

Effect of Capital Structure on the Financial Performance of Listed Brewery Industries in Nigeria.

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ABSTRACT

This study examined the effect of capital structure on the performance of brewery companies listed on the Nigerian Exchange Group. The study adopted an ex-post facto research design. The study used a sample of four listed brewery companies on the Nigerian Exchange Group. The secondary source of data was collated from the annual reports of the companies for the period 2021 to 2015. Data were analysed using multiple regression analysis. Results showed that there is a negative and significant relationship between the total debt ratio and both return on assets and return on equity of brewery companies listed on the Nigeria Exchange Group, while the total debt to assets ratio has a positive effect on Tobin's Q. The results also indicated that the F-statistics are 10.4941, 21.2366, and 5.3740, with probabilities of 0.000, 0.000, and 0.0041, indicating that the combined effect of the explained variables on firm performance, represented by return on assets, equity, and Tobin's Q, is statistically significant. Therefore, the study recommended that listed companies should watch their continued use of the debt-to-assets ratio in their operations carefully to achieve better performance.

Keywords: Capital Structure, Firm's Performance, Firms' Size, Return on Assets, Return on Equity.

INTRODUCTION

The importance of capital structure has garnered significant attention in the empirical financial literature. The prevailing question has been, why do a firm's managers need to be very careful in the choice of capital structure? Is there an optimal level of capital structure? The theoretical past studies in finance offer three different alternative models to answer the above-mentioned prevailing questions, namely agency theory, pecking order theory, and trade-off theory. Many researchers have conducted empirical studies on the impact of capital structure on the performance of firms within the theoretical framework of these three alternative models.

Recent researchers on the impact of capital structure on firm performance have been focusing their empirical studies on developing economies, as shown in the studies undertaken by Lukuman, Daud, and Yusuf (2019). Luu (2021), Mai (2021), Ater (2017), Nguyen (2020), Mischelle (2021), Divya and Puma (2017), Nenu, Vintila, and Gherghina (2018), AL-Taani (2013), Mathewos (2016), and Hani and Zoubour (2019) have conducted studies on the relationship between capital structure and firm performance in Nigeria. However, studies conducted by Ugwoke and Sergius (2019), Rosink (2020), Asen, Nwude, Idamoyibo, and Udo (2021), Abubaka (2021), Ajayi and Obisesan (2020), Ajibola, Wisdom, and Qudus (2018), Christoph (2018), and Alhassan (2021) provide the majority of the available data. Iyoha and Umoru (2016), Ubesie (2016), Oino and Ukeagbu (2015), Ihenetu, Iwo, and Ebiware (2016), Sebastain and Onuegbu (2018), Oyedeji (2019), Yinusa, Ismail, Yulia, and Olawale (2019). However, the impact of capital structure on the performance of selected

listed brewery firms in Nigeria has received very little attention. Amah and Ken (2016) looked at the capital structure composition and financial performance of firms in the brewery industry between 2004 and 2013 using only Tobin's Q as a measure of performance. Ubesie (2016) examined the factors influencing capital mix in developing economies, drawing evidence from the Nigerian brewery industries. And Sylvester (2020) looked at how financial leverage affected a company's performance in the Nigerian brewery industry between 2008 and 2009 using ROI as a measure of performance. The literature failed to provide any conclusive evidence about the relationship between capital structure and firm performance. The inconclusive findings from previous literature highlight the relevance of this study. Moreover, the majority of studies in this field have not implemented robust tests to improve the validity and reliability of the statistical inferences derived from their findings. However, the current study conducts Hausman, heteroskedasticity, and Lagrangean tests, among others. This study, however, fills the gap in the literature by not only conducting Hausman, heteroskedasticity, and Lagrangean tests, among others, but also extending the work to cover recent years, 2014-2018. This study, therefore, examines the effect of capital structure on the performance of the listed brewery industries in Nigeria from the period of 2014 to 2016.

