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Sequence of Manuscript

I. Title page
II. Abstract (150-250 words)
III. Keywords (3-5)
IV. Introduction
V. Literature Review
VI. Methodology
VII. Results and Discussion
VIII. Conclusion and Recommendations
IX. References (APA 7th Edition)
X. Appendices (if necessary)
XI. Author Biographies (optional)

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CAPITAL STRUCTURE DECISIONS: DOES FIRM CHARACTERISTICS MATTERS? AN EMPIRICAL ANALYSIS OF LISTED MANUFACTURING FIRMS IN NIGERIA

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ABSTRACT

Determination of optimal capital structure decision poses great challenges to listed manufacturing ÿrms in Nigeria, as wrong ÿnancing decision may crumble the fortune of any ÿrm. This study looks at how ÿrm characteristics a ect the capital structure decisions of Nigerian-listed manufacturing ÿrms. It also tries to exploit the di erences among capital structure decisions by demarcating various degrees of capital structure decision into aggressive decision, moderate decision and conservative decision. A comparative test of trade-o theory and pecking order theory using over 280 observations from listed manufacturing ÿrms in Nigeria between 2012 and 2022. It focuses on the role of non-debt tax shield, proÿtability, business risk, and liquidity as variables that help explain these strategic capital structure decisions. The study used a quantitative approach and a correlational research design in analyzing panel data from twenty-eight ÿrms. The study uncovered a statistically signiÿcant link between proÿtability and business risk under the pooled and for ÿrms that adopted aggressive decision. Meanwhile, business risk and liquidity were signiÿcant for ÿrms that adopted conservative decision, and non-debt tax shield and liquidity were signiÿcant for ÿrms that adopted moderate decision. As a result, it was recommended that future and present investors, as well as other pertinent stakeholders, utilize the business risk associated with the ÿrm as a means of assessing the capital structure of Nigerian listed manufacturing ÿrms. Furthermore, it is imperative for the management of industrial goods ÿrms in Nigeria to prioritize proÿtability and strive to maintain adequate liquidity ratios and a non-debt tax shield.

Keywords: Capital structure, Firm characteristics, Manufacturing firms, Aggressive decision, Moderate decision, Conservative decision

1. Introduction

Corporate decisions on how firms determine sources of finances is one of the most extensively researched areas in finance. Locating the optimal capital structure (CS) has been a longstanding topic of academic inquiry. The proportions of debt and equity (D&E) used to finance the firm's assets, has implications for stockholder value. CS decision poses a lot of challenges to firms. Determining an appropriate mix of D&E is one of the most strategic decisions entities are confronted with and a wrong financing decision has the tendency of stalling the fortunes of any business especially in developing nation.

Nigeria, similar to other developing nations in the world, has a relatively underdeveloped capital market and limited access to external sources of funding, which puts pressure on firms to rely heavily on debt financing. The main issue with relying heavily on debt financing is that it increases a company's financial leverage, which can lead to higher interest payments and debt servicing costs. This, in turn, can reduce profitability, restrict future growth opportunities, and increase the risk of default. In addition, companies that rely solely on equity financing may face dilution of ownership and control and may also have difficulty raising sufficient funds to meet their capital

requirements. An organization needs to ascertain the optimal mix of D&E financing to maximize shareholder wealth while managing financial risk. The challenge is to identify the right balance of D&E that minimizes the cost of capital, ensures liquidity, complies with regulatory requirements, and aligns with the company's long-term growth and financial stability objectives. This decision entails appraising numerous components, including market conditions, interest rates, industry-specific risks, and the company's own financial health, and it must be made within the framework of organization's strategic goals and objectives. According to Akinmurele (2021), as of 2021, the issuing of debt instruments has increasingly become a viable funding source for Nigerian manufacturing firms due to the low borrowing rates for debt issuance and corporate bonds in Nigeria.

The manufacturing sector combined debt to Nigerian banks rise from N4.09 trillion in December 2021 to N4.54 trillion in June 2022 according to the central bank of Nigeria's sectoral analysis of deposit money banks' credit (Tunji, 2022). Similarly, capital is an issue of concern within the manufacturing firms in Nigeria due to the persistent rise in their debt levels, which has an effect on the firms' CS. The industry has been borrowing aggressively to fund its increasing market share (Bala, 2019). Manufacturing sectors in Nigeria are faced with growing debt ratios, with Dangote and BUA Cements being among the firms with the largest debt proportion in their CS as of 2021(Omokolade, 2021). In addition, BUA Cement has issued the largest corporate bond in the history of the Nigerian capital market. Also, Notore Chemical Industries Plc has been faced with a high level of debt and mounting financial burdens. The firm has a total debt stock of 122.17 billion naira in its balance sheet, which is 2.84 times its equity as of the fourth quarter of 2021, which implies that the firm is levered, although there are plans to raise more capital through a public offer or a right issue (Team, 2020). Firms such as Lafarge Africa Plc also adopted an aggressive approach to restructuring their capital (Olalekan, 2020).

