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Effect of Finance Choices on the Financial Performance of Listed Agricultural Firms in Nigeria

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Abstract

This study examined the effect of finance choices on the financial performance of listed agricultural firms in Nigeria. This study adopted ex-post factor research design. Data were sourced from annual reports and accounts of listed agricultural firms. The collated data were analyzed using descriptive statistics and Multiple Least Square Regression. The results revealed a significant positive relationship between short term debt, equity, interest coverage ratio and financial performance of listed agricultural firms in Nigeria at 0.05 level of significance. However, there was insignificant negative relationship between long term debt, firm size and financial performance of listed agricultural firms in Nigeria and also a negative but statistically significant relationship between debt ratio and financial performance was observed at 0.05 level of significance. This study therefore recommended that listed agricultural firms in Nigeria should use more of short term debt in financing their business activities; Government and financial sectors should provide available long term debt for registered farmers and also agricultural firms should be mindful of stringent conditions that may be attached to long term debts; listed agricultural firms in Nigeria should use debt to finance its activities but should be careful of conditions attached to debt. It is also recommended that listed agricultural firms in Nigeria should increase their equity in financing their business activities; listed agricultural firms in Nigeria should be careful of acquiring unnecessary debt as finance choices for their business because of the charges and interest (interest coverage) which they may need to cover in the long run and lastly, listed agricultural firms in Nigeria should enhance their firm size (such as the total asset value, the number of employees, or the total sales) for the purpose of improving their financial performance as firm size is capable of enhancing the financial performance of firms.

Keywords: Agriculture firms, financial performance, finance choices, short-term debt, long-term debt, debt ratio, equity

1. Introduction

The global macroeconomic situation during the last decade has made it even more necessary to strengthen and secure the financing capacities of agricultural businesses. The credit crunch following the global financial crisis and the instability of agricultural markets (in terms of prices and/or legislation) have led to a strong decline in average farm income because of the inadequate financing. Petrick & Kloss (2013) [76] further explained that compared with large corporate firms, which have direct access to capital markets and exhibit a sophisticated capital structure, most farms have a relatively limited number of accessible financial resources depending on the country, which may be summarized as internal funds and short-and long-term debt. For farms, as for all businesses, the design and optimization of finance choices play a central role in their financial performance globally.

According to Osabohien, Mordi & Ogundipe (2020) [72], agriculture is the largest contributor to Africa's Gross Domestic Products (GDP), accounting for over 32 percent of the total output. For most of the African countries, (except the oil producing) agriculture is also the major source of income. More precisely, about 70 percent of Africa population engages in agricultural cultivation. Most of the African countries have substantial part of their exports in agricultural products. By implication, agricultural sector is a major source of foreign exchange in Africa.

In the case of Nigeria, in the 1960s, the Nigerian agricultural sector occupied a coveted position among its cohorts in the world. The country took the lead in palm oil exports, second in cocoa exports, and ahead of the USA and Argentina in groundnut exports. More specifically, in the 1960s, export crops accounted for a considerable quantum of the country's foreign exchange earnings (Green, 2013) [40]. During this period, Nigeria was regarded as one of the key agricultural commodity vaults of the world. Unfortunately, during and after the 1970s oil boom, agriculture, the country's major non-oil tradable sector degenerated into a shadow of its former self (Oyejide, 1986; Pinto, 1987) [74, 77]. Ever since, the oil and gas sector has consistently maintained the dominating position of exports and government revenue, while agriculture continues to struggle. These developments remain a major concern to policy makers and have led to many empirical literatures interrogating the possible causes of the stark decline in agriculture performance in the country since 1970s.

Currently, there have been many studies proving the impact of capital structure on the financial performance of businesses; however, the results are not the same. In addition, each business sector has its own characteristics as well as capital management, so the impact level is also much diversified (Dinh & Phan, 2019) [25]. In corporate finance field, the effect of firm financing choices on firm performance has been broadly studied, there has not been consensus, and what has emerged are conflicting predictions, given the different conclusions of the different theories of capital structure (Mallick & Yang, 2011) [53]. For example, Modigliani and Miller, as cited in Mathenge & Nikolaidou (2016) [56]

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"irrelevance theory," postulated that capital structure has no effect on firm performance. On the other hand, the agency cost theory by Jensen & Meckling, as cited in Mathenge & Nikolaidou (2016) [56], posited that firms with higher debt levels have higher financial performance because higher debt levels reduce the agency cost of equity, thereby increasing firm value, as managers are constrained to act in the interest of shareholders.

Studies have shown that countries with well-developed legal systems are more likely to have well-developed financial systems. As a result, firms in different countries are faced with different financial environments. While some countries are able to provide external finance to firms, others must rely on internal sources of finance. Firms are negatively affected when they have limited financing options and are forced to forego investment opportunities. In this regard, previous studies discovered the positive, negative, and mixed effects of debt on performance. For example, Berger & Bonaccorsi (2006) [18], Baum, Schafer, and Talavera (2006) [17], Omran & Pointon (2009) [71], Margaritis & Psillaki (2010) [54], Antwi, Mills, & Zhao (2012) [13], Abu-Rub (2012) [4], Aliakbar, Seyed & Peyen (2013) [10], El-Maude, Ahmed & Ahmed (2016) [28], and Sultan and Mustafa (2015) [81] exhibited a positive impact on capital structure and financial performance.

Studies such as Eriotis, Vasiliou & Ventoura (2002) [33], Ebaid (2009) [26], Umar, Tanveer & Aslam (2012) [83], Ahmad, Abdullah & Roslan (2012) [6], Mwangi, Makau & Kosimbei (2014) [62], Maina & Ishmail (2014) [52], Vatavu (2015) [85], Omete & Isabwa (2017) [70], and Rahman, Saima & Jahan (2020) [78] have looked at the relationship between capital structure and financial performance and reported negative results.

