

Capital Structure, Corporate Governance and Profitability of Listed Industrial Goods Firms in Nigeria: A Moderating Effect of Firm Size

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Abstract

Now a days, industrial goods firms have experienced draught in debt financing due to the lending preference of financial institutions to firms in the oil and gas sector, corporate failures and financial scandals as well as the overstatements of accounts of some firms in and outside Nigeria blamed to be as result of account improprieties and ineffective board of directors also Issues of the mixed outcome of previous researches; thus, necessitating and justifying the need for undergoing more investigations into the subject area. The objective of this study is to determine the overall effect of capital structure and corporate governance on profitability with the influence of firm size of the sampled industrial goods firms. The study used multiple regressions as tool for analysis. The population of the study includes the thirteen (13) industrial goods firms listed by the Nigerian Stock Exchange as at 31st December 2022 out of which ten (10) considered as sample size. The study employed panel data analysis by using random-effect estimation model as alternatively considered more appropriate. Secondary data explored from the annual reports and accounts of the sampled firms for the period of ten (10) years from 2013 to 2022 were analyzed. The results revealed that Leverage, board size and firm size are negatively significant at 1% level of significance. While board composition is positively significant at 5% level of significance to the profitability of the sampled firms. In view of the findings, it is recommended that the financial managers/ management of the industrial goods firms should have more independent directors of its board size to enhance proper control over the activities of the managers through which profit level would be increased. It is therefore recommended to conduct careful evaluation and take into consideration on leverage, board size and firm size that influence the profitability of their firms before making major business decision as this will go a long way in improving their profitability.

Keywords: Leverage, Board Size, Board Composition, Firm Size, ROA, Industrial Goods.

Introduction

The capital structure decision is a very crucial financing choice by the management because it largely affects its going concern as well as the risk and return of the shareholders (Hassan, Kadiri, & Oloba, 2022). Hence, organizations can decide on the amount of debt capital they require by evaluating the appropriate capital structure policies based on the financial instruments available in the financial market (Dona, Fernando, & Raveendra, 2021). To achieve this, the board must be totally committed to administer the policies and

procedures, which involve in pursuing the true spirit of corporate governance through openness, integrity, honesty and accountability that commensurate with corporate goals (Abdulkarim, Yusuf, & Isah, 2020). This is because decisions made by the board on behalf of shareholders may make or break a company's future viability and its ability to continue as a going concern (Obera & Okunola, 2022). However, for the board to be effective in discharging its duties and responsibilities, the size as well as its composition must be taken into consideration.

Furthermore, Daniel and Robert (2019) argued that, there is a dynamic financial leverage and performance link which varies in magnitude along the company size spectrum. In this case therefore, borrowing capacity grows with firm size, which enables companies to increase their leverage ratio and make more investments (Ahmad, Mobarek, & Raid, 2023). Hence, the entity's size is expected to enhance the link of the leverage with performance.

In Nigeria, the growing economic sectors such as industrial goods have experienced draught in debt financing due to the lending preference of financial institutions to firms in the oil and gas sector and the precedent bad debts suffered by financing institutions and lenders (Hassan et al., 2022). This draught has posed huge difficulties for firms in the sector to make adequate decisions on optimum capital mix, leaning heavily on equity financing (Oko & Elemi, 2023). Furthermore, the shareholders' wealth dwindling and corporate failure in recent have been greatly attributed to ineffective board of directors (Okolie & Uwejean, 2022). In Nigeria also, a number of corporate failures such as Wema bank, Fin bank, Spring Bank, All State Trust Bank among others have been recorded and publicly blamed to be as result of account inappropriateness and ineffective board of directors (Nwanko & Uguru, 2022). Further issues are brought about by the mixed outcome of previous studies in and outside Nigeria; thus, necessitating and justifying the need for undergoing more investigations into the subject area.

Statement of the Problem

Large numbers of corporate entities have registered declining financial performance in the recent years, which adversely affects the economic growth of most developing countries contrary to the expectations of stakeholders (Ghathara et al., 2019). In addition to the conservativeness to debt financing of Nigerian firms, the unfavorable lending condition of financial institutions has made the companies highly geared and unable to make sufficient Earnings Before Interest and Tax (EBIT), which resulted to poor economic growth in Nigeria (World Bank Group, 2016). In Nigeria also, events of a number of corporates failure have prompted questions to be asked about the ability and effectiveness of boards of directors in managing the corporate entities to attain their major goals. This is an urgent problem since the boards in question were clearly incompetent and, as a result, did not avoid some of the corporate governance concerns that eventually arose. To address such allegations, this study concentrates on the effect of capital structure, corporate governance on financial performance of industrial goods firms.