LITERATURE REVIEW

A firm's capital structure refers to arranging capital from various sources in order to meet the need for long-term funds for the company. Financial capital is an uncertain yet crucial source for all firms, as the financier has the ability to exert control over them. There are two different methods of funding the assets of an organization: through internal equity or external debt. Capital structure refers to the proportion of equity as well as debt financing that a firm utilizes to carry out its operations and grow (Luu, 2021). To ensure sustainable business development in a competitive environment, the manager must establish an appropriate environment and financial policy. A firm's optimal capital structure is a combination of debt and equity financing that maximizes the firm's market value while minimizing the cost of capital.

Ugwoke and Sergius (2019) support this, emphasizing that in order for a business organization to compete favorably with other companies, it must confront conditions that encourage creativity in securing the most effective sources of financing. The capital structure decision is a crucial strategic decision for the company, as it significantly influences the company's risk profile and bank lending decisions.

Theoretically, debt financing offers the least cost of capital due to its tax deductibility. However, too much debt increases the financial risk to the shareholders and the return on equity that they require. The financial managers have to ascertain the optimal point at which the marginal benefit of debt equals the marginal cost. A sound capital structure policy not only enables firms to fully leverage the benefits of financial leverage but also reduces potential financial risks, thereby boosting firm performance (Ater, 2017; Mai, 2021).

Capital structure, according to Mai (2021), is one of the most popular topics among scholars in the finance field. Capital structure closely relates to a firm's ability to meet the needs of its stakeholders. Therefore, we cannot ignore this crucial fact. Capital structure in financial terms means the way a firm finances its assets through the combination of equity, debt, or hybrid securities (Oyededeji, 2019). In short, capital structure is essential to how a firm finances its overall operations and grows by using different sources of funds.

Based on the trade-off theory and the pecking order theory, previous studies have found that capital structure variables like the debt-to-equity ratio, the total debt-to-assets ratio, the long-term debt-to-assets ratio, and the short-term debt-to-assets ratio affect performance. We measure the relationship between capital structure as the ratio of total debt to total assets. Luu (2021) aligns with this, and we will discuss other dependent variables below.

According to the pecking order theory, firms tend to favor internal finance over external finance, primarily due to the asymmetry of information when making financing decisions. When external sources are required, a firm will prefer debt capital to equity capital. Therefore, we expect firms with higher retained earnings to have larger cash reserves for internal funds (Ajayi and Obisesan, 2020; Hani and Zoubour, 2019). Therefore, we expect a negative relationship between capital structure and firm performance. Numerous studies suggest that

capital structure significantly influences performance, demonstrating a negative relationship between capital structure and firm performance. Among authors who have tested and confirmed the prediction of this theory are Abeywardhana (2016), Nwude and Anyalechi (2018), Hani and Zoubour (2019), and Ajayi and Obisesan (2020).

According to Mai (2021), the capital structure of many firms has significantly influenced their performance over time, as it provides financial resources through debt and owners' equity. Every business organization typically bears the responsibility of generating returns. This is crucial because a firm's future survival greatly influences its capacity to generate adequate and appropriate returns in a global and competitive business environment. Henry and Kenn (2017) defined performance as a veritable tool that measures how well a business organization uses its resources in generating profit. Performance, both financial and market, therefore, is crucial to any business entity's survival and continuous patronage by investors, both existing and potential, and other stakeholders in the business world (Kinyua, 2016).

The trade-off theory predicts a positive relationship between return on assets, return on equity, Tobin's Q, and capital structure. The pecking order theory, on the other hand, predicts the opposite return on assets was chosen because it is an indicator of how profitable a firm is relative to its total assets, and it gives an idea of how efficient management is at making use of its assets to generate revenue. Thus, the calculation involves dividing a firm's net income by its total assets (Gideon, 2020). We chose return on equity as one of the most important profitability metrics. It reveals how important profitability metrics are. It reveals how much profit a firm earned in relation to the total amount of shareholders' equity fund on the statement of financial position. Ugwoke Sergius (2019) calculates it by dividing net income by shareholders' equity. Tobin's Q is widely used as a proxy for operating performance in studies of corporate governance. It is the ratio between a physical asset's market value and its replacement value. The calculation of Tobin's Q involves dividing the market value of shares and the book value of liabilities by the book value of assets (Luu, 2021; Do, 2020 & Mai, 2021).