However, mixed results on capital structure and financial performance were reported by researchers such as Simerly & Li (2000) [80], Weill (2008) [86], Ahmed & Wang (2013) [7], Langat, Chepkoech, Shavulimo, Wachura & Thuo (2014) [51], Enekwe, Agu & Eziedo (2014) [29], Muchiri, Muturi & Ngumi (2016) [60], Mouna, Ye & Kenza (2018) [59], Omaliko & Okpala (2020) [69], and Osirim, Wadike & Idatoru (2020) [73], that is, studies report both negative and positive effects on the Capital structure and financial performance. Lack of consensus among researchers on the effect of capital structure on the financial performance of firms may be as a result of measurement in financial performance, as most past studies such as Uremadu & Efobi (2012) [84], Akinyomi (2013) [9], Akeem (2014) [8], Enekwe, Agu & Eziedo (2014) [29], Eriki & Osagie (2017) [32], Nwude & Anyalechi (2018) [67], Omaliko & Okpala (2020) [69], Osirim, Wadike & Idatoru (2020) [73] from Nigeria used Accounting based measure(s) of financial performance as used by this study. The question is; would the result be the same or different from previous studies?

Furthermore, what is the effect of short-term debt, long-term debt, debt ratio, equity, interest coverage ratio, and firm size on the financial performance of listed Agricultural firms in Nigeria? The limited paucity of studies on finance choices and financial performance particularly in the agricultural sector from Nigeria are not much or scanty, therefore, there is a puzzle that needed to be settled, hence, the motivation for this study.

Existing and potential investors who are interested in Agriculture businesses need to know the best choice of finance that impact positively on wealth creation and also, sparse research in Nigeria on the effect of finance choices on the financial performance of firms; and absence of fundamental consideration for macroeconomic factors as it affects finance choices in relation to the financial performance of firms are the underlying issues that ignited this study. Thus, this study examines the effect of finance choices on the financial performance of listed Agricultural firms in Nigeria.

The study attempts to provide answers to the following research questions: What is the effect of short term debt on the value of listed Agricultural firms in Nigeria? To what extent does long-term debt affect the value of listed Agricultural firms in Nigeria? How does debt ratio impact on the value of listed Agricultural firms in Nigeria? What is the relationship between equity and value of listed Agriculture firms in Nigeria? The Research Hypotheses are: The study attempts to test the validity or otherwise of the following hypotheses in terms of null hypotheses.

H_{01}: Short-term debt has no significant effect on the value of listed Agricultural firms in Nigeria.

H_{02}: Long-term debt does not significantly affect the value of listed Agricultural firms in Nigeria.

H_{03}: Debt ratio has no significant effect on the value of listed Agricultural firms in Nigeria.

H_{04}: There is no significant relationship between equity and value of listed Agriculture firms in Nigeria.

2. Materials and Methods

2.1 Empirical Review

Shahara & Shaharb (2015) [79] investigated the impact firm leverage towards the Performance of Shariah-compliant listed companies with the non-compliant Shariah listed companies. A total of 70 construction companies listed in Securities Commission Malaysia (SC) main board belonging to construction sector for Shariah and non-Shariah compliant listed companies are analyzed covering the period from 2008 until 2012. Using pooled ordinary least square (POLS) method and generalized least square (GLS) with random and fixed effects, the results clearly indicated that firm leverage's choice between Shariah and non-Shariah compliant companies are totally difference. It shows that debt ratio does not give an impact towards Shariah-compliant company's performance based on return in asset (ROA) and return on equity (ROE) but short-term Debt and long-term debt does give an impact to Shariah-compliant company's performance based on Market to-book value (MTBV) with negative relationship. On the other hand, in Non-Shariah Compliance Company, inverse result shows when long-term Debt and total Debt does give an impact to Non-Shariah compliant company's performance based on ROE. While, size also represent a positive relationship toward Non-Shariah-compliant Company's performance. The study recommended that firms should be very careful when choosing finance for business activities.

Muchiri, Muturi & Ngumi (2016) [60] investigated the relationship between financial structure and financial performance of listed firms at the East Africa Securities Exchanges. Feasible Generalized Least Squares method, random effect for models without moderator and fixed effect for models with moderator, based on Hausman specification test were used. The study found out that short term debt, long term debt, retained earnings and external equity had an insignificant negative relationship with return on assets but insignificant positive relationship with return on equity. While combined, financial structure had a significant positive and negative relationship with return on equity and return on assets respectively. The study recommended that firms should endeavour to use combination of leverage to improve their financial performance.

Omaliko & Okpala (2020) [69] investigated the effect of financing mix on the financial performance of firms. The research design used is Ex-Post Facto design and data for the study were obtained from the published annual financial reports of the entire 9 firms listed under health care sector of Nigeria Stock Exchange (NSE) with data spanning from 2014-2018. The statistical test of parameter estimates was conducted using multiple regression models. The findings generally indicate that equity financing, Debt and debt-equity financing have significantly influenced firms' performance. Preferred stock financing was found negatively and insignificantly related to firms' performance. Based on this, the study concludes that the financing mix of firms have exerted significant influence on firms performance over the years. The study however, recommended that firms should always thrive to attain that optimal mix in order to achieve the overall objective of the organization.

Abatcha & Bala (2020) [1] investigated the determinants of capital structure in listed insurance companies in Nigeria for the period of thirteen years, from 2006-2018. Ex-post facto research design was adopted for this study. The population of the study is made up of the 28 insurance companies listed on the floor of the Nigerian Stock Exchange (NSE) as at 2018. The data used in this study were secondary data derived from annual reports of insurance companies that are listed on the NSE. The study used panel regression with respect to the use of the Hausman specification test to determine the use of fixed or random-effect model. The random effect regression result revealed that that firm size has an insignificant positive effect on capital structure (CST) of listed insurance companies in Nigeria. The study showed a significant positive effect between age and CST of listed insurance companies in Nigeria. Based on the regression result, asset tangibility has insignificant negative effect on CST, the regression result shows that risk has insignificant positive effect on CST, while the study found that insurance growth has significant positive effect on CST of listed insurance companies in Nigeria. The study recommended that insurance companies should have a high consideration for the value of total assets when determining their capital mix.