Research Questions

The following research questions are addressed in order to guide the conduct of the study.

1. Does leverage affect the profitability of listed industrial goods firms in Nigeria?
2. Does board size influence the profitability of listed industrial goods firms in Nigeria?
3. Does board composition has any significant effect on profitability of listed industrial goods firms in Nigeria?
4. What is the moderating effect of firm size on the relationship between capital structure, corporate governance and profitability of listed industrial goods firms in Nigeria?

Objectives of the Study

The main objective of this study is to examine the relationship between capital structure, corporate governance and profitability of listed Nigerian industrial goods. The specific objectives are:

1. To determine the significant effect of leverage on profitability of listed industrial goods firms in Nigeria.
2. To examine the effect of board size on profitability of listed industrial goods firms in Nigeria.
3. To ascertain the effect of board composition on profitability of listed industrial goods firms in Nigeria.
4. To examine the moderating effect of firm size on the relationship between capital structure, corporate governance and profitability of industrial goods firms in Nigeria.

Literature Review

Conceptual Review

Capital Structure

Capital structure is a financial indicator between long term debt and foreign capital or own capital, capital structure is very important for companies because it will affect the amount of risk that will be borne by shareholders and the level of return or profit level he expects (Wibowo & Alifah 2023). Capital structure is proxied by debt to equity assets and debt to equity ratio (Danso, Lartey, Gyimah & Adu-Ameyaw, 2021). Debt to equity ratio is a percentage that shows how dominant debt is used in company financing compared to total equity (Dang, Vu, Ngo & Hoang, 2019).

Leverage

Leverage is one of the most vital capital structure to have influence on the profitability of firms; it can be as debt or to borrow funds to finance the purchase of inventory, equipment and other company assets. Companies can use debt or equity to finance or buy the company's assets, which shows the ability of a firm that will earn higher return by

employing fixed assets or debt. Sumaira and Amjad (2013); Ghardallou (2023) stated that leverage is measured of total debt divided by total asset.

Corporate Governance

Corporate Governance is a broad term defines the methods, structure and the processes of a company in which the business and affairs of the company managed and directed (Beretta, Demartini & Sotti, 2023). Corporate governance also enhances the long term shareholder value by the process of accountability of managers and by enhances the firm's performance. It also eliminates the conflict of ownership and control by separately defines the interest of shareholders and managers (Beretta, Demartini & Sotti, 2023).

Board Size

Size is one of the most widely discussed board characteristics in the literature. It is argued that large boards are more likely to have greater knowledge, skills and experiences at their disposal than their smaller counterparts, resulting in superior resources available for sharing that make the appearance of mutual peer influence more feasible (Shakir, 2021). Similarly, Van den Berghe and Levrau (2017) suggested that increasing the number of directors may allow boards to draw on a diversity of perspectives on corporate policy and may shrink control by the CEO.

Board Composition

In the study of Ajoku (2007), section 359 (4) of Allied Matter Acts (2004) provides for board composition to be on equal proportion. The new Security and Exchange Commission (SEC) guideline was silent on the number. However, the best international practice is having a board with more non-executive than executive directors for ensuring independence of the board. Board composition normally concerns issues related to board independence (including independence of board committees) and diversity (firm and industry experience, functional backgrounds, etc.) of board members.

Firm Size

Firm size has been variously defined in the literature to refer to the total assets, scale of operations and number of employees among others. Larger firms are assumed to have more resources at their disposal and therefore have the wherewithal to commitment them to several investment opportunities. Babalola (2013) assert that increase in company size increases the performance of the bank. Almajali et al. (2012); Long et al. (2023) argued that the size of the firm can affect its financial performance.

Profitability

According to the Business Dictionary profitability is the ability of a firm to generate net income on a consistent basis. Ratio is used as a benchmark for evaluating the performance

of a firm. Ratios help to summarize large quantities of financial data and to make qualitative judgement about the firm's profitability. The performance of a business can be evaluated based on its level of profitability (Pandey, 2019). Hence, the importance of profitability and the use of shareholders' fund or equity fund cannot be overemphasized.