The CS of a firm consists mainly of D&E. The major objective of all financial managers is to expand the overall worth of the firm while reducing its cost of capital to its lowest level. In order to increase shareholders wealth, the finance manager needs to seek the optimal CS. Firms combine both D&E when financing their assets, especially when the equity is not sufficient. Firms then source more finance from outsiders, which brings about debt. It is very rare for any firm to use equity as their only financing source (Do et al., 2020). In addition, decisions that are made on CS modify the firm's total worth or value. A good outcome will have a useful effect on the business's value, while a bad outcome will have a negative effect on the business's value (Mbonu & Amahalu, 2021). An optimal decision to finance gives a firm two merits: increasing the worth of the business and enhancing its capital efficiency. A firm has to issue various combinations of securities in pursuit of an optimal CS (Okegbe et al., 2019).

Indeed, the CS theory began with the work done by (Modigliani & Miller, 1958) which is the dominant theory of CS because it serves as the base theory for other theories of CS (Musa & Tahir, 2023) that are used in research. The MM Theory asserts that theories of CS operate in optimal market conditions with different conclusions about an optimal market, which include no tax, investors are rational, perfect competition exists, bankruptcy costs do not exist, and the market is efficient (Okegbe et al., 2019). The prepositions made by M&M have made the world interested in this field of research.

Moreover, the propositions made are still very vital to one's comprehension of the components of CS, and they laid the foundation for the modern history of finance. Similarly, other finance theories like the tradeoff and pecking order theories specifically pointed out the firms' unique features that possess key characteristics that influence the firm's debt or equity choices as a business organization (Bashir, 2019). The firms' attributes, which include non-debt tax shield, return on investment, business volatility, and asset liquidity, will be used to examine and report whether firm characteristics will influence the CS decisions of Nigerian listed manufacturing firms (NLMF). These variables were selected due to their prominent impact on the decisions made about how and how much capital should be raised. The variables cited earlier have been used in previous literature, particularly studies of (Abdullahi & Suleiman, 2020; Abdur Rouf, 2018; Bahir, 2019; Buvanendra et al., 2017; Do et al., 2020; Elbekpashy & Elgiziry, 2018; Khan et al., 2020). Non-debt tax shields are a cheaper way of reducing burdens and providing a way to enjoy the benefits of debt tax shields (Bashir, 2019). A profitable business may decide to use its retained earnings to fund the business instead of incurring more debt (Pontoh & Budiarso, 2018). Risk occurs due to uncertainty and information asymmetry. Therefore, firms' with more risk tend to increase borrowing to counteract the effect of unequal access to information (Do et al., 2020). Liquidity provides different signs to different stakeholders (Do et al., 2020).

Study is motivated by the uncertainty in the Nigerian economy, which culminate to a persistent rise in debt levels and capital restructuring, which has been the trend in the manufacturing sector in Nigeria. This is quite alarming and gives drive for research to be

conducted in this particular industry. The occurrence of the COVID-19 pandemic, which had an adverse effect on firms around the globe, also prompted the researcher to revisit this issue. Furthermore, there are limited studies on the CS decisions of the manufacturing sector in Nigeria. Most of the studies are carried out in other industries, such as the insurance and banking industries focused on the CS with addressing the decisions. The scope of this study is limited to the firm variables that have an influence on the CS decisions of NLMF in Nigeria.

The study aims to provide additional evidence on the factors affecting the LMF financing decisions choices as made by managers, by amplifying behavioral CS decisions in a difficult time or through financial crisis (characterize by inflation, depression and Covid 19 and son on).

2. Literature Review

Renowned scholars have attempted to provide a concrete definition of CS; the various definitions attempt to describe the different classes of loan and the portion that sums up its capitalization. CS is define as the blend of D&E that a firm utilizes to finance its operational activities, assets, and future investments (Dao & Ta, 2020). The CS reflects the firm's financial composition, consisting of the equity and debt utilized in financing the firm (Agbata & Uche, 2019). For the focus of this inquiry, CS decisions refer to the organizational methods and techniques employs to determine the combination of D&E used to finance its operation and investments. These decisions involve the proportion of debt, such as loans or bonds, and equity, including common and preferred stock in the company's overall structure The CS decisions are classified into 3 including the aggressive, moderate and conservative decisions. Aggressive CS decisions involve a strategy in which a company relies heavily on debt financing compared to equity. This means taking on a higher level of debt relative to equity in the company's CS. The moderate capital decisions involve maintaining a balanced mix of D&E in a company's overall financial structure while the conservative CS decisions involve a strategy in which a company relies more on equity financing and minimizes the use of debt.