2.2 Conceptual Issues

2.2.1 Concept of Finance Choices

Financing choices are part of the financial structure and refer to the proportion of the various sources of financing. It is concerned with making the array of the sources of funds in a proper manner, which is in relative magnitude and proportion (Chandra, 2011 [22]; Osirim, Wadike & Idatoru, 2020) [73]. Designing a proper capital structure maximizes value, minimizes cost, increases the share price and provides investment opportunities. According to Akeem (2014) [8], financing choices is the combination of the Debt and equity structure of a company. It can also be referred to as the way a corporation finances its assets through some combination of equity, Debt or hybrid securities; that is, the combination of both equity and Debt.

2.2.2 Short-Term Debt (STD)

Short-term Debt is made up of any debt incurred by a company that is due within the current fiscal year. The value of STD is very important when determining a company's financial performance. According to Muchugia (2013) [61], STD financing tends to be less expensive and increasing it with a relatively low interest rate which could lead to an increase in profit levels and therefore performance. Short-term financing matures quickly and needs to be renewed at frequent intervals. Hence, this could be used as a monitoring device to control self-interested managers' actions. Short-term funds are spontaneously generated sources such as accounts payable, provisions and accruals, and non-spontaneously generated sources such as unsecured and secured short-term borrowings and off-balance sheet financing instruments. Marx, de Swardt, Beaumont Smith, and Erasmus (2011) [55] stated that spontaneous sources of financing arise from the ordinary course of business, are directly related to the sales level and increase or decrease in direct proportion to sales. According to Syed & Attaullah (2017) [82], secured short-term borrowings are usually made up of short-term bank loans, cash credit overdraft, and working capital demand loans. Unsecured financing (also known as financial statements lending) is short-term financing obtained from the money market without pledging any specific assets as collateral, and include negotiable certificates of deposit (NCD), commercial paper and banker's acceptances (BAs).

2.2.3 Long-Term Debt (LTD)

A long term debt is a loan from a financial institution. LTD can be raised in a relatively short period, because LTD is negotiated directly between the lender and the borrower, and documentation is minimized (Muchiri, Muturi & Ngumi, 2016) [60]. Terms and conditions of LTD can be revised by mutual agreement between the lender and borrower. LTD has lower issuance costs. Funds raised from LTD are typically used to finance permanent working capital, to pay for fixed assets or to discharge other loans a firm had borrowed (Athreya, 2008 [15]; Olonite, Gurowa, Ibrahim & Ajewole, 2021) [68]. LTD minimize time spent saving for investments and investors are able to realize potential earnings sooner to help offset the cost. LTD increases the flexibility of an investor's limited capital by allowing for its distribution over multiple investments, and minimizing the immediate impact on operational cash flow. LTD provides an opportunity to finance potential investments while maintaining control of the firm (Ahmed & Wang, 2013) [7]. Generally, LTD have a very structured payment thus builds credit. It can be very advantageous to take out a LTD for a business. After the maturity date and when full ownership is assumed, the former debtor and now owner can use the asset and the credit they have developed, paying for it for future borrowing. Thus, reliable debtors experience a compounding effect of the advantages of a LTD (Abu-Rub, 2012) [4].

2.2.4 Debt Ratio (DR)

Debt ratio is otherwise known as total debts to total assets. This ratio is meant to indicate the percentage of a company's total assets that will be absorbed by the company's total debts (non-current liabilities and current liabilities) if the debts are not to fall due for payment (Omete & Isabwa (2017) [70]. Enekwe (2012) [30] asserts that debt ratio is a financial ratio indicating the relative proportion of Debt used to finance a company's assets which are indicator of the financial leverage. The two components are often taken from the firm's statement of financial position (Balance Sheet). When used to calculate a company's financial leverage, the Debt usually includes only the total Debt. This is a useful measure as it helps the investor see the way management has financed operations. A high debt ratio generally means that a company has been aggressive in financing its growth with Debt. This can result in volatile earnings as a result of the additional interest expenses as well as volatile cash flow as principal

payments on Debt come due (Rahman, Saima & Jahan, 2020) [78]. If a lot of Debt is used to finance increased operations (high Debt ratio), the company could potentially generate more earring per share than it would have without this outside financing. If this were to increase earning by a greater amount than the interest on Debt, then the shareholders benefit as more earnings are being spread among the same amount of stock. However, as stated, increased interest and the need to repay the principal on borrowed fund can far outweigh the benefit, it is used to measure the net worth of the organization. This is one of the most important metrics to measure and manage as you create strategic plans. Debt Ratio (DR) is measured as measured as natural log of total Debt (Anderson & Core, 2013) [12].

2.2.5 Equity (EQ)

Equity finance is the capital invested in exchange for shares of ownership in the enterprise plus any surpluses of income over expenditure. Osirim, Wadike & Idatoru (2020) [73] assert that equity finance include share capital, share premium, reserves and retained earnings of an entity. Equity financing is the process of raising capital through the sale of shares in a company. Equity financing involves not just the sale of common equity, but also the sale of other equity or quasi-equity instruments such as preferred stock, convertible preferred stock and equity units that include common shares and warrants. With equity financing, companies have less burden of repaying loans, issues associated with creditworthiness are gone; however, owners of the company lose control, share profits and potential conflict may arise (Eriki & Osagie, 2017 [32]; Olonite, Gurowa, Ibrahim & Ajewole, 2021) [68]. In this manner, financing choices of firms' is the capital mix of equity and capital utilized as a part of financing its operations and assets acquisition. Be that as it may, most essential and complex issue in corporate fund is that whether there exists ideal capital structure or not. Equity means invested money that, in contrast to debt capital, is not repaid to the investors in the normal course of business. It represents the risk capital staked by the owners through the purchase of a company's common stock (ordinary shares) (Omran & Pointon, 2009) [71] Nwude & Anyalechi (2018) [67]. According to Rahman, Saima & Jahan (2020) [78], equity ratio is measured by the natural logarithm of total shareholders' equity.