Return on Asset (ROA)

The profitability can be measured by return on assets (ROA), and its commonly employed by most studies. Hammed (2015), Chandrasekaran and Munawer (2023) stated that Return on Asset is measured as net income after tax divided by total asset. Irom et al. (2018) defined Return on assets (ROA) as one example of the classical financial indicators or accounting ratios used by firms to measure profitability. ROA is an indicator of how profitable a company is, relative to its total assets

Conceptual Framework

The conceptual framework of the study that depicts the relationship between dependent and independent variables with moderating effect of firm size was originated and adopted by matching two models together, from which a specify model in line with the traditional theory of capital structure by El-Maude, Abdul-Rahman and Ahmad (2016), and that of El-Maude, Bawa and Shamaki (2018) model on corporate governance were used.

Moderating Variable

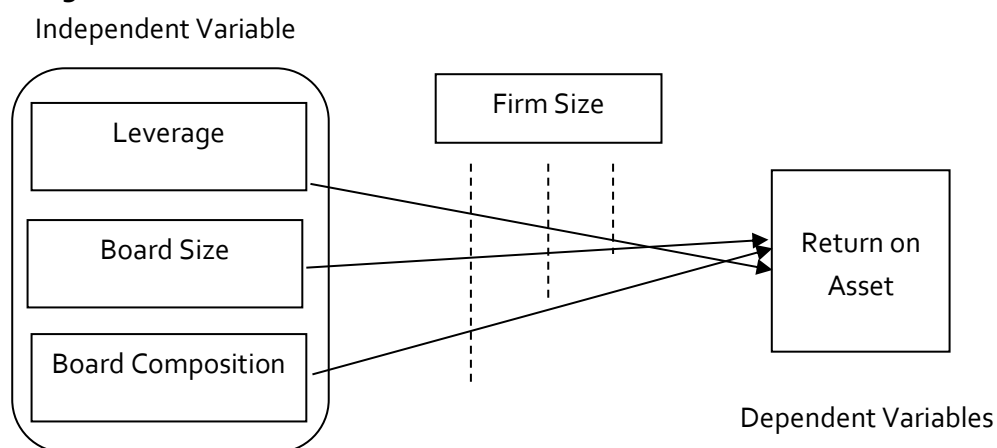


Figure 1: Conceptual Framework

Empirical Review

Several empirical studies around the world have been conducted to measure the relationship between capital structure and corporate governance on firms' profitability. In most cases, researchers come up with mixed results; some revealed a positive relationship

between the variables, others revealed the negative relationship while other researchers revealed the contradictory results between study variables.

The first group of researchers tested the relationship between capital structure and company profit proved the negative results between the variables as follows; Mireku (2014); Opoku-Asante (2022) in Ghana listed companies revealed that firms' financial performance has negative relationship with financial leverage and depends more on internal source of finance thus supporting the pecking order theory. Chisti (2013); Nguyen and Nguyen (2020) in listed companies in India discovered that Debt to equity ratio of Indian listed companies was negatively correlated to profitability ratios. Puni and Anlesinya, (2020) studied the relationship between Board composition and performance of commercial banks in Nigeria. The study explored the relationship between board independence and the performance of commercial banks in Nigeria. Primary data was collected using questionnaires. Secondary data was obtained from annual published accounts, NSE returns to the registrar, individual's websites and CBN. Bank performance was measured using ROA, ROE and TBO ratio. Data was analyzed using hierarchical regression under panel data framework using SPSS version 21. The study found no significant linear relationship between board composition and the performance of commercial banks in Nigeria. In the study of El-Maude, Bawa and Shamaki (2018) examined the effect of board size, board composition and board Meetings on the financial performance of listed consumer goods in Nigeria over the period of ten years from 2006 to 2015, Their findings concluded that: Board size is negatively significant at 1% with T. Value of -2.70 , Board composition is positively significant at 1% with T-Value of 2.15 and finally, Board meeting is negatively insignificant with T-Value of -1.45 . Another study was conducted by Tailab (2014) in America used a sample of 30 energy American firms for a period of nine years from 2005 to 2013 to test the effect of capital structure on profitability of energy, American firms and found the negative relationship between debt ratios and performance variables of return on equity (ROE) and return on asset (ROA) while company size in terms of sales indicated a negative effect only on return on equity (ROE) of the energy American firms.