According to Egbunike and Chinedu (2018) who define firm characteristics as a firm's demographic and business variables, which are part of the company's internal environment. Firm-specific attributes are those indicators that are within the firm and are capable of influencing their funding decision. These indicators are within the control and power of the management because they are financial in nature (Abdulkarim, Mohammed, Mohammed & Abubakar, 2019). This may include, but is not limited to, the non-debt tax shield, profitability, business risk and liquidity within the purview of this research work. Furthermore, non-debt tax shield refers to the depreciation expenses that are used instead of interest expenses, and it frees them from depending on external sources of capital (Liang et al., 2020). Depreciation expenses are viewed as an alternative option to the benefits received while using debt. The non-debt tax shield is also referred to as the depreciation of total assets. According to Lungu (2019) profitability is the ability of a firm to generate profit, which is the difference between revenue and costs, over a given period of time. Falkowski and Naklicki (2018) also defined profitability as the ability of a firm to generate a net income after accounting for all expenses, including interest, taxes, and depreciation, over a given period of time. Also, business risk is a risk that is caused by uncertainties in earnings. Earnings become unknown when the environment is uncertain (Khan et al., 2020). According to Fleisher and Bensoussan (2015) business risk is defined as the potential for a company to experience financial losses or reduced profitability due to internal or external factors that are beyond its control. It includes factors such as changes in the market, technological developments, economic conditions, or competition. Liquidity refers to a company's ability to change its short-term assets into cash in order to carry out its day-to-day operations (Egbunike & Chinedu, 2018). Liquidity is the ability of the firm to put together its short-term commitments as they become payable. (Abdur Rouf, 2018).

Buvanendra et al. (2017) explored the most important determinants of the speed of adjustment towards an optimum CS of firms listed in India and Sri Lanka for a period of ten (10) years. The sampled population is ninety, and secondary sources of data were used with regression models and correctional analysis. Ten (10) explanatory variables consisting of the firms' specific attributes relating to firms were tested using a model called dynamic adjustment. The non-debt tax shield was measured as the ratio of depreciation to total assets. It was found that there was a strong direct association between the non-debt tax shield and the adjustment speed of optimum capital. It was discovered that firms in the 2 countries tend to adjust to an optimal CS over the years. There were no differences in the determinants of CS adjustments between Sri Lanka and India, regardless the countries uniqueness. Khan et al. (2020) investigated the CS determinants of firms in Pakistan. The quantile regression was used to analyze the sample of one hundred and eighty-three non-financial companies from 2008–2017, summing up to ten years on the Pakistan stock exchange. The non-debt tax shield was measured as the total depreciation divided by total assets. The results revealed that the Pakistan-listed firms' CS varies among the companies at various quantiles of leverage. The findings showed that non-debt tax shields are inversely related to leverage

among listed firms in Pakistan. No theory was used to support the findings.

Bahir (2019) examined the CS and the firm attributes that have an impact on listed beverages and food companies in Nigeria. Firm characteristics are represented by profitability, firm size, growth opportunity, non-debt tax shield, and asset tangibility, while the explained variable was leverage. A secondary source of data was collected for a period of ten (10) years from 2008 to 2017. A correlation research design type was utilized concurrently with a robust multiple regression equation. The findings established that profitability shows a strong adverse relationship with leverage. The study didn't back up its findings with any theories. Afey and Warui (2019) the study quested to set up the firm attributes that have an impact on the financial leverage of Nairobi firms listed on the stock exchange. The population consists of all 65 firms that were listed. The research supported its discovery with tradeoff theory, pecking order theory, and agency theory. The data sourced was secondary in nature and came from firms' financial statements. Fifteen years was the timeframe covered in the work, starting from 2003 to 2017; only 32 levered firms were studied. Data was collected and analyzed using panel regression analysis, correlation analysis, and descriptive statistics. It was discovered that profitability had an adverse and strong relationship with the financial leverage of companies.

Tahir et al. (2020) examined the systematic risk and credit risk on the firm's CS using panel data from twenty firms, covering an eight-year period. The data was sourced from the published annual reports of the firms. The firm's risk was categorized into credit risk and systematic risk. Credit risk was measured as loan loss provision divided by total debts, while systematic risk was measured as beta equal to beta return equal natural log (Pt/Pt-1). The credit risk showed an inverse effect on the firm's CS, while the systematic risk showed a direct effect on the firm's CS. The effect of business risk and financial flexibility, along with the moderating effect of firm size on the CS was investigated by Yanti et al., (2022) for a three-year period, studying 52 companies. Panel data regression models and moderated regression analysis were used. Business risk was measured as a percentage change in EBIT divided by a percentage change in sales. They established that business risk has no significant impact on the CS, and firm size as an intervening variable does not improve the effect business risk has on the CS. The study utilized the wrong sampling technique for quantitative research, which is the purposive sampling technique.

Abdullahi and Suleiman (2020) examined firm characteristics and CS. The population included all the Nigerian listed cement firms. The regression result showed that liquidity has a significant negative influence on leverage which implies that has liquidity increases the leverage decreases. Sashata (2021) researched on the influence of firm attributes on operational, financial, and market performance of firms listed in Saudi Arabia during the period of COVID-19 pandemic. The study used several regression models over the period from third quarter of 2019 to third quarter of 2020. Descriptive and inferential analysis was utilized in testing the relationships. Firm liquidity shows no significant impact on firm performance measures.

Theoretical Framework

The Tradeoff Theory (TOT)

The TOT pioneers are Kraus and Litzenberger (1973), who stated that businesses swap tax advantages between their debt and the burdensome debt cost of financing (Do et al. 2020). The recognition of the business can be enhanced by using more debt, which contradicts the MM's approach in 1958. The TOT includes the agency and cost of financial distress. The cost of agency, tax, and bankruptcy drives firms making high profits to higher levels of book leverage. The estimated cost of bankruptcy usually decreases as profitability rises.