2.2.6 Financial Performance

Financial performance is the measuring of results of a firm's policies and operations in monetary terms. These results are reflected in the firm's return on investment, return on assets, value-added, among others. According to Eriki & Osagie (2017) [32], financial performance is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. This term is also used as a general measure of a firm's overall financial health over a given period of time, and can be used to compare similar firms across the same industry or to compare industries or sectors in aggregation. In the words of Firch (2013) [36] argues that performance is a general term applied to a part or to all the conducts of activities of an organization over a period of time, often with reference to past or projected cost efficiency, management responsibility or accountability or the like. Thus, not just the presentation, but the quality of results achieved refers to the performance. This implies that performance refers to the act of performing; execution, accomplishment, fulfilment, and among others. In broader sense, performance refers to the accomplishment of a given task measured against pre-set standards of accuracy, completeness, cost, and speed (Eriki & Osagie, 2017) [32].

2.3 Theoretical Review

2.3.1 Trade-off Theory

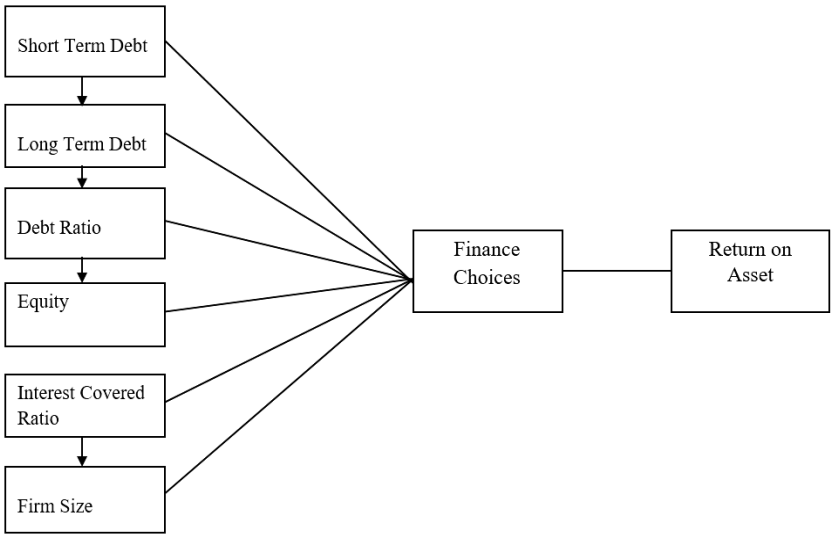
The trade-off theory is originated from the discussion of Modigliani and Miller (1958) [57] and Modigliani and Miller (1963) [58]. The idea of the trade-off theory is that firm should balance how much debt finance and how much equity finance to use by balancing the cost and benefits. In other words, the assumption of this theory is that the cost of Debt can protect firm earnings from corporate income tax, therefore 100% capital from Debt can bring high benefit for firm, however this issue is also extremely risky because there are no firms dare to take advantage from Debt for operation without thinking of debt disadvantages. According to Modigliani & Miller (1958) [57], when corporate income tax was added on the original irrelevance proposition, this issue will create benefit for Debt in that it creates tax shield. Firms in trade off theory set the target debt to value ratio and slowly acquire the target (Myers, 1984) [65]. An effective leverage plan that works for any firm that intends to maximize its profits and shareholders wealth is a plan which, upon its successful implementation, the marginal benefits exceed the marginal costs.

The logic behind the reliance on trade off theory in determining the finance choice for a given firm is that firms' are financed partly with Debt and partly with equity. The rationale of trade-off theory is that marginal benefits exists and firms can leverage within a financing choice that forms the capital structure of a given firm up until the optimal capital structure is reached. The trade-off theory is advantageous to pecking order model for it recognizes the tax benefit as a result of interest payments made by firms. As the proportion of debt financing increases, the marginal benefits of further increase in Debt subsequently declines. As the proportion of debt financing increases, the marginal costs also increases. A firm that aims at optimizing its capital structure has to focus on this trade-off between marginal costs and marginal benefits when choosing what percentage of debt finance and equity finance should be used in financing its operations (Omete & Isabwa, 2017) [70]. Optimal capital structure can only be reached by firms by trading off the costs of debt financing and costs of equity financing against their benefits. Following this position, this study expects a positive relationship between long-term Debt and financial performance. Empirically leading researchers such as Hovakimian, Opler, & Titman (2001) [44], Korajczyk & Levy (2003) [48], Hovakimian & Tehranian (2004) [45] and Abor (2007) [3] and Nguyen & Dinh (2016) [66] supported the use of the trade-off theory as the best in determining long term debt financing as a source of firm financing.

2.3.2 Free Cash Flow Theory

Jensen & Meckling (1976) [46] & Jensen (1986) [46] argued that high leverage can help a firm's performance by reducing conflicts among shareholders and managers concerning Free Cash Flow. Jensen (1986) [46] stated that firms with high Free Cash Flow and low growth opportunities are expected to have high debt levels. He further argued that firm managers tend to use internal funds (FCF) to avoid shareholder control. However, shareholders tend to avoid this by reducing cash flow by raising Debt. Some studies have considered Debt and equity as tools to reduce Free Cash Flow problems (Harris &

Raviv, 1991; Jensen 1986) [46]. Firms' managers can use Free Cash Flow to finance projects with negative Net Present Value and to expand a firm beyond its optimal size (Jensen 1986) [46]. Using higher debt levels can reduce the ability of managers to use Free Cash Flow. This leads to the assumption that equities are the first and best choice for firms with Debt considered the last choice. The Trade-off Theory and Free Cash Flow theory are used to underpin this study. This is because the Trade-off theory explained that an effective leverage plan that works for any firm that intends to maximize its profits and shareholders wealth is a plan which upon its successful implementation, the marginal benefits exceeds the marginal costs. In the light of the above, therefore, this study takes advantage of the positions of the three theories by subjecting them to the effect of finance choices on financial Performance of Agricultural firms in Nigeria in order to determine their altruism empirically.



Source: Modified from the work of Nguyen and Dhin (2016) [66].

Fig 1: Conceptual Model

Figure 2.1 above is the modified model used for this study. Dependent variables are short term debt, long term debt, debt ratio, equity, while interest coverage ratio and firm size are used as control variables. Furthermore, return on asset is used to measure the financial performance of listed agricultural firms.

