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Capital Structure and Financial Sustainability of Micro, Small and Medium Scale Enterprises in Northeastern Nigeria

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ABSTRACT

This study empirically assesses the effect of capital structure on the financial sustainability of micro, small and medium-scale enterprises (MSMEs) in Northeastern Nigeria. Using the fixed effects method, the research analysed panel data of 174 MSMEs across the six (6) states from 2018-2023. Further evidence was provided using the random effect technique. The finding shows that short-term debt negatively influences financial sustainability, while long-term debt financing may lead to sustainable performance. The result implies that MSMEs should prioritise securing long-term borrowing to enhance their performance and attain financial sustainability. Policymakers and regulators should not relent in providing long-term financing opportunities to MSMEs for consistent growth.

1. INTRODUCTION

Involvement in sustainability practices to attain the cardinal objective of United Nations Development goals has now been the emphasis of many organisations globally. One of the fundamental principles in the sustainability framework is achieving economic sustainability for the benefit of diverse stakeholders (Almulhim & Aljughaiman, 2023; Musabayana et al., 2022; Shakil et al., 2024). Also, in the contemporary business discourse, analysts, academics, investors, and policymakers have engaged in extensive discussions regarding the determinants of corporate sustainability due to its linkage to business growth and survival (Abereijo & Fayomi, 2005; Barriga & Escandon-Barbosa, 2024; Rao et al., 2021). Sustainability is a fundamental mechanism that may enable a business to succeed in the long run and meet the needs of different stakeholders. It focuses on tapping sufficient revenue to meet future financial obligations and continuing as a going concern (Owen et al., 2023; Thi, 2022; Wu et al., 2024). Financial sustainability enables companies to minimise insolvency and refinancing risks, and financially sustainable firms may be associated with lower agency conflicts and greater value (Di Vaio et al., 2023; Ghardallou, 2022). Sustainable growth strategy and financial sustainability focus on a firm's ability to generate sufficient revenue and accelerate steady growth (Githaiga & Kosgei, 2023; Shakil et al., 2024). Thus, sustainable growth is a crucial determinant of financial sustainability, implying that sustainable growth models can be utilised to measure firms' financial sustainability.

Drawing from the Modigliani and Miller theory, trade-off and pecking order views, capital structure choices may enable a firm to attain financial sustainability. Selecting an appropriate mixture of debt and equity may mitigate external financing risks and facilitate the attainment of optimum leverage, thereby reducing default risk (Ardalan, 2017; Fama & French, 2002; Modigliani & Miller, 1963; Myers, 1984). Accordingly, many studies suggest that capital structure decision drives sustainable value creation (Bogan, 2012; Kong et al., 2023). The capital structure is the combination of different financing sources that a business uses to maximise its value (Abor & Biekpe, 2006; Kim et al., 2024; Myers, 2001). Failure to determine the appropriate mixture of financing sources may negatively affect the cost of capital and profitability, thus threatening business survival (Wu et al., 2024; Yazdanfar & Öhman, 2020). Hence, the foregoing review established that capital structure may influence corporate financial sustainability. However, most empirical studies on the link between capital structure and financial sustainability dwelled on large listed companies (See, for instance, Al-Duais et al., 2021; Almulhim & Aljughaiman, 2023; Kong et al., 2023). The contribution of micro, small and medium-scale enterprises (MSMEs) has been recognised globally. They assist economies in job creation, wealth generation and economic growth (Barriga & Escandon-Barbosa, 2024; Musabayana et al., 2022; Rao et al., 2021).

This research concentrates on the MSMEs in northeast Nigeria for several reasons. Firstly, government agencies and other non-governmental organisations in Nigeria have offered different interventions and financing options for MSMEs because they contribute to job creation and wealth generation. However, despite these interventions, Nigerian MSMEs face severe economic challenges, such as unstable growth and unhealthy financial operations. These problems appear more severe in the northeastern region, as the Nigerian Small and Medium Scale Enterprises agency indicates. Some identified issues responsible for the MSMEs' failure include working capital management problems and inefficient capital structure strategies. Thus, organisations in Nigeria need to embrace financial sustainability strategies to enhance their financial performance and create long-term wealth. Therefore, this study examines the relationship between capital structure and the financial sustainability of MSMEs.

The research provides further insights into the sustainability literature. It sheds light on the determinants of financial sustainability for MSMEs. This analysis contributes to the literature regarding financial sustainability indicators for MSMEs. Further, analysing the implication of various financing sources on sustainable growth extends the existing knowledge by revealing that corporate finance theories can apply to MSMEs and not only large firms. Moreover, the research outcome may guide managers in selecting the appropriate financing sources to boost firm value for sustainable performance.

The other parts of this paper contain the literature review and methodology. The fourth section focuses on results presentation and discussion, followed by robustness checks. The final section concludes the paper.