The Pecking Order Theory (POT)

The theory was created by Myers and Majluf (1984), the theory addresses the type of financing a firm will prefer when more funds are required, which can be sourced either internally or externally. The firm prefers raising its funds internally by putting back its profits and trading its short-term securities. Whenever finances cannot be generated internally, the firm will issue debt and preferential shares. The last solution for raising funds is for the firm to issue common stock (Aljamaan, 2018).

3. Methodology

Correlational research design was adopted in examining the firm characteristics influence on CS decisions of NLMF. The study population consists of all forty five (45) manufacturing firms listed on the Nigerian Exchange Group. This study adopted the census approach, filtration was applied to derive the adjusted population of twenty eight (28) NLMF. The source of data utilized in the study is secondary data and was extracted and collected from the audited and published annual financial reports of the listed manufacturing firms on the Nigeria Exchange Group from 2013–2022 which is ten (10) years. This period covers when the economic shocks occurred that threatened the existence of these firms, which were not captured in other studies conducted in the manufacturing sector. Panel data, fixed effect robust and cross-sectional time series regression were the techniques used because they reduce the bias that might occur.

Model Specification

Using CS decisions/policies of NLMF, three behavioral CS policies/ decisions patterns were identified as follows

i- Conservative CS decision

29% of NLMF in Nigeria are using conservative CS policies/ decisions of having lower (debt/equity) ratio, ranging from 0% to 40%.

ii- Moderate CS decision

35% of NLMF are using moderate CS policies/ decisions of having moderate (debt/equity) ratio, ranging from 41% to 60%.

iii- Aggressive CS decision

35% of NLMF are using moderate CS policies/ decisions of having moderate (debt/equity) ratio, ranging from 61% and above. Optimistic or overconfident managers choose higher debt level and issue new debt recurrently but need not to follow a pecking order. The debt level restrain managers diverting funds or it may delay investment.

Stemming from the above conditions, the study hypotheses were examined using the ordinary least square regression:

$ACSDit = ß0 + \beta1NDTSit + \beta2PFRTit + \beta3BRit + \beta4LQit + \beta5FSit + Eit$ ..... (1)

$MCSDit = ß0 + \beta1NDTSit + \beta2PFRTit + \beta3BRit + \beta4LQit + \beta5FSit + Eit$ ..... (2)

$CCSDit = ß0 + \beta1NDTSit + \beta2PFRTit + \beta3BRit + \beta4LQit + \beta5FSit + Eit$ ..... (3)

Where; ß0= Constant, β1 to β5= Coefficient of the independent variables, ACSD = Aggressive CS decisions, MCSD = Moderate CS decisions, CCSD = Conservative CS decisions, NDTS = non-debt tax shield, PRFT = Profitability, BR = Business risk, LQ = Liquidity, FSZE = Firm size and it = Panel indicator.

4. Results and Discussions

This section presented and analyzed both the descriptive and inferential result. The results are shown and discussed below:

Table 4.1: Descriptive Statistics

Variables	Obs	Mean	SDev	Min	Max
CS	280	1.0564	2.6958	0.0323	19.557
NDTS	280	0.0380	0.0344	0.0001	0.3870
PRFT	280	0.1117	0.4681	-2.353	6.1930
BR	280	0.2085	2.1525	3.13e-09	34.100
LQ	280	1.5651	2.9287	0.0005	36.411
FS	280	9.1816	1.8140	6.0309	11.690

Source: Data computation 2023

Table 4.2: Descriptive Statistics for Conservative, Moderate and Aggressive Data

	Conservative CS decisions' firms				Moderate CS decisions' firms				Aggressive CS decisions' firms			
Var	**Mean**	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
CS	0.294	0.104	0.0323	0.408	0.5329	0.054	0.411	0.607	2.182	4.294	0.6100	19.56
NDTS	0.052	0.031	0.0033	0.146	0.0342	0.237	0.0001	0.106	0.352	0.045	0.0009	0.387
PRFT	0.085	0.105	-0.161	0.380	0.1273	0.103	-0.086	0.510	0.104	0.773	-2.353	6.193
BR	0.004	0.008	3.13e-09	0.045	0.0056	0.012	3.60e-08	0.101	0.574	3.584	4.83e-07	34.10
LQ	3.033	5.103	0.4299	36.41	1.2262	0.499	0.260	2.169	0.789	0.419	0.0005	1.442
FS	8.389	1.914	6.050	11.54	9.4133	2.008	6.031	11.58	9.184	1.546	6.265	11.69