This study used *ex-post facto* research design because it is amenable to this study as it involves events that have already taken place, and as such, no attempt would be made to manipulate relevant independent variables (that is, finance choices variables) as they already exist in the published form (audited annual reports and accounts). The population of this study comprises five (5) listed Agricultural firms in Nigeria as of 31 December 2019. However, for this study, the entire five (5) listed Agricultural firms were selected for the study. These firms are; Ellah Lakes Plc, FTN Cocoa Processors Plc; Livestock Feeds Plc; Okomu Oil Palm Plc and Presco Plc.

According to Kothari (2004), when the population for a study is many, it is advisable to use the whole population as a sample size. Therefore, this study used all listed five (5) agricultural firms in Nigeria as sample size. The five (5) listed. Agricultural firms are used because they are all listed on the Nigeria Stock Exchange (NSE), have complete audited annual reports and accounts covering the period of 2009 to 2019, have variables needed for this study. Based on these reasons, all the five (5) listed. Agricultural firms met the selection criteria and formed the sample size for this study.

Secondary data were sourced for this study. Panel data (involving both time-series and cross-sectional data) were used which were obtained from listed Nigerian agricultural firms' annual reports. The data collected covered both finance choices and financial performance variables, which are; Short Term Debt (STD), Long Term Debt (LTD), Debt Ratio (DR); Equity (EQ), Interest Covered Ratio (ICR) Control Variables that is, Firm Size (FS), and Financial Performance (ROA) of listed Agricultural firms in Nigeria. Although, there are other financial performance indicators such as Return on Equity (ROE), Return of Capital Employed (ROCE), Return on Shareholders' Fund (ROSF), Asset Turnover Ratio among others. According to Marshall (2021), ROA is best used when comparing similar companies or by comparing a company to its own previous performance. ROA provides a more balanced view of profitability compared to traditional metrics. Metrics like ROE disregard risk that financial leverage creates. An increase in leverage commensurately improves asset balances through the cash it provides. Any changes in leverage, therefore, are equally reflected in assets. This is the reason why this study used Return on Asset (ROA). It should be noted that combination of two financial performance indicators may be used as carried out by some empirical studies under this study; it all depends on the choice of the researcher(s).

The data analysis was done using descriptive statistics such as correlation matrix, descriptive statistic results. This study utilized Multiple Least Square to analyze the data obtained from the annual reports of listed Agricultural firms in Nigeria. These techniques was adopted to determine the extent to which the independent variables (Short Term Debt (STD), Long Term Debt (LTD), Debt Ratio (DR), Equity (EQ) affect the dependent variable (financial performance, that is, ROA) in order to achieve the main objective of this research. Inferential and descriptive statistics provide the conceptual impact of each variable on the others to validate the research hypotheses. The data analyzed spanned a period of ten (11) years from 2009 to 2019.

This study adopted the model Nguyen and Dinh (2016) [66] used to investigate the impact of capital structure choices on a firm's financial performance with slight modification.

The model used by Nguyen and Dinh (2016) [66] is stated as follows:

$ROA_{it} = \alpha + \beta_1 TDTA_{it} + \beta_2 RISK_{it} + \beta_3 TANG_{it} + \beta_4 SIZE_{it} + \beta_5 LIQ_{it} + \beta_6 GROWTH_{it} + \varepsilon_{it}$

The model for this current study is specified as follows:

$ROA_{it} = f(STD_{it}, LTD_{it}, DR_{it}, EQ_{it} ICR_{it} FS_{it})$ … (1)

The modification made in the adapted model was the addition of Debt Ratio (DR); Equity (EQ) as integral parts of finance choices instead of using only Short Term Debt (STD) and Long Term Debt (LTD) as applied by Nguyen and Dinh (2016) [25] to measure finance choices. Furthermore, Business Risk (RISK), Asset Tangibility (TANG), Liquidity (LIQ) and Growth Opportunity (GROWTH) were also used by Nguyen and Dinh (2016) [66] as control variables while this current study used Interest Coverage Ratio (ICR) and Firm Size (FS) as control variables. The inadequacy in the modified model was the inability to measure debt ratio and also interest coverage ratio and firm size as control variables because these variables are directly related to finance choices.

Model above in its econometric form becomes:

$ROA_{it} = \alpha + \beta_1 STD_{it} + \beta_2 LTD_{it} + \beta_3 DR_{it} + \beta_4 EQ_{it} + \beta_5 ICR_{it} + \beta_6 FS_{it} + \varepsilon_{it}$ ... (2)

Where:

STD = Short-term Debt
LTD = Long-term Debt
DB = Debt Ratio
EQ = Equity
ICR = Interest Coverage Ratio
FS = Firm Size
ROA = Return on Asset
$\beta 0$ = Constant or Intercept;
$\beta_1 - \beta_5$= Coefficient of the explanatory Variables;
β_6 = Coefficient of control variable
μit = error term of firm i for time period t;
it = firm i for time period t.

A priori expectations are *β1, β2, β3, β4, β5 ... β6*. Theoretically, there are expectations of STD, LTD, DR, EQ, ICR, FS having no positive effect on ROA respectively.

2.3.3. Variable Definitions and Measurements

Table 1: Measurement of Variables

Variables	Measurement	Author(s)
STD = Short Term Debt	Measured by the natural log of Total Short Term Debt	Bhakri & Verma, (2021) [19]
LTD = Long Term Debt	Measured by the natural log of Total Long Term Debt	Bokhari & Verma (2021) [19]
DR = Debt Ratio	Measured by the natural log of total liabilities/debt	Anderson & Core, (2013) [12]
EQ = Equity	Measured by the natural log of Total Shareholders' Equity	Rahman, Saima & Jahan, (2020) [78]
ICR = Interest Coverage Ratio	Computed as dividing earnings before interest and taxes (EBIT) by the total interest expense on all of the company's outstanding debts.	Enekwe, Agu, & Eziedo (2014) [29]
FS = Firm Size	Measured by the natural log of total asset	Farai & Merle, (2014) [35]
ROA = Return on Asset	Measured as Profit After Tax/Total Asset	Abu-Rub (2012) [4]

Source: Researcher's Review 2020

Table 3.1: Shows how the variables in equation one are measured in this study.