Firm size is an important factor affecting capital structure in this study; small firms suffer more severe information asymmetry (Yolandafitri and Muthia, 2019), have more financial constraints, and, as a result, they are more likely to suffer financial distress (Olawejaju, 2018). Also, the cost of external financing is smaller for bigger firms because of economies of scale resulting from a substantial fixed cost component of security issuance costs. The natural logarithm of fixed assets measures the size of firms. We expect a positive relationship between firm size and capital structure. The trade-off theory predicts a positive relationship between a firm's size and debt, considering that larger firms have lower monitoring costs, less agency debt, easier access to the credit market, and need more debt to fully benefit from the tax shield (Songul, 2015). The pecking order theory asserts an inverse relationship between size and debt, suggesting that larger firms reveal more information to external investors than their smaller counterparts (Alexis, Bagher, and Milad, 2016).

REVIEW OF EMPIRICAL LITERATURE

Iyoha and Umoru (2016) used data estimation techniques to investigate the link between capital structure and business financial performance in Nigeria from 2010 to 2014 and discovered that leverage does not appear to demonstrate causality with financial performance (RETOA), the other way around. Bidirectional causality between current liabilities expressed as a ratio to equity (CULEQ) and current liabilities appears to exist (RETOA). Furthermore, a causal relationship exists between equity, expressed as a percentage of total assets (EQTTA), and return on equity (RETOA). The study came to the conclusion that in Nigeria, financial performance influences capital structure, and vice versa. The previous study employed data estimation techniques; however, the current study will make use of pooled ordinary least squares regression, fixed effects, and random effects regression methods of regression analysis instead. This research also accounted for the impact on financial performance of utilizing the complete capital-ownership structure. When looking at the financial performance of Nigerian listed conglomerates from 2011 to 2015, Ubesie (2016) studied the impact of capital structure. Descriptive statistics and ordinary least squares regression analysis methods revealed a capital structure effect on conglomerates' return on assets, turnover, and earnings per share. We found that an in-depth examination of the business factors affecting a certain industry is necessary to reap the benefits of a

debt-to-equity ratio. Previous research relied on descriptive statistics and ordinary least squares regression analysis, but this study used pooled ordinary least squares regression analysis, fixed effects, and random effects methods.

Amah and Ken (2016) studied the capital structure and financial performance of Nigerian brewery enterprises from 2004 to 2013, using Tobin's Q as a measure of performance. The capital structure composition (current liability to total assets, total liability to total assets, debt-to-equity, and debt-to-asset) negatively correlates with firm performance. The pecking order theory revealed that business performance was unaffected by the composition of the capital structure. Similar to the current study, this one analyzed data from Nigeria. The two studies differ in their methodology, subject matter, and the metric used to gauge financial performance. As compared to the previous study, which focused on the brewery sector and only used Tobin's Q as a performance indicator, this one looked at the ROA, ROE, and Tobin's Q indicators for all of the listed brewery firms. Abeywardhana (2016), on the other hand, used Pearson correlation and multiple regression models to examine the effect of capital structure on company performance. Data from UK manufacturing SMEs reveals a negative correlation between company performance and leverage (ROA and ROCE), a negative correlation between liquidity and firm performance, and a significant correlation between size and firm performance. According to the findings, high-performing companies don't rely on borrowed capital and instead fund their operations with retained earnings, while small and medium-sized enterprises (SMEs) in particular have less access to external financing and experience borrowing issues. To estimate data and assess performance, the reviewed study employed multiple regression, while the current study used pooled ordinary least squares, fixed effects, and random effects, as well as ROA, ROE, and Tobin's Q to estimate data and measure performance.