Table 4.1 reveals that manufacturing firms have an average CS of 100% and a standard deviation of 2.6958. This suggests a high level of variation among the firms. The descriptive statistics indicate that the minimum level of leverage utilised in the CS of manufacturing firms was 3.2%, while the maximum level of leverage utilised was 1900%. Furthermore, it is worth noting that the non-debt tax shield shows an average value of 3.8% with a standard deviation of 0.0344. This study indicates that there is relatively moderate variation among the firms operating in the manufacturing industry in Nigeria. The range of non-debt shield values observed within the indicated period ranged from 0.01% to 38%. Furthermore, the profitability indicator has a mean value of 11%, standard deviation of 0.4681, suggesting that there is a high variation across the manufacturing firms in Nigeria. The range spans from -200% to a maximum of 600%, signifying that some companies had times of financial decline while others managed to earn profits. Furthermore, the business risk indicator has an average of 20% and a standard deviation of 2.1525, suggesting a high level of fluctuation between the mean and the standard deviation. This implies that, on average, manufacturing firms are exposed to a risk of 20%. 3.13e-09% as the minimum limit and 3400% as the maximum limit. Also, the average value and standard deviation of liquidity in the manufacturing sector are 1.56 times and 2.9287, respectively. The liquidity ratio varies between a minimum of 0.05 times and a maximum of 36.4 times. The average firm size in the manufacturing industry is 9.1816, with a standard deviation of 1.8140, maximum and minimum of 11.69 and 6.0309 values respectively.

Table 4.2 reveals that conservative firms in Nigeria manufacturing sector have an average CS of 29% with a standard deviation of 0.1035. This suggests a low level of variation among the firms. The descriptive statistics indicate that the minimum level of leverage utilized in the CS of conservative firms was 3.23%, while the maximum level of leverage was 40.7%. Notably the non-debt tax shield shows an average value of 5.22% with a standard deviation of 0.0314. This study indicates that there is relatively low variation among the conservative firms operating in the manufacturing industry in Nigeria. The range of non-debt shield values observed within the indicated period ranged from 0.33% to 14.64%. In addition, the mean and standard deviation values of profitability are 8.54% and 0.1053 respectively, suggesting that there is not much variation across the conservative firms in the manufacturing sector. The range spans from -16.1% to a maximum of 38%, signifying that some companies had times of financial decline while others managed to earn profits. Furthermore, the business risk indicator has an average of 0.41% and a standard deviation of 0.0084, suggesting a high level of fluctuation between the mean and the standard deviation. This implies that, on average, firms are exposed to a risk of 0.41%. 3.13e-09% as the minimum limit and 4.5% as the maximum limit. Also, the average value and standard deviation of liquidity in the conservative manufacturing sector are 3.033 times and 5.1026, respectively. The liquidity ratio varies between a minimum of 0.42 times and a maximum of 36.4 times. The average firm size in the conservative manufacturing industry is 8.3894, with a maximum, minimum and standard deviation of 11.540, 6.0500 and 1.9138 respectively.

Table 4.2 reveals that moderate firms in the manufacturing sector in Nigeria have an average CS of 53% and a standard deviation of 0.0538. This suggests a low level of variation among the firms. The descriptive statistics indicate minimum and maximum level of leverage of 41% and 60% in the CS of moderate firms. Moreover, it is important to note that the non-debt tax shield shows an average value of 3.42% with a standard deviation of 0.2374. This signal a relatively high variation among the moderate firms operating in the manufacturing industry in Nigeria. The range of non-debt shield values observed within the indicated period ranged from 0.01% to 10.60%. Likewise, the profitability has a mean and standard deviation values of 12.73% and 0.1031 respectively, suggesting that there is not much variation across the moderate firms in the manufacturing sector. The range spans from -8.6% to a maximum of 51%, signifying that some companies had times of financial decline while others managed to earn profits. Similarly, the indicator for business risk has an average of 0.56% and a standard deviation of 0.0124, suggesting a high level of fluctuation. This implies that, on average, firms are exposed to a risk of 0.56%. 3.06e-08% as the minimum limit and 10% as the maximum limit. Also, the average value and standard deviation of liquidity among the moderate manufacturing firms are 1.22 times and 0.4990, respectively. The liquidity ratio varies between a minimum of 0.26 times and a maximum of 2.169 times. The average firm size in the moderate manufacturing industry is 9.4133, with a standard deviation of 2.0084, a minimum of 6.0309, and a maximum value of 11.580.

Table 4.2 reveals that aggressive firms in the manufacturing sector in Nigeria have an average CS of 200% and standard deviation of 4.2958. This suggests a high level of variation among the firms. The descriptive statistics indicate that the minimum level of leverage utilised in the CS of aggressive firms in the Nigerian manufacturing sector was 61%, while the maximum level of leverage utilised was 1900%. Furthermore, it is pointed out that the non-debt tax shield shows an average value of 35% with a standard deviation of 0.0454. This study indicates that there is relatively low variation among the aggressive firms operating in the manufacturing industry in Nigeria.