3. Results

3.1 Descriptive Analysis

Table 2: Summary of Descriptive Statistics of all the variables

	ROA	STD	LTD	DR	EQ	ICR	FS
Mean	6.783636	5.872545	5.899273	51.16273	6.451273	6.103636	6.794909
Median	6.900000	6.250000	6.130000	51.00000	6.320000	1.700000	6.680000
Maximum	35.60000	7.420000	7.410000	118.4000	7.880000	77.55000	7.990000
Minimum	-17.10000	3.400000	0.000000	5.000000	4.710000	-12.49000	5.760000
Std. Dev.	11.59477	1.031931	1.366975	20.00523	0.759183	15.29556	0.605355
Skewness	0.361039	-1.115215	-2.913547	0.657339	0.032694	2.387514	0.250402
Kurtosis	2.864650	3.124487	13.29947	4.412388	2.241685	10.40490	2.038534

Source: Output from E-View 9.0

The descriptive result in table 2 shows that Return on Asset (ROA) has an average value of 6.78% with a Standard Deviation of 11.59%. This implies that data points are above the mean; that is, data are more spread out (there is a high dispersion) in sampled listed Agricultural firms in ROA across the total observation as shown by the Maximum and Minimum values of 35.60% and-17.10% as reported by Okomu Oil Palm Plc in 2011 and FTN Cocoa Processing Plc in 2009. The distribution shows a positive skewness value of 0.36 and a kurtosis value of 2.86, which reveals the normality of the data distribution.

However, the Short Term Debt (STD) has an average value of 5.87% and a 1.03% Std. Dev. This implies that data points are below the mean, that is, data clustered around the mean (there is, a lower dispersion) in STD across the total observation as shown by the Max. and Min. values of 7.42% and 3.40% reported by Presco Plc in 2019 and Ellah Lakes in 2012. The distribution shows a negative skewness value of-1.12 and a kurtosis distribution of 3.12.

Statistical observation from the Long Term Debt (LTD) shows that it has a mean of 5.90% with a Std. Dev. of 1.37% indicates that data clustered around the mean; that is, data

points are below the mean in the LTD (low dispersion value or lower than the mean). The difference between the Max confirms this Max. and Min. values of 7.41% reported by Presco Plc in 2016 and 0.00% as reported by Live Stock Feeds Plc in 2018 and 2019, respectively. The distribution shows a negative skewness value of-2.91 and a kurtosis distribution of 13.30.

Also, the Debt Ratio (DR) has an average value of 51.16% with a Std. Dev. of 20.01% indicates that data clustered around the mean, that is, data points are below the mean (low dispersion value or lower than the mean) in the DR. This is confirmed by the difference between the values of Max. and Min. values of 118.40% reported by FTN Cocoa Processing Plc in 2009 and 5.00% as reported by Ellah Lakes in 2009. The distribution shows a positive skewness value of 0.65 and a kurtosis distribution of 4.41. This result depicts the data are normally distributed.

Equity (EQ) has a mean of 6.45% with a Std. Dev. of 0.76%, which indicates that data points are below the mean, that is, data clustered around the mean (there is a lower dispersion) in the EQ. This is confirmed by the difference between the Max. and Min. values of 7.88 reported by Preco Plc in 2017 and 4.71 as reported by Ellah Lakes Plc in 2013. The distribution shows a positive skewness value of 0.03 and a kurtosis distribution of 2.24. This result depicts the data are normally distributed.

Furthermore, Interest Coverage Ratio (ICR) shows a mean of 6.10% with a Std. Dev. of 15.30%. The implication of this ICR data distribution shows that data clustered around the mean, that is, data are more spread out (there is a high dispersion) in sampled listed Agricultural firms. This is further collaborated by the large difference between the values of Max. and Min. values of 77.55% reported by Okomu Oil Palm Plc in 2015 and-12.49% as reported by Ellah Lakes Plc in 2016. The distribution shows a positive skewness value of 2.38 and a kurtosis distribution of 10.40. This result depicts the data are normally distributed.

Lastly, Firm Size (FS) as a control variable shows a mean of 6.79% with a Std. Dev. of 0.61%. The implication of this is that FS distribution shows that data clustered around the mean (there is a lower dispersion) in sampled listed Agricultural firms. This is further collaborated by the difference between the values of Max. and Min. values of 7.99% reported by Presco Plc in 2017 and 5.76% as reported by Live Stock Feed Plc in 2014. The distribution shows a positive skewness value of 0.25 and a kurtosis distribution of 2.04. This result depicts the data are normally distributed.

3.2 Correlation Analysis

Correlation analysis was carried out in order to determine the degree of relationship between the dependent variable: Return on Asset (ROA), independent variables of the study (short term debt, long term debt, debt ratio, equity, interest coverage ratio and firm size which is used as a control variable). The summary of the results is in Table 2.

Table 3: Correlations Matrix

	ROA	STD	LTD	DR	EQ	ICR	FS
ROA	1.000000						
STD	0.548185	1.000000					
LTD	0.158416	0.141060	1.000000				
DR	-0.487804	-0.040043	-0.215665	1.000000			
EQ	0.646982	0.643100	0.397018	-0.280845	1.000000		
ICR	0.585953	0.408356	0.256831	-0.354950	0.550083	1.000000	
FS	0.611628	0.751870	0.433901	-0.294328	0.884171	0.492206	1.000000

Source: Output from E-View 9.0
(For details, see appendix V)

From the Correlation results in table 3, it indicates that short term debt (STD) and long term debt (LTD) are positively correlated with return on asset (ROA) respectively; this indicates that short term debt and long term debt has positive effects on the return on asset of listed Agricultural firms in Nigeria. Also, the relationship between debt ratio (DR) and return on asset (ROA) is negative. Furthermore, equity (EQ), interest coverage ratio (ICR), firm size (FS), and return on asset (ROA) is positive, indicating a positive correlation with return on asset, suggesting that equity, interest coverage ratio, firm size increases return on asset (financial performance) and have a positive influence on return on asset of listed Agricultural firms in Nigeria.

Note: According to Glen (2015), when the correlation is 0.80 between two variables, it means there is the presence of a multicollinearity problem, but from table 3, there is no variable up to 0.80, which shows that there is no multicollinearity among variables.

