) observations: 29
White cross-section standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-1.084084	0.428212	-2.531653	0.0198
ROA	0.165128	0.079948	2.065437	0.0521
LOG(TA)	0.533754	0.582579	0.916192	0.3705
C	11.24256	10.93507	1.028119	0.3162

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.974410	Mean dependent var		21.62661
Adjusted R-squared	0.964175	S.D. dependent var		2.771130
S.E. of regression	0.524508	Akaike info criterion		1.796414
Sum squared resid	5.502171	Schwarz criterion		2.220747
		Hannan-Quinn		
Log likelihood	-17.04800 criter.			1.929309
F-statistic	95.19623	Durbin-Watson stat		1.064167
Prob(F-statistic)	0.000000			

Source: Computed by Researcher Using Eviews 10.0 Statistical Software

Table 3 shows that leverage has a significant and negative effect on biological assets, with a probability value that is less than 0.05(0.0198) and a t-statistic that is greater than 2(-2.531653). Profitability has an insignificant and positive effect on biological assets with a probability that is less than 0.05(0.0521) and a t-statistic that is greater than 2(2.065437). Firm size has an insignificant and positive effect on biological assets with a probability that is less than 0.05(0.3705) and a t-statistic that is less than 2 (0.916192).

The table further depicts that a unit change in leverage will reduce biological assets by 1.084. While a unit change in profitability will increase biological assets by 0.165 respectively. Furthermore, a unit change in firm size will increase biological assets by 0.533 respectively. The adjusted R-squared (R^2) indicated that about 96% of the changes in the biological asset is accounted for by the explanatory variables. The remaining 4% could be explained by other factors capable of influencing the biological assets of firms in the Agricultural sector in Nigeria. The probability of the F-statistic is significant which shows the statistical fitness of the multiple regression results. There is an absence of serial autocorrelation in the panel data extracted from annual reports and accounts of Agricultural companies in Nigeria as suggested by Durbin-Waston Stat of 1.06.

4.1 Test of Hypotheses

We proposed six main testable hypotheses in section one to ascertain the financial determinants of biological assets of Agricultural Companies in Nigeria. The proposed hypotheses are put to test using data from our inferential statistical analysis. The decision rule is based on the p-values that represent the significance of the t-statistics.

Statement of Decision Rule: Reject H0 if P-value is less than the A-value calculated (0.05) and accept the null hypotheses if the reverse becomes the case.

4.1.1 Hypotheses One: Leverage does not have any significant effect on the biological assets of Nigerian Agricultural sector

Decision: From the panel regression analysis in Tables 4.2.5b, the P-value of $0.0198 < 0.05$. Therefore, the null hypothesis is rejected and the alternative hypotheses accepted. This implies that leverage has a significant positive impact on the biological assets of Nigeria's Agricultural Industry.

4.1.2 Hypotheses Two: Profitability does not significantly affect the biological assets of Nigerian Agricultural companies

Decision: From the panel regression analysis in Tables 4.2.5b, the P-value of $0.0521 > 0.05$. Therefore, the null hypotheses are accepted and the alternative hypotheses rejected. This implies that profitability does not significantly affect the biological assets of Nigeria's Agricultural Industry.

4.1.3 Hypotheses Three: Firms' size does not have a significant effect on the biological assets of Nigeria Agricultural Firms

Decision: From the panel regression analysis in Tables 4.2.5b, the P-value of $0.3705 > 0.05$. Therefore, the null hypothesis is accepted and the alternative hypotheses rejected. This implies that firm size does not have a significant impact on the biological assets of Nigeria Agricultural firm.

4.2 Discussion of Findings

The panel regression analysis of hypothesis one shows that leverage has a negative and large affect on firms' biological assets in Nigeria. This shows that when agricultural firms'

borrowing ratios increase, biological assets shrink. It is not unexpected because a firm's capacity to satisfy its financial duties, especially in supporting its operations, improves with its debt and equity capital. According to the study's conclusions, agricultural firms in Nigeria must minimize the rate at which they utilize leverage to finance their activities. The findings do not match those of Carolina, Kusumawati, and Chamalinda (2020). (2020). No evidence that leverage influences biological asset disclosure was discovered. This is not unexpected given some of the firms are trading at a loss, showing that their potential to continue is connected to financial leverage. Most essential since it deals with the influence of Agricultural companies' biological assets in Nigeria.

In the test of hypothesis Two, the panel regression analysis demonstrates that profitability does not significantly alter the biological assets of the Nigeria Agricultural Industry. This conclusion shows that while the profitability ratio of Agricultural enterprises improves or falls the biological assets is not changed. This shows that enterprises in the sector may not depend on profit gains created in the course of their operation to successfully and efficiently manage the business. The findings are also compatible with the findings of Carolina, Kusumawati and Chamalinda (2020). (2020). This study found out that profitability did not impact biological assets disclosure.

In the test of hypothesis three, the panel regression analysis demonstrates that company size does not have a significant influence on the biological assets of Nigeria's Agricultural firm. The findings reveal the importance of total assets in biological assets, this suggests that the capacity of a business in the Agricultural industry to continue its operation is not connected to its total assets. The study also shows that Firm size does not have any influence on biological assets. The findings are also not compatible with the findings of Carolina, Kusumawati and Chamalinda (2020) that revealed that business size do not effect biological assets disclosure.

5. Conclusion and Recommendation

The study looked at the criteria that determine biological assets in publicly listed Nigerian agricultural enterprises. Leverage has a negative and substantial effect on biological assets, according to the panel regression analysis (fixed-effect model) (fixed-effect model). Profitability and business size have a favorable but small effect on agricultural enterprises' biological assets in Nigeria. The modified R-squared (R2) revealed that the explanatory factors accounted for roughly 96 percent of the variations in the biological asset. The remaining 4 percent might be accounted by various variables impacting the biological assets of enterprises in Nigeria's agricultural industry. As a consequence, the study suggests that, among the indicators of firm characteristics, only leverage may be utilized to estimate the biological assets of agricultural enterprises in Nigeria. In tandem with the findings of the study, the researcher made the following recommendation:

i.   Agricultural firms should look for other sources of finance to fund their business activities. In line with Pecking Order Theory, they should use retained earnings first in financing their activities because retained earnings come with no costs.

ii.   They should strive to increase their profitability by ensuring that their revenue is always greater than costs. They can achieve this through sales promotion and advertisements.

iii.   Efforts should be made to ensure continuous firm growth because of the positive link it has with biological assets.

5.1 Contribution to the Knowledge

Despite the importance of biological assets in the growth of agricultural companies in Nigeria, there is a scarcity of research in Nigeria that examines factors that affect the biological assets of listed agricultural firms in Nigeria. The majority of previous studies on biological assets were conducted in other countries. Furthermore, despite the benefits of agricultural produce to the Nigerian economy, researchers appeared to intentionally avoid the agricultural sector of the economy in the reviewed literature; thus, the current study contributed to the reservoir of knowledge by establishing that, among the attributes of agricultural firms in Nigeria, leverage was the only variable that has a significant effect on biological assets.

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