2. LITERATURE REVIEW

Several theories underpin the nexus between capital structure and business sustainability. One such framework is the trade-off theory. According to this view, businesses are required to attain an optimum debt-equity level to enhance their performance (Fama & French, 2002; Myers, 1984). However, this theory argues that debt financing is associated with cost and benefits (Myers, 2001). The benefit of debt usage may include an interest tax shield advantage because interest on a loan appears to be a deductible expense in tax computations. On the other hand, the cost of debt may consist of the probability of bankruptcy or liquidation because failure to repay the principal and accompanying interest may threaten business survival (Agyei et al., 2020; Shyam-Sunder & Myers, 1999). Consequently, the theory concludes that businesses are expected to operate at an optimum mixture of debt and equity to enhance their profitability for sustainable value creation.

The pecking order theory may also be relevant in MSMEs' capital structure analysis. This perspective predicted that because of information asymmetry between managers and outsiders, firms have a hierarchy of financing sources when they require additional capital to finance their new investment (Chen, 2004; Myers & Majluf, 1984). The theory argues that internal financing is cheaper than external financing due to asymmetric information costs accompanying external financing (Fama & French, 2002). Also, when securing external funding becomes necessary, a loan is preferable to raising fresh stock (Shyam-Sunder & Myers, 1999; Sofat & Singh, 2017). The pecking order theory sheds light on the cost implications of raising internal and external finances when a firm wants to undertake a new investment proposal. Thus, MSMEs need to be mindful of financing costs for sustainable performance.

The empirical literature identified different financing options available to MSMEs. Among them are short-term borrowings, long-term loans, government grants, and interventions (Molina-Garcia et al., 2022). Others include venture capital and interventions from the private sector. These funding sources are primarily the main composition of MSMEs' capital structure. It is indicated that selecting the appropriate sources of capital helps minimise agency conflicts, enhance financial flexibility and limit bankruptcy probability (Abor & Biekpe, 2006; Bogan, 2012). In this regard, several studies have appraised the role of short-term borrowing in promoting sustainable performance. Short-term loans require frequent refinancing, and MSME managers are expected to work hard and generate sufficient cash flow to repay such a burden (Yazdanfar & Öhman, 2020). Thus, this financing method helps constraint managers from inefficient investment policies. In this regard, many studies reported a positive association between short-term borrowing and business sustainability.

In contrast, a stream of the literature contended that short-term loans might expose MSMEs to financial instability when creditors cannot roll over such loans (Abereijo & Fayomi, 2005; Dang et al., 2022; Kong et al., 2023). Hence, MSMEs may need to secure long-term loans for sustainable growth. Long-term borrowing is a loan with more than one year of repayment. Accordingly, studies recommend that MSMEs secure long-term loans due to the advantages businesses can derive from such an alternative method. Such as lower interest, little interference from creditors and greater financial flexibility. Studies argued that long-term financing is preferred for MSMEs' survival because it may give managers ample time to initiate and design a robust financial strategy for long-term investment opportunities (Owen et al., 2023; Rao et al., 2021). Therefore, studies that share such views reported that long-term borrowing might positively impact the sustainability of MSMEs. Based on the preceding review, the following hypotheses are formulated:

H1: A significant negative association exists between short-term debt and the financial sustainability of micro, small and medium-scale enterprises in Northeastern Nigeria.

H2: There is a significant positive association between long-term debt and financial sustainability of micro, small and medium-scale enterprises in Northeastern Nigeria.

3. METHODOLOGY

3.1 Sample and data

The population of this study comprises all registered MSMEs in the Northeastern states. The registered MSMEs list was collected from SMEDAN offices across the states. The research focuses on registered MSMEs because they have a more established operating system. Thus, their financial records may be relied upon by researchers. Regarding the study sample size, a stratified sampling method was employed. Accordingly, in each state, the registered MSMEs were classified into three strata (3): the micro, small and medium businesses. Afterwards, random sampling was undertaken in each stratum to construct the sample size using the Krejcie and Morgan sampling criteria. The final sample covers 174 MSMEs across the six (6) states from 2018-2023. The study used secondary data sources through the financial statements of MSMEs domiciled at SMEDAN.