3.3. Regression Analysis

The Regression analysis shown in table 3 is a panel regression

Table 4: Multiple Least Square Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-21.34695	15.38298	-1.387699	0.1716
STD	3.353264	1.686709	1.998051	0.0425
LTD	-1.011346	0.882352	-1.146193	0.2574
DR	-0.202904	0.058728	-3.454978	0.0012

EQ	5.776222	3.043785	1.997710	0.0538
ICR	0.161710	0.084781	1.987394	0.0525
FS	-1.981675	4.633183	-0.427713	0.6708

Source: Output from E-View 9.0
(For details, see Appendix VI)

Table 4 depicts the results of the Multiple Least Square Regression as specified by the econometric model. The result shows that short term debt has a positive value of 3.3533 and a significant impact on the financial performance measured by annual Return on Asset (ROA) of listed Agricultural firms in Nigeria. It means that an increase in short term debt has the potential, on average, 335.33 per cent impact on the financial performance of Agricultural firms while holding other variables constant. With a p-value of 0.0425, it is evident that the result is significant.

As shown in table 4, the result shows that long term debt has a negative value of-1.0114 and has a significant impact on the financial performance measured by the annual Return on Asset (ROA) of listed Agricultural firms in Nigeria. It means a decrease in long term debt has the potential on average to decrease the financial performance of Agricultural firms in Nigeria by-101.14 per cent while holding other variables constant. This impact is negative and statistically insignificant, considering the p-value of 0.2574.

In addition, the debt ratio has a negative value of-0.202904 and has a significant impact on the financial performance measured by the annual Return on Asset (ROA) of listed Agricultural firms in Nigeria. It means a decrease in debt ratio has the potential on average to decrease the financial performance of Agricultural firms in Nigeria by 20.29 per cent while holding other variables constant. This impact is negative and statistically significant, considering the p-value of 0.0012.

Furthermore, equity has a positive value of 5.776222 with a p-value of 0.0538, implying that a unit increase in equity by operators of Agricultural firms in Nigeria, holding other variables constant, equity will have a 577.6222 per cent increase in the financial performance of Agricultural firms in Nigeria; however, the result is significant considering the p-value of 0.0538.

The interest coverage ratio (ICR) has a positive value of 0.161710 with a p-value of 0.0525, implying that ICR is statistically significant at 0.05 level. Lastly, firm size (FS) has a negative value of-1.981675 with a p-value of 0.6708, implying that FS is statistically insignificant. It means a decrease in firm size has the potential on average to decrease the financial performance of Agricultural firms in Nigeria by 198.17 per cent while holding other variables constant. This impact is negative and statistically insignificant, considering the p-value of 0.6708.

The coefficient of determination, $R^2 = 0.621894$, shows that 62.19 per cent and adjusted $R^2 = 0.574630$ shows that 57.46 per cent of the variation in return on asset (ROA) is explained by the independent variables; Short Term Debt, Long Term Debt, Debt Ratio, Equity, Interest Coverage Ratio and Firm Size (STD, LTD, DR, EQ, ICR and FS).

Discussion

From the findings of this study, a significant positive relationship was observed between Short Term Debt (STD) and Financial Performance (ROA). The finding suggests that an increase in short term debt will create a situation of an increase in the financial performance of listed Agricultural firms in Nigeria. This shows that there is a positive relationship between short term debt (STD) and Financial Performance (ROA). The objective driven is of this finding showed that short term debt worthwhile for Agricultural sector in Nigeria. The study's findings correlate with that of Garcia-Teruel & Martinez-Solano (2007) [37], Muchugia (2013) [61], and Langat, Cheptkoech, Shavulimo, Wachura & Thio (2014) [18], Omran & Pointon (2009) [71], Abu-Rub (2012) [4], El-Maude, Ahmed & Ahmed (2016) [28], Hasan, Ahsan, Rahaman & Alam (2014) [42], Ashraf, Ameen & Shahzadi (2017) [14], their studies found a significant positive relationship between short term debt and financial performance. However, the finding of this study is not in line with the finding of Akinyomi (2013) [9], Ahmed & Wang (2013) [7], Maina and Ishmail (2014) [52], Shahara & Shaharb (2015) [79], Alrabba, Ahmad & Hamadneh (2020) [11], Muchiri, Muturi & Ngumi (2016) [60], who find a negative relationship between short term debt and financial performance.

The relationship between Long Term Debt (LTD) and Financial Performance (ROA) was also observed to be negative. The finding suggests that a decrease in long term debt will create a situation of decrease in the financial performance of listed Agricultural firms in Nigeria. This shows that there is a negative relationship between long term debt (LTD) and Financial Performance (ROA). The objective driven is of this finding showed that long term debt does not worthwhile for Agricultural sector in Nigeria due to high rate of charges. The study's finding is in line with that of Ebaid (2009) [26], Le & Tannous (2013); Akinyomi (2013) [9], Ebaid (2009) [26], El-Maude, Ahmed & Ahmed (2016) [28], Orji, Nwadialor & Agubata (2020) who found a significant positive association between long term debt and financial performance. But disagree with the findings of Omran & Poiton (2009) [71], Umar, Tanveer & Aslam (2012) [83]; Antwi, Mills & Zhao (2012) [13]; Aliakbar, Seyed & Peyen (2013) [10], Ahmed & Wang (2013) [7], Hasan, Ahsan, Rahaman & Alam (2014) [42], Maina & Ishmail (2014) [52], Shahara & Shaharb (2015) [79], Ashraf, Ameen & Shahzadi (2017) [14] who found a significant negative relationship between long term debt and financial performance.