The range of non-debt shield values ranged from 0.09% to 38%. Likewise, the indicator for profitability has an average value of 10% and a standard deviation of 0.7725, suggesting that there is high variation across the aggressive firms in the manufacturing sector. The range spans from -200% to a maximum of 600%, signifying that some companies had times of financial decline while others managed to earn profits. Furthermore, the business risk indicator has an average of 57% and a standard deviation of 3.584, suggesting a high level of fluctuation between the mean and the standard deviation. This implies that, on average, firms are exposed to a risk of 57%. 4.83e-07% as the minimum limit and 3400% as the maximum limit. Also, the average value and standard deviation of liquidity among the aggressive firms in the manufacturing sector are 0.78 times and 0.4187, respectively. The liquidity ratio varies between a minimum of 0.05 times and a maximum of 1.44 times. The average firm size in the aggressive manufacturing industry is 9.1842, with a standard deviation of 1.546, a minimum of 6.2646, and highest value of 11.688.

Correlation Matrix

The correlation matrix depicts the association of dependent and independent variables among themselves. According to Gujarati (2004), a correlation coefficient between two independent variables above 0.80 is considered excessive. From the tables below, it can be observed that the association among the predictors were smaller (less than 0.80), which shows the absence of multicollinearity. However, to further test to confirm this result was conducted using variance inflation factor (VIF), where variance factors for each variable are estimated. The result of the VIF test for conservative vary from a least value of 1.23 to a highest value of 1.39 which all falls below 10. Further confirmation buttresses that, the mean VIF is 1.27, equally endorsing lack of multicollinearity among the explanatory variables (Hair, J. J. et al., 2014). Similarly, the result of the VIF test for moderate ranges from a minimum of 1.12 to a maximum of 1.53 which are all less than 10. To further substantiate this claim, the mean VIF is 1.35, also confirming the absence of multicollinearity among all the independent variables. In addition, the VIF test for aggressiveness span from a smallest value of 1.08 to a highest value of 3.91, which are falls below 10. More proof confirm that, the mean VIF is 1.91, also substantiating the multicollinearity absence among the independent variables. The VIF test result for the manufacturing firms fluctuate between 1.05 and 2.32 which are all less than 10. To further substantiate this claim, the mean VIF is 1.58, also confirming the absence of multicollinearity among the independent variables.

Table 4.3: Matrix of correlations for Pooled Data

Variables	CS	NDTS	PRFT	BR	LQ	FS
CS	1.0000					
NDTS	-0.1001	1.0000				
PRFT	-0.0040	-0.0803	1.0000			
BR	0.4549	-0.0718	0.7518	1.0000		
LQ	-0.1314	0.1986	-0.0466	-0.0503	1.0000	
FS	-0.0999	0.0312	-0.0099	-0.0615	-0.2556	1.0000

Table 4.4: Matrix of correlations for Conservative, Moderate and Aggressive Data

	CONSERVATIVE CS DECISIONS' FIRMS						MODERATE CS DECISIONS' FIRMS						AGGRESSIVE CS DECISIONS' FIRMS					
Variable	CS	NDTS	PRFT	BR	LQ	FS	CS	NDTS	PRFT	BR	LQ	FS	CS	NDTS	PRFT	BR	LQ	FS
CS	1.0000						1.0000						1.0000					
NDTS	-0.478	1.0000					-0.199	1.0000					-0.094	1.0000				
PRFT	0.4020	-0.236	1.0000				-0.054	-0.274	1.0000				-0.002	-0.062	1.0000			
BR	0.1048	0.1316	0.1318	1.0000			-0.144	-0.130	0.4474	1.0000			0.4411	-0.082	0.7723	1.0000		
LQ	-0.523	0.3243	-0.364	-0.082	1.0000		-0.388	-0.175	0.2336	0.1504	1.0000		-0.619	-0.142	-0.013	-0.296	1.0000	
FS	0.3611	-0.234	0.3281	0.3686	-0.300	1.0000	0.322	-0.002	-0.171	-0.170	-0.552	1.0000	-0.238	0.2214	-0.039	-0.122	0.082	1.0000

From Table 4.3, it can be observed that the CS of manufacturing firms has a direct linkage with business risk. This leads to conclusion that this variable moves in the same direction as the CS. However, CS has an inverse relationship with non-debt tax shield, profitability, liquidity, and firm size. The implication of this is that the variables move in the opposite direction with CS. Also, from the correlation matrix in Table 4.4, it can be observed that the CS of conservative firms in the manufacturing sector has a positive relationship with profitability, business risk, and firm size. This entails that these variables have direct with CS. However, CS has an inverse effect on non-debt tax shield and liquidity. The implication of this is that the variables move in the opposite direction with CS. Furthermore, the correlation matrix in Table 4.4, it can be observed that the CS of moderate firms in the manufacturing sector has a direct relationship with firm size. This implies that this variable moves in the same direction as the CS. However, CS has an inverse association with non-debt tax shield, profitability, business risk, and liquidity. The implication of this is that the variables move in the opposite direction with CS. In addition, the correlation matrix from Table 4.4, it can be observed that the CS of aggressive firms in the manufacturing sector has a positive relationship with business risk. This implies that this variable moves in the same direction as the CS. However, CS has an inverse association with non-debt tax shield, profitability, liquidity, and firm size. The implication of this is that the variables move in the opposite direction with CS.