3.2 Variables

The research variables are categorised into dependent, independent, and control variables. The dependent variable is financial sustainability (FS), measured using Higgins's (1977) growth model. The main objective of the model is that firms should ensure that their growth objective is consistent with their financial policies. The model is given as:

$$SGR\ (\%) = PM * AT * FL * ERR$$

Where SGR = sustainable growth rate, PM = profit margin (net income after tax/revenue), AT = assets turnover (revenue / total assets), FL = Financial leverage (total debt / total assets) and ERR = earnings retention rate (retained earnings / net income after tax)

The independent variable is capital structure, measured using short-term debt (STD) and long-term debt (LTD). Following extant literature, STD was calculated as the short-term debt over total assets, while LTD was determined as the long-term borrowings over total assets (Ibrahim & Zulkafli, 2023; Sani et al., 2020). Additionally, this study employed some control variables in order to empower the model and avoid misspecification bias. These variables are firm size (FSIZE), tangibility (TANG) and age (AGE). Fsize was measured as the logarithms of total assets, while TANG was computed as the ratio of fixed assets over total assets (Ezeani et al., 2023; Özer & Merter, 2023). AGE was calculated as the number of years an MSME registered with SMEDAN during an observation period (Ezeani et al., 2022; Sani, 2020). These variables were employed because prior studies have found they can influence firms' financial sustainability (Barriga & Escandon-Barbosa, 2024; Dang et al., 2022; Kong et al., 2023; Shakil et al., 2024).

3.3 Estimation model

This study employed a regression analysis to examine the effect of capital structure on financial sustainability. The research finds it necessary to use a panel data methodology because the sampled data cut across 174 MSMEs over 6 years. Panel data methodology is widely applied in similar studies because of its advantages. It produces large data points and more degrees of freedom, generating consistent estimates (Githaiga & Kosgei, 2023; Hsiao, 1985; Pesaran, 2015). The study adopts a fixed effect analytical framework based on the suggestion of the Hausman test outcome, which indicates a significant p-value (Gujarati, 2003; Pesaran, 2015). Thus, the study specified the following empirical models using financial sustainability as the dependent variable:

$$FS_{it} = \emptyset + \beta_1 STD_{\text{it}} + \beta_2 LTD_{\text{it}} + \beta_3 FSIZE_{\text{it}} + \beta_4 TANG_{\text{it}} + \beta_5 AGE_{\text{it}} + \mu_i + \varepsilon_{it} \qquad (1)$$

Where:
FS = Financial sustainability
STD = Short-term debt ratio
LTD = Long-term debt ratio
FSIZE = size of the organisation
TANG = Tangibility
AGE = Age of MSME
μ_i = firm effect
ε_{it} = error term
$\emptyset$ = regression intercept

4. RESULTS AND DISCUSSION

4.1 Descriptive results

Table I displayed the summary statistics of the variables in the specified models. It indicates a mean of 14.62 for the financial sustainability index (FS). The variable shows a large standard deviation because of the large margin between the minimum and maximum values. The evidence reveals that short-term debt ratio (STD) and long-term borrowing (LTD) represent 29% and 8% of the capital employed by MSMEs. The size of the organisation (FSIZE) exhibits minimum and maximum values of 4.15 and 7.64,

respectively. On average, the tangibility ratio (TANG) shows that the fixed assets investment of the MSME represents 13% of their total composition. AGE displays a mean of approximately 4 years, with a lower and higher value of 2 and 13 years, respectively.

Table I: Descriptive results

Variable	Mean	Std. Div.	Min.	Max.	Observations
FS	14.62	4.76	8.00	72.00	1044
STD	0.29	0.22	0.00	0.53	1044
LTD	0.08	0.61	0.00	0.38	1044
FSIZE	3.51	1.16	4.15	7.64	1044
TANG	0.13	0.86	0.04	0.61	1044
AGE	3.52	2.49	2.00	13.00	1044

FS = financial sustainability, STD = short-term debt, LTD = long-term debt, FSIZE = size of the organisation, TANG = tangibility and AGE = age of the MSME.

4.2 Correlation results

The correlation matrix of the variables is reported in Table II. According to the results, the correlation coefficients of the explanatory variables are not above 80 percent. This suggests the absence of multicollinearity in the models (Alshareef & Sulimany, 2024; Pesaran, 2015). Further, the variance inflation indicators (VIF) are lower than 10, reinforcing the absence of multicollinearity among the explanatory variables.

Table II: Correlations matrix

Variable	FS	STD	LTD	FSIZE	TANG	VIF
FS	1.000					
STD	0.099**	1.000				1.13
LTD	0.127***	0.087**	1.000			1.28
FSIZE	-0.013	0.074	-0.089***	1.000		1.13
TANG	0.053*	0.244***	-0.276***	0.062*	1.000	1.72
AGE	-0. 216***	0.318***	0.113**	0.030	0.471***	1.12

*, ** and *** show significance level at 1%, 5% and 10%, respectively.
FS = financial sustainability, STD = short-term debt, LTD = long-term debt, FSIZE = size of the organisation, TANG = tangibility and AGE = age of the MSME.