From 2008 to 2016, Henry and Kenn-Ndubuisi (2017) looked at the impact of Nigerian firms' capital structure and board structure on performance. There was a negative but not statistically significant correlation between Nigeria's capital structure and board size, as well as a negative but not statistically significant correlation between the size of the board and performance (ROA and ROE). A negative correlation exists between capital structure and profitability, implying that high-leverage enterprises will experience lower profitability due to their higher-than-ideal debt levels. Sebastain and Onuegbu (2018) conducted research on the impact of the Nigerian capital structure on company performance. We conducted a statistical analysis of the consumer goods industry from 2002 to 2016. We used the ROA as a performance metric. Capital structure has a negative and minor impact on the performance of Nigerian consumer goods firms, according to the results of the study. Return on assets was negatively and insignificantly affected by the long-term debt-to-total-assets ratio, while the total debt-to-equity ratio was negatively and insignificantly affected by ROA.

According to the findings, the capital structure of a company has little bearing on its success. This study also used Nigeria as a case study. This study compared the consumer products research by Sebastain and Onuegbu (2018) with their assessment of brewery businesses. The evaluated study only measured ROA using the standard least squares method. Ajibola, Wisdom, and Qudus (2018) used the same methods as Sebastain and Onuegbu (2018) to investigate the capital structure and financial performance of listed manufacturing enterprises in Nigeria between 2005 and 2014. Long-term debt ratios have a statistically significant positive correlation with ROE, while short-term debt ratios have a statistically negligible positive correlation, according to the findings. All of the capital structure proxies (LTD, STD, and TD) have a negative, insignificant connection with ROA; hence, ROE is a stronger performance indicator. The findings suggest that companies should use long-term debt more frequently due to its beneficial impact on firm performance. Based on ROA, ROE, and Tobin's Q, the current study calculated data using a pooled ordinary least squares fixed effect and random effect regression model for the listed brewery companies.

Hani and Zoubour (2019) studied the Middle East banking sector's capital structure and performance. From the bank's annual report, researchers obtained secondary data. Descriptive statistics show that total debt and short-term debt positively impact the Middle East banking sector's ROE. However, the results showed that total debt and short-term debt had a negative and considerable impact on ROA. According to the findings, international and national regulatory boards have a significant impact on the design of a company's capital structure. As Nguyen (2019) found in research on the food and beverage industries in Vietnam, there is a strong correlation between leverage and the performance of these businesses. Nguyen (2019) found a negative correlation

between company performance and capital structure. Additionally, Salam and Shourkashti (2019) found an inverse association between capital structure and firm performance in Malaysia, whereas Sathyamoorthi, Pritika, Dzimiri, and Wally-Dima (2019) found an inverse relationship between capital structure and firm performance in Botswana. The current study focused solely on publicly traded ICT firms, estimated data using a combination of pooled ordinary least squares, fixed effects, and random effects regression techniques, and calculated ROA, ROE, DPS, and Tobin's Q to assess the performance of the companies.

In addition, Oyedeji (2019) analyzed data from listed manufacturing firms over a seventeen-year period (1990-2016) using a panel unit root test, Pedroni co-integration tests, and the panel vector error connection method to uncover the dynamic relationship between capital structure and quoted manufacturing firms' performance (PVECM). The results showed that in Nigeria, there is a long-term link between a company's financial structure and its performance. The PVECM results showed that, aside from itself, no other variable accounts for the variation in ROA over both the short and long term, given the error decomposition statistics. Capital structure has no dynamic association with firm performance, according to the study. Unlike the previous survey, which focused on the industrial sector, the current study focused on brewery companies on the list.

Furthermore, Ugwoke and Sergius (2019) studied the impact of capital structure on food and beverage companies' financial performance in Nigeria from 2007 to 2016. The study employed multiple regression models to analyze data from annual reports of the food and beverage industries, revealing a positive impact of short-term debt on ROE, a performance indicator.

Both short- and long-term indebtedness positively impact the financial performance of Nigerian food and beverage enterprises. We suggested that organizations should start their business operations with equity capital. The reviewed work examined the performance of food and beverage companies using ROE, whereas the current study examined the performance of publicly traded brewery enterprises using ROA, ROE, and Tobin's Q.