Table 4.5: Fixed Effect Robust (VCE) Result for Pooled Data

CS	Coef.	St.Err.	z-value	p-value
NDTS	-9.346	0.7259	-1.29	0.209
PRFT	-1.662	0.1009	-16.4	0.000
BR	0.3259	0.0200	16.28	0.000
LQ	-0.006	0.0063	-0.98	0.336
FS	0.0427	0.0400	-1.07	0.295
Constant	1.6124	0.3902	4.13	0.000
No of obs	280.00	**Wald chi**		
Hausman	0.0000	**Adjusted R^2**		0.7765
Hettest	0.0000	**Prob>F**		0.0000

Table 4.6: Regression Results for Conservative, Moderate and Aggressive CS decisions' firms

Conservative CS decisions' firms					**Moderate CS decisions' firms**				**Aggressive CS decisions' firms**			
CS	**Coef.**	**St.Err.**	**z-value**	**p-value**	**Coef.**	**St.Err.**	**z-value**	**p-value**	**Coef.**	**St.Err.**	**z-value**	**p-value**
NDTS	-3.006	2.3191	-1.30	0.219	-0.6166	0.2103	-2.93	0.003	-2.4415	1.9455	-1.25	0.224
PRFT	0.3118	0.4618	0.68	0.512	0.0143	0.0534	0.27	0.788	-1.7261	0.0240	-71.6	0.000
BR	0.0231	0.0120	1.93	0.078	-0.5132	0.4262	-1.20	0.229	0.3377	0.0043	76.7	0.000
LQ	0.0203	0.0018	11.2	0.000	-0.0397	0.0116	-3.40	0.001	-0.6440	0.5835	-1.10	0.283
FS	0.0394	0.0476	0.83	0.424	0.0027	0.0028	0.96	0.336	-0.1992	0.2778	-0.72	0.482
Constant	-1.439	0.3463	-4.16	0.001	0.5779	0.0397	14.53	0.000	4.5927	2.7375	1.68	0.109
No of obs	82.000				98.000				100.00			
Hausman	0.0467				0.2959				0.0305			
Hettest	0.0000				0.0415				0.0000			
Wald chi					32.02							
Adjusted R^2	0.1386				0.2463				0.6206			
Prob>F	0.0000				0.0000				0.0000			

The details from the tables above show the results obtained from the robust fixed-effect and cross-sectional time series FGLS. The coefficient of determination of R-squared for conservative firms was 0.1386, which indicates about 13.86% of variation in conservative CS caused by variations in independent variables, as shown by the model in Table 4.6; the remaining 86.14% is accounted for by the error term. The R-squared of moderate firms was 0.2463, which shows that 24.63% of the variations in the moderate CS are caused by the combined explanatory variables; the remaining 75.37% are accounted for by the error term. The aggressive firm's CS has an R-squared of 0.6206, which implies that the predicting variables account for about 62.06% of changes in the CS of these firms; the outstanding 37.94 were accounted for by the error term. An R-squared of 0.7765 was attributed to the pooled data of manufacturing firms in Nigeria; this shows that about 77.65% of variations were caused by the predicting variables used in this study; the remaining 22.35% are represented by the error term, which represents elements that were not covered in this study.

Non debt tax shield and CS decision

Hypothesis one which asserts that the non-debt tax shield has no significant influence on the CS decision of a firm, is supported for conservative, aggressive, and pooled data but rejected for moderate data. The non-debt tax shield was not significant for conservative, aggressive, and manufacturing firms, which validates the result of Bashir (2019); Do et al (2020), who also discovered that the non-debt tax shield does not have a relationship with the CSs of firms. However, it was unearthed that the non-debt tax shield has an inverse significant relationship with the CS of moderate firms in the Nigerian manufacturing sector. By implication, there is sufficient evidence to prove that a relationship exists between the non-debt tax shield and the CS of moderate firms in the Nigeria manufacturing sector. Hence, an increase in the non-debt tax shield by 1 unit will lead to a corresponding increase in their CS by 61.66%, all things being equal. As a firm increases its non-debt tax shield, it might tend to prefer a lower level of debt in its CS. It reflects a balancing act between maximising tax advantages and avoiding insolvency risk costs associated with high debt levels. The end result of this study align with the conclusions drawn by (Buvanendra et al., 2017; Khan et al., 2020). The discovery aligns with the principles of TOT, which posits that firms must tradeoff between debt and non-debt tax shields when deciding the optimal CS.

Profitability and CS decision

Hypothesis two which stipulates that profitability has no significant effect on the CS decision of a firm, is supported by conservative and moderate data but rejected by aggressive and pooled data. Profitability was not significant for conservative and moderate firms, which resonates with the Abdullahi and Suleiman (2020); Elbekpashy and Elgiziry (2018); Etale et al (2020) conclusions who also discovered absence of any link between profits and CSs of firms. However, an inverse significant association between earnings and CS of aggressive and pooled manufacturing firms was discovered. By implication, there is sufficient evidence to prove that a relationship exists between profitability and the CS of aggressive and pooled data of manufacturing firms. This outcome prove that a 1 naira rise in profitability is associated with a 1.7261 and 1.662 drop in the CS of aggressive and pooled data of manufacturing firms in Nigeria, with all other conditions remaining the same. The inverse effect between earnings and CS of these firms may be attributed to the reduced reliance on external funding by financially successful enterprises (Myers & Majluf, 1984). The results align with previous research conducted by 'Afey and Warui (2019); Hailegebreal and Wang (2018); Khan et al (2020); Liang et al (2020); Pontoh and Budiarso (2018), who identified a substantial correlation between profitability and CS. The discovery is in line with postulation of POT, which explains how firms prioritise different sources of financing based on their internal hierarchy of preference and suggests that firms with higher profitability have greater internal funds to finance their activities, reducing their reliance on debt financing.