4.3 Regression results

The research applied the Hausman test to select the appropriate analytical framework between random and fixed effects, and the test outcome indicated a significant P- value. Therefore, this work adopts the fixed effect over the random effect model because of this significant result (Gujarati, 2003; Hausman, 1978). Accordingly, the regression results of the fixed effects model are shown in Table III. The R square of the model reveals that the explanatory variables explained 11.29% of the financial sustainability variations. Also, the F-statistics appear significant, showing the robustness of the stated model.

Table III: Regression results (Fixed effects)

Variables	Coefficient /stand. error
Constant	0.7203 (0.30266) **
STD	-6.3662 (1.2724) ***
LTD	6.9071 (1.3881) ***
Control variables:	
FSIZE	1.0375 (0.5339) ***
TANG	0.2524 (0.1449) *
AGE	0.0356 (1.7482)
Year dummies	Yes
Industry dummies	Yes
R^2	0.1129
F-statistics	19.31
Prob F-statistics	0.0000

***, ** & * show significance level at 1%, 5% and 10% respectively.
STD = short-term debt, LTD = long-term debt, FSIZE = size of the organisation, TANG = tangibility and AGE = age of the MSME.

According to the results in Table III, there is a significant negative relationship between short-term debt and financial sustainability, supporting **H1**. The finding implies that as short-term borrowing increases, financial sustainability may decrease. The outcome supports prior studies that argued that short-term loans might expose firms to financial instability when creditors cannot roll over such loans (Abereijo & Fayomi, 2005; Dang et al., 2022; Kong et al., 2023). This instance may distort firms' financial conditions, reducing sustainable performance. The coefficient of long-term debt appears positive and significant, confirming **H2**. The positive result suggests that long-term debt financing may lead to greater financial sustainability. The finding aligns with the studies that recommend the need for MSMEs to secure long-term loans due to the advantages they can derive. Such incentives include lower interest, little interference from creditors and greater financial flexibility (Owen et al., 2023; Rao et al., 2021). This greater flexibility may enable MSMEs ample time to initiate and design a robust financial strategy for long-term investment opportunities, resulting in sustainable performance. The policy implication of the above findings is that MSMEs need to secure long-term loans for sustainable growth. Some of the control variables appear consistent with prior studies. The coefficient of FSIZE suggests that larger MSMEs may be associated with financial sustainability due to their track records and sound financial system. Similarly, TANG indicates that MSMEs with higher fixed assets may record greater sustainable performance. However, AGE shows an insignificant coefficient, suggesting the variable is weak in the specified model.

4.4 Robustness check

Additional analysis was carried out using the random effects analytical techniques, which are contained in Table IV. The essence of this further analysis is to assess the robustness of the results in Table III. Based on the results, the main explanatory variables maintained their initial sign and magnitude, as shown in Table III. The outcome still emphasises that short-term debt negatively influences financial sustainability, while long-term debt financing may lead to sustainable performance. Hence, the research findings appear robust using the fixed and effects analytical techniques.

Table IV: Regression results (Random effects)

Variables	Coefficient /stand. error
Constant	0.6392 (0.3187) **
STD	-5.0266 (1.0612) ***
LTD	6.1944 (1.1393) ***
Control variables:	
FSIZE	0.2323 (0.4082)
TANG	0.8475 (1.1747)
AGE	0.0331 (0.01924) *
Year dummies	Yes
Industry dummies	Yes
R^2	0.1063
Wald-statistics	44.98
Prob > chi2	0.0000

***, ** & * show significance level at 1%, 5% and 10% respectively.
STD = short-term debt, LTD = long-term debt, FSIZE = size of the organisation, TANG = tangibility and AGE = age of the MSME.

5 CONCLUSION

Government agencies and other non-governmental organisations in Nigeria have offered different interventions and financing options for MSMEs because they contribute to job creation and wealth generation. However, despite these interventions, Nigerian MSMEs face severe economic challenges, such as unstable growth and unhealthy financial operations. These problems appear more severe in the northeastern region, as indicated by the Nigerian Small and Medium Scale Enterprises Agency (SMEDAN). Some identified issues responsible for the MSMEs' failure include working capital management problems and inefficient capital structure strategies. Therefore, this research examines the effect of capital structure on the financial sustainability of MSMEs in North Eastern Nigeria. Using the fixed effects method, the study analysed panel data of 174 MSMEs across the six (6) states from 2018-2023. Further evidence was provided using the random effect technique. The finding shows that short-term debt negatively influences financial sustainability, while long-term debt financing may lead to sustainable performance. The result implies that MSMEs should prioritise securing long-term borrowing to enhance their performance and attain sustainable growth. Policymakers and regulators should not relent in providing long-term lending to MSMEs for long-term value creation and consistent growth.

While the study provides further insight into the determinants of financial sustainability, future studies can verify the results by focusing on other regions in Nigeria. Likewise, future studies can deploy other proxies to measure financial sustainability for further evidence. Additionally, different variables not captured in this study can be employed to confirm the findings of this research.

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