Mai (2021) conducted a study using a standard regression model, which found that the capital structure, as measured by the DA and SDA ratios, negatively impacted the value of publicly traded plastics and packaging companies from 2012 to 2018. As a measure of performance and scale, ROA has a positive impact on the value of the company. Nigeria's listed brewery companies were the focus of the current study. On the other hand, Etale (2020) conducted a five-year empirical study to examine how capital structure affects a company's profitability on the Ghanaian stock exchange from 1998 to 2002.

There is a significant correlation between SDA, TDA, and profitability evaluated by ROE in a panel data regression model. The statistics showed a negative correlation between LDA and ROE. Companies are more likely to use debt finance, according to the findings of the study. The review study took place in Ghana, while the current study took place in Nigeria.

Luu (2021) conducted a study on the impact of capital structure on business value, specifically focusing on a case study in Vietnam from 2012 to 2019, as part of another recent Vietnamese study. The researchers analyzed the data from the 23 chemical companies in question using ordinary least squares regression, FEM, and REM methods. Results showed that Tobin's Q proxies for company value had a negative link with capital structure. In relation to asset turnover, business size, and number of years in operation, firms with higher turnover tend to have lower firm value.

Research found that chemical companies should lower their debt ratios and boost equity in their capital structure. The current analysis focused only on publicly traded brewery companies and measured their performance using ROA, ROE, and Tobin's Q, among other metrics.

METHODOLOGY

This study covers all quoted brewery companies in Nigeria. The study adopted an ex post facto research design. The design was considered appropriate because it determined the cause-and-effect relationship among variables. The study aims to describe the relationship between the dependent and independent variables,

providing a foundation for making predictions about the dependent variable. The population consists of all seven (7) brewery firms listed on the Nigeria Exchange Group plc from 2014 to 2018 and published on the Nigeria Exchange Group plc website. The study used a random sampling technique based on the availability of up-to-date annual financial statements. In light of this, the study's sample size comprises four (4) prominent listed brewery companies, covering a five-year period from 2021 to 2025.

We chose the five-year period to ensure the availability of fairly reasonable, reliable, and up-to-date financial data. The firms used are Nigeria Brewery Plc and Guinness Nigeria Plc. This study extracted secondary data from the published audited annual reports and accounts of the selected firms, covering the period from 2021 to 2025. The data is quantitative and panel in nature, respectively.

The study adopted a multiple regression technique because of its effectiveness and efficiency in estimating the statistical relationship of several independent variables to one dependent variable. Given the cross-sectional and time series nature of the data, the study employed a variety of regression models, including the pooled ordinary least squares (POLS) model, fixed effect (FE) model, and random effect (RE) model. This study applied the Hausman Specification Test and Breusch and Pagan Lagrange Multiplier Test to determine which regression model, among POLS, FE, and RE, had the highest explanatory power and was better suited to the data set used in the study.

This study adopted the model from Luu's (2021) work. Here's how we present the balanced panel data: PERF (TD/TAS).

With:

$$\text{PERF} = (\text{ROA}, \text{ROE}, \text{and Tobin's } Q) \dots 1$$

$$\text{CS} = \text{TD/TA}.$$

PERF represents the difference measure of performance (ROA, ROE, and Tobin's Q), and TD/TA shows the measure of capital structure, and S indicates the size of the companies.

The relationship between the components of PERF and the independent variable can be rewritten implicitly as follows:

$$\text{ROA}_{it} = f(\text{TD/TA}, S, \mu_{it}) \dots 2$$

$$\text{ROE}_{it} = f(\text{TD/TA}, S, \mu_{it}) \dots 3$$

$$\text{Tobin's } Q_{it} = f(\text{TD/TA}, S, \mu_{it}) \dots 4$$

Where: -

ROA = Return on assets (Net income / Total Assets)

ROE = Return on equity (Net Income / Shareholders' equity)

Tobin's Q = (Market share price * Number of outstanding shares + Book value of debt / Book value of total assets).