Business risk and CS decision

Hypothesis three which specifies that business risk has no significant effect on the CS decision of firms, is supported by moderate data but rejected by the conservative, aggressive, and pooled data of manufacturing firms in Nigeria. Business risk was not significant for moderate firms, which is consistent with the findings of Khan et al (2020); Yanti et al (2022), who also discovered lack of relationship between business risk and CSs of firms. However, it was discovered that business risk has a significant but positive relationship with the CS of conservative, aggressive, and pooled data of manufacturing firms. This evidence demonstrate that a 1% rise in business risk is associated with a proportional increase of 0.0231, 0.3377, and 0.3259 in the CS of conservative, aggressive, and pooled data of manufacturing firms in Nigeria, assuming a constant environment. This finding could be connected to the potential incentives for certain firms to incorporate higher levels of debt into their CS. Similarly, the finding support the previous studies conducted by 'Do et al (2020); Tahir et al (2020) who have identified a statistically significant relationship between business risk and CS. However, the finding contradicts the TOT, which expects a significant negative relationship between business risk and CS. The observed direct relationship suggests that agency costs are lesser in higher risky firms as a result of least underinvestment problems, permitting such entities to lean on higher gearing ratios. This direct relationship may be due to

distressed borrowing in a contentious economic environment.

Liquidity and CS decision

Hypothesis 4 which declares that liquidity has not significant effect on the CS decision of firms, is supported by aggressive and pooled data of Nigerian manufacturing firms but rejected by conservative and moderate data of NLMF. Liquidity was not significant for aggressive and pooled data firms, which is in line with the findings of Abdur Rouf (2018); Sashata (2021), who also documented that liquidity have no relationship with the CSs of firms. However, a significant direct effect of liquidity on CS of conservative firms and an inverse relationship with moderate manufacturing firms' data was discovered. This signifies that a 1 percent upward in the liquidity of conservative Nigerian manufacturing firms will result in a 0.0203 increase in the CS of these firms, while a 1% increase in the liquidity of moderate firms would result in a drop in CS of 0.0397 respectively. This phenomenon may be attributed to the tendency for firms in the manufacturing sector to possess ample current assets, enabling them to fulfil their immediate financial responsibilities. The outcome of the investigation align with the POT. The deduction of the conservative firms, however, contradict the POT but align with the TOT. Also, the finding is congruent with the findings of (Abdullahi & Suleiman, 2020; Khan et al., 2020; Mbonu & Amahalu, 2021).

1. Conclusion and Recommendations

As derived by the investigation, the study concludes that firm attributes strongly drive the CS of manufacturing firms in Nigeria. Amongst the firm characteristics is the non-debt tax shield, and it was concluded that it had a negative and significant effect on the CS of moderate firms in the Nigerian manufacturing sector during the period under review. This is in accordance with the position of the tradeoff theory, which predicts a negative relationship between the non-debt tax shield and CS. Also, the study concludes that profitability had a significant and negative relationship among aggressive and pooled data of the manufacturing firms; this aligns with the POT. Similarly, liquidity had a significant and negative relationship with the CS of moderate firms, while a positive relationship was established for conservative firms in the manufacturing sector during the period under study. In addition, the study concludes that business risk has a significant and positive relationship with the CS decision of conservative, aggressive, and listed Nigerian manufacturing firms pooled data; this, however, contradicts the TOT. Derived from the analysis and consistent with the conclusions made, the following recommendations were put forth: Financial managers of Nigerian manufacturing firms should use the non-debt tax shield to minimize financial distress costs, prioritize profitability strategies like cost management and revenue growth to improve financial flexibility, evaluate the CS of listed manufacturing firms by considering business risk through diversification, and expansion strategies. In addition, strike a balance between debt uncertainties and benefits, regulatory bodies should ensure firms maintain adequate liquidity levels to reduce short-term debt and maintain a stable CS decision. This can be achieved through evaluating lending policies, reducing surplus inventory, and imposing reserve requirements.

Much like other studies, this research work encountered some constraints. These include the fact that the focus was on Nigerian manufacturing firms, specifically 28 firms listed on the Nigeria Exchange Group, which is a small proportion of the total number of listed firms. The study used only four explanatory variables and focused on the debt-to-total assets ratio, even though alternative metrics exist. Lastly, additional research is recommended to investigate Nigeria's CS in various sectors, explore indicators like short-term debt-to-assets ratio and interest coverage ratio, compare the CS decision of manufacturing firms in West African nations with similar traits to Nigeria, and extend the research to a broader period. This will provide substantiated proof for investors and other stakeholders.

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