A negative connection was noticed between Debt Ratio (DR) and Financial Performance (ROA). The finding indicated that the debt ratio has a negative but significant impact on the financial performance of listed Agricultural firms in Nigeria. The objective driven is of this finding showed that debt ratio worthwhile for Agricultural sector in Nigeria but adequate measure could be taking to help the sector in order to boost their financial performance. The finding of this study is in line with those of Enekwe, Agu & Eziedo (2014) [29]; Maina & Ishmail (2014) [52], Hasan, Rukh, Ali & Rehman (2014) [43], Vatau (2015). However, the finding did not agree with the findings of Ahmed and Wang (2013) [7], Akeem, Edwin, Kiyanjui & Kayode (2014) [8], Maina & Ishmail (2014) [52], Enekwe, Agu & Eziedo (2014) [29], Birru (2016) [20], Sultan & Mustafa (2015) [81], Ashraf, Ameen & Shahzadi (2017) [14].

The relationship between Equity (EQ) and Financial Performance (ROA) was also observed to be positive and statistically significant even at a 5% significance level. The result shows that there is a significant positive relationship between equity and financial performance. The study's

finding in this regard suggests that equity has a positive effect on the financial performance of listed Agricultural firms in Nigeria. The objective driven is of this finding showed that equity from investors is advisable for Agricultural sector in Nigeria if investors could pool their resources together. This result agrees with the finding of Osirim, Wadike & Idatoru (2020) [73] and Achieng, Muturi & Wanjare (2018) [5].

The relationship between Interest Coverage Ratio (ICR) and Financial Performance (ROA) was observed to be positive and statistically significant. The study's finding in this regard suggests that the interest coverage ratio shows a significant positive effect on the financial performance of listed Agricultural firms in Nigeria. The objective driven is of this finding had helped to show that coverage of interest on debt is essential for of this finding had helped to show that coverage of interest on debt is essential for Agricultural sector in Nigeria in order to ascertain actual financial performance. The study's finding is in line with that of Enekwe & Eziedo (2014) [29].

The relationship between Firm Size (GDE) and Financial Performance (ROA) was observed to be negative and statistically insignificant. Firm size shows an insignificant negative effect on the financial performance of listed Agricultural firms in Nigeria. The objective driven is of this finding showed that acquisition of firm size like total assets worthwhile for Agricultural sector in Nigeria as this will go a long way to improve their financial performance. The study's finding is in line with that of Chandrasekharan (2012) [23], Mouna, Ye & Kenza (2018) [59], Ayo-Oyebiyi (2020) [16], Alrabba, Ahmad & Hamadneh (2020) [11]. The finding of this study did not agree with the findings of Sultan and Mustafa (2015) [81] and Abatcha & Bala (2020) [1].

Policy Implication of the Result

Investing in the Agriculture sector is quite profitable. Besides the firms' performance, the investors must look at the other fundamental aspects that may affect the firm's profitability, like the finance choices (capital structure). By considering the firm performance, the capital structure, and the effect of capital structure on the firm performance, investors can invest in the right sector, sub-sector, and right firm to generate a sustainable return. Private companies like the Agriculture sector may have a harder time using debt over equity, particularly long term debt, which is required to have personal guarantees from their owners.

The policy implications of long term debt in the Nigeria context is that it may create problem to the agricultural sector because of high interest rate from lender which could affect the financial performance adversely. The policy implication of short-term debt to agricultural finance could pose higher risks to Agricultural sector because most agricultural sector profit may be used for paying lenders charges thereby affecting their financing. On debt ratio, higher charges increases the ratio of debt and it can affect the financial performance of agricultural sector in Nigeria. Equity finance is the best finance choice for agricultural businesses but the policy implication is that expansion of agricultural businesses may be difficult because of limited equity. Interest coverage as at when due on debt acquired by agricultural sector is advisable because the policy application is that inadequate payment on debt could increase the interest coverage ratio and thereby affecting the financial performance. Lastly, firm size has a great policy implication on all sectors especially the agricultural sector because most lender often consider the size of a firm before granting debt for the purpose of financing.

Conclusions

From the findings of this study, it was discovered that finance choices cannot be overemphasized among profit oriented organizations because of the crucial role it play in the financial performance of firms by providing the necessary funds for investments, especially in the agricultural sector. Thus, the broad objective of this study was achieved because the findings revealed the effect of finance choices on the financial performance of listed agricultural firms in Nigeria.

The study also achieved the specific objectives that a significant positive relationship was observed between short term debt and financial performance of listed Agricultural firms in Nigeria; there was a negative relationship between long term debt and financial performance of listed Agricultural firms in Nigeria; debt ratio has a negative but significant impact on the financial performance of listed Agricultural firms in Nigeria; equity has a positive effect on the financial performance of listed Agricultural firms in Nigeria; interest coverage ratio shows a significant positive effect on the financial performance of listed Agricultural firms in Nigeria and Firm size shows an insignificant negative effect on the financial performance of listed Agricultural firms in Nigeria. Thus, the findings of this study are one of a kind and important to farmers because it looked into finance choices and financial performance of agricultural firms especially now that there is a paradigm shift towards agricultural revival by the government of Nigeria.

Recommendations

From the conclusion and based on the research findings, the following recommendations are made:

i) Listed Agricultural firms in Nigeria should use more short-term debt to finance their business activities because of the higher risks attached to Agricultural businesses and debt financing of business. This way, their decisions shall boost the firm's competitiveness and, consequently, financial performance. Government and financial sectors should provide available long term debt for registered farmers, and that listed Agricultural firms in Nigeria should not rely more on long term debt as a source of financing its operation as it is capable of having adverse effects on their financial performance and should also be mindful of stringent conditions that may be attached to long term debts.

ii) Listed agricultural firms in Nigeria should use debt to finance their activities but should be careful of conditions attached, charge on assets, the burden of fixed charges, dilution of ownership and control, among others. The implication of debt ratio is that the higher the debt ratio, the more leveraged a company is, implying greater risk. A debt ratio greater than 1.0 (100%) means that a company has more debt than assets.

iii) It is also recommended that listed agricultural firms in Nigeria should increase their equity financing on their business activities because of the higher risks attached to debts which may be weak in the financial performance of the agricultural business.

iv) Listed Agricultural firms in Nigeria should be careful of acquiring unnecessary debt as finance choices for their business because of the charges and interest (interest coverage) they may need to cover in the long run.

v) Listed Agricultural firms in Nigeria should enhance their firm size such as the total assets value as used under this study to improve their financial performance as firm size

is capable of enhancing the financial performance of firms.

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