TD/TA = Total debt to total assets.

Size = Natural log of total assets.

μ_{it} = Error term capturing other unexplained variables.

β_0 = Constant or intercept

Control Variables are Size

RESULTS AND DISCUSSION

Descriptive Statistics of the Variable

We used return on assets, return on equity, and Tobin's Q to capture firm performance. The sampled breweries in Nigeria had an average return on assets of 0.0324, with a variance of 0.1386. The return on assets displayed a skewness of -1.3656 and a leptokurtic distribution of 5.4200. The maximum return on assets is 0.2651, and the least return on assets was -0.4416. The average return on equity was 0.0485, and the maximum was 0.8875. The least return on equity was -1.3766, and the standard deviation was 0.4533. The standard deviation of ROA and ROE reveals a dispersion in the financial performance of the brewery sector's firms. Some are performing well, while some are not performing well. The average capital structure of the firms was 0.6819, with a maximum value of 2.2411 and a minimum value of 0.1827. The capital structure's standard deviation is less than its mean, indicating that the firms are exhibiting a relatively similar debt structure. The firm's average age ranged from 36 years to 72 years. The average age of the firm was 53 years. In the same vein, the firm's average log of assets was 17.80, accurately reflecting its size. The maximum size was 19.77, and the minimum size was 14.84. Because the standard deviation was smaller than the mean, the size did not exhibit dispersion, indicating a similar size pattern. The Jarque-Bera statistics captured the normality of the variables, revealing that all variables, except size, did not follow a normal distribution, with a p-value greater than 0.05. We expect the panel data to have a non-normal distribution, as the variable represents a collection or combination of firms with distinct characteristics. Since the size represents a log of an asset, it follows a normal distribution. The adoption of the panel least squares technique will accommodate the normality of the variables by considering either the fixed effect or the random effect.

Table 1: Descriptive statistics

	ROA	ROE	TBQ	CAP	AGE	SIZE
Mean	0.032467	0.048598	3.235429	0.681957	53.75000	17.80211
Median	0.064139	0.166256	2.519803	0.597268	53.50000	18.28440
Maximum	0.265165	0.887572	13.75782	2.241110	72.00000	19.77849
Minimum	-0.441613	-1.376628	1.335894	0.182751	36.00000	14.84568
Std. Dev.	0.138601	0.453354	2.472265	0.407533	12.82269	1.467359
Skewness	-1.365600	-1.408012	2.890577	1.963133	0.015910	-0.209425
Kurtosis	5.420089	5.212247	11.38196	7.679627	1.234637	1.692080
Jarque-Bera	19.97443	19.23603	155.5184	55.97170	4.676277	2.829137
Probability	0.000046	0.000067	0.000000	0.000000	0.096507	0.243031
Observations	36	36	36	36	36	36

Correlation Analysis

The study further assesses the quality of the variables prior to model estimation using the pairwise correlation. The correlation analysis attempts to explore the interrelationship among the independent variables, specifically

with a view to detecting the degree of collinearity among them. The correlation result in Table 2 indicates a negative correlation between capital structure and age, with a coefficient of -0.3990. Moreover, there was no statistically significant correlation between capital structure and the size of the firm. The correlation between age and size was positive, with a coefficient value of 0.2043. The results suggest a weak correlation between the variables, indicating the likelihood of a strong collinearity issue. The subsequent section of this study will assess the relationship between the dependent and independent variables. Regression will better explore this.

Table 2: Correlation Analysis

Correlation Analysis	Correlation Analysis	Correlation Analysis				
Correlation	Correlation					
Probability	ROA	ROE	TBQ	CAP	AGE	SIZE
ROA	1.0000					

ROE	0.8968	1.0000				
	0.0000	-----				
TBQ	-0.1694	-0.0531	1.0000			
	0.3232	0.7581	-----			
CAP	-0.7601	-0.6204	0.2461	1.0000		
	0.0000	0.0001	0.1478	-----		
AGE	0.6185	0.5050	-0.2964	-0.3990	1.0000	
	0.0001	0.0017	0.0791	0.0159	-----	
SIZE	0.3986	0.3088	-0.1167	-0.2196	0.2043	1.0000
	0.0160	0.0669	0.4976	0.1980	0.0000	-----

Modern econometric methodology calls for a prior understanding of the variable order of integration. If the variable is stationary at a level, the proposed method of estimation is welcome; otherwise, there is a need to adopt a different approach. Table 3 presents the outcome of the panel unit root test for all the variables used in

the model estimation. The test result indicates that all the variables exhibit stationarity at a certain level, as evidenced by a p-value of less than 0.05. 0.05. This suggests that we can use panel least squares to achieve the study objective.

Table 3: Panel Unit Root Test

	LLC Test Statistics	P-value	Remarks
Size	-3.7784	0.0001	
Age	-107.439	0.0000	
CAP	-4.1922	0.0000	
TBQ	-3.0408	0.0012	
ROE	-5.8169	0.0000	
ROA	-4.6765	0.0000	

The correlation analysis revealed a low degree of collinearity among the independent variables, but it was not strong enough to suspect a multicollinearity problem. However, the pairwise correlation analysis only served as a necessary condition, not a sufficient one. Consequently, we obtained the variance inflation factors of the variables, which we present in Table 4 below. The result reveals that all the variables report a Variance Inflation Factor (VIF) of less than 10, indicating a lower level of correlation among the variables, potentially leading to severe collinearity effects.

Table 4: Variance Inflation Factors

Variance Inflation Factors	Variance Inflation Factors	Variance Inflation Factors
Variable	Coefficient Variance	Centered VIF
CAP	0.023389	1.199796
AGE	0.000133	3.775693
SIZE	0.010208	3.788963
C	1.652253	NA

Table 5 captures the resulting model estimate. The table comprises three model estimates of ROE, ROA, and TBQ. The HausmaWe conducted the Hausman test on the models, revealing that the random effect was the best fit for the ROE model, with the p-value of the Hausman test being greater than 0.05. of the Hausman test on the ROA model shows that the fixed effect model was the best fit, and the TBQ model indicates that the random effect model seems to be the best. The post-diagnostics test of the three models revealed that the residuals were robust and devoid of serial correlation and heteroskedasticity problems. This implies that the model is consistent and efficient. The coeffiThe model's coefficient of determination reveals that it accounted for 49.5% of the variation in ROE, while the independent variables explained 81.4% of the sources of variation in the ROA model. The TBQ model's result indicates that the independent variable accounted for 33.50% of

the variation in the dependent variable. of the f-value indicates that all the models were statistically significant.

The capital structure of the brewery firms had a decreasing effect on the return on equity, with a coefficient of -0.5339 and a t-value of -3.3660. Similarly, the impact of capital expenditure on the return on asset declined, with a coefficient of -0.2268 and a t-value of -7.2414. However, at the 5% level of significance, there was no statistically significant relationship between the capital structure and the firm's Tobin's q. The outcome demonstrates that capital structure has a substantial impact on the firms' financial performance, in contrast to the Tobin's q measure of firm value. An increase in the debt proportion of brewery firms will result in a significant decrease in their financial performance, whereas the debt structure of the brewery is less likely to influence the firm value.

Table 5: Regression Estimate

	ROE	ROE	ROA	ROA	TBQ	TBQ
Variable	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
CAP	-0.5339	-3.3660	-0.2268	-7.2414	1.2177	1.3237
SIZE	0.1443	1.3770	0.0287	0.9345	2.0946	3.4464
AGE	-0.0041	-0.3468	-0.0117	-1.7784	-0.2628	-3.7837
C	-1.9330	-1.4497	0.3095	0.8047	-20.7535	-2.6840
R-squared	0.4959	0.4959	0.8146	0.8146	0.3350	0.3350
Adjusted R-squared	0.4486	0.4486	0.7762	0.7762	0.2726	0.2726
F-statistic	10.4941	10.4941	21.2366	21.2366	5.3740	5.3740
Prob(F-statistic)	0.0000	0.0000	0.0000	0.0000	0.0041	0.0041
Hausman test	0.7414(p=0.8634)	0.7414(p=0.8634)	12.4869(p=0.0059)	12.4869(p=0.0059)	5.6940(p=0.1275)	5.6940(p=0.1275)
Serial correlation test	0.0055(p=0.9956)	0.0055(p=0.9956)	0.0045(p=0.9964)	0.0045(p=0.9964)	0.4530(p=0.6505)	0.4530(p=0.6505)
Heteroskedasticity test	2.1555(p=0.7071)	2.1555(p=0.7071)	3.631595(p=0.4582)	3.631595(p=0.4582)	6.6332(p=0.1565)	6.6332(p=0.1565)

DISCUSSION OF FINDINGS

The study's results indicate a significant and negative relationship between the capital structure (TDA) and the firm performance, as measured by the return on assets (ROA) of the studied brewery companies. The results showed that a higher level of capital structure led to a lower return on assets (ROA), supporting the pecking order theory hypothesis of a negative relationship between profitable listed brewery firms that require less debt. This aligns with the findings of Hani and Zaubour (2019), Ajayi and Obisesan (2020), Abeywardhana

(2016), and Nwude and Anyalechi (2018), which suggest a negative correlation between capital structure and performance. However, this contradicts the findings of Lukuman, Daud, and Yusuf (2019), Christoph (2018), and Abubakar (2021), who discovered a positive and significant impact of capital structure on the performance of firms. Additionally, the total debt-to-assets ratio showed a significant negative effect on return on equity (ROE). The discovery aligns with the findings of Nguyen and Nguyen (2020), Ajibola, Wisdom, and Qudus (2018), and Mathews (2016), who found a negative relationship between capital structure and firm performance. However, the study does not align with the findings of Alhassan (2021), Ugwoke and Sergius (2019), and Asen, Nwude, Idamoyibo, Ufodiana, and Udo (2021), who indicated a positive association between capital structure and firm performance. Interestingly, the empirical evidence demonstrated a significant and positive impact of the capital structure, as measured by the total debt-to-assets ratio (TDA), on the firm value, as measured by Tobin's Q. This suggests that higher debt would lead to an increase in firm value. This result implies that brewery firms can enhance their value by raising their debt levels. This contradicts the findings of Almahadin and Oroud (2019), Okeke and Okeke (2019), Rosink (2020), Misshelle (2021), and Luu (2021), which suggest that capital structure negatively affects firm value. It also supported the findings of Nenu, Vintila, and Gherghina (2018), Divya and Puma (2017), and Asen, Nwude, Idamoyibo, and Udo (2021) that capital structure significantly enhances the value of firms.

CONCLUSIONS AND RECOMMENDATIONS.

This study examined the impact of capital structure on the performance of several listed brewery firms in Nigeria. We regressed return on assets (ROA), return on equity, and Tobin's Q on one measure of capital structure using three panel estimators from 2021 to 2025. The regression results showed a negative and significant relationship between the total debt-to-assets ratio, return on assets (ROA), and return on equity (ROE), and a positive and significant relationship between capital structure (TDA) and Tobin's Q. The results also showed that the F-statistics are 10.4941, 21.2366, and 5.3740, with probabilities of 0.000, 0.000, and 0.0041. This indicates that the combined effect of the explained variables on firm performance, as represented by return on assets, return on equity, and Tobin's Q, is statistically significant. The implication of these results is that listed brewery firms can increase their performance by relying less on debt to finance their operations, since it would be considered less risky. The management of listed brewery firms should closely monitor their continued use of debt in their operations. Overuse of debt could potentially jeopardize their solvency, particularly if the charges escalate and have a significant impact on their performance. Additionally, the management of brewery firms must assess the potential impact of debt on the firm's performance before making any decisions.

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