Theoretical Framework

A number of theories have been advanced in explaining the relationship between capital structure, corporate governance and profitability of firms. The theoretical constructs that would be used by this study include trade-off theory, agency theory and structural inertia theory in trying to examine the relationship between capital structure, corporate governance and profitability with moderating effect of firm size of Nigerian industrial goods firms as discussed below.

Trade-Off Theory

The trade-off theory is linked to the insight derived from Modigliani & Miller's irrelevance theory. Under the trade-off theory, an optimal capital structure is determined by the costs

and benefits connected with the use of debt as against equity and accordingly firms must choose an optimal capital structure that trades off the marginal benefits and costs of debt after taking into consideration market imperfections such as agency costs, taxes and bankruptcy costs. The marginal benefit derived from debt reduces as the level of debts declines and at the same point the marginal cost of debts rises as debts increases. Thus, a rational firm will be optimized by the trade-off point to find out the level of equity and debt to finance its activities (Scott, 1977; Katharina, 2021).

Agency Theory

The agency theory was developed by Jensen and Meckling (1976). In its primitive form, the agency theory relates to situations in which one individual (called the agent) is engaged by another individual (called the principal) to act on his/her behalf based upon a pre-determined legal arrangement. Since both individuals are assumed to be motivated by their pecuniary and non-pecuniary interests, and their interests do not always move in same direction, there is the contention that the agent may take actions which will endanger the principal's interests.

Structural Inertia Theory

The structural inertia theory was put forward by Hannan and Freeman (1984). From the perspective of Hannan and Freeman (1984) theory of structural inertia, as an organisation grows larger, bureaucracy increases, inflexibility sets in which may cause resistance to change and ultimately decrease the level of profitability. This means a functional relationship exists between firm size and profitability. The negative relationship is due to the fact that when an organisation becomes larger, its increased bureaucracy causes stiff resistance to change which will ultimately decrease the level of profit. The study therefore proposes a negative relationship between firm size and profitability.

Methodology

The research design adopted for this study is the ex-post facto research design. The population of the study consists of all the thirteen (13) Industrial goods firms listed on the Nigeria Exchange Group as at 31st December 2022. The sampling technique adopted for the study is filtering sampling technique. Therefore, sample of ten (10) listed Industrial goods firms were selected from a total of thirteen (13) Industrial goods firms for a period of ten years (2013-2022). The study formulated four hypotheses and used multiple regressions as tool for analysis. Secondary data extracted from the annual reports and accounts of the commercial banks listed on the floor of Nigeria Exchange Group for the period 2013 to 2022 were analyzed. Panel data techniques (random effects model) is utilized.

Model Specification

In order to achieve the objectives of this study and test of the hypotheses, a functional

relationship in form of multiple linear regression model consisting of dependent, independent and moderating variables was formulated. It was originated and adopted from El-Maude, Bawa and Shamaki (2018) with the specific modifications of leverage, firm size. The regression model is presented as follows:

$$ROA_{it} = \beta_0 + \beta_1 BSIZE_{it} + \beta_2 BCOMP_{it} + \beta_3 FSIZE_{it} + \mu_{it} \dots \dots \dots (1)$$

Where: BSIZE: Board Size; BCOMP: Board Composition; FSIZE: Firm Size; μ : Error Term.

The modified model of this study was expressed and specified as follows:

Profitability (P) of Nigerian industrial goods firms have estimated using Return on Asset (ROA) as its proxy. This was expressed as follows:

$$P = (ROA) \dots \dots \dots (2).$$

Profitability proxy by ROA is a function of six (3) explanatory variables, namely: Leverage (LEV), Board size (BSIZE) and Board composition (BCOMP) Therefore:

$$ROA = f(LEV, BSIZE, BCOMP)$$

Firm size (FSIZE) introduced as moderating variable.

The model that will be used to estimate the impact and the equation is as follows:

$$ROA_{it} = \theta_0 + \theta_1 LEV_{it} + \theta_2 BSIZE_{it} + \theta_3 BCOMP_{it} + \theta_4 FSIZE_{it} + eit \dots \dots \dots (3).$$

Where:

$\theta_0, \theta_1, \theta_2, \theta_3, \theta_4, \theta_5, \theta_6$ are parameters to be estimated with a prior expectation. ROA = Return on Asset, LEV= Leverage, BSIZE = Board Size, BCOMP = Board Composition and FSIZE = Firm Size.

β_0 = Constant, $\beta_1 \dots \dots \beta_6$ = Coefficients, eit = Error term.

Measurement of Variables

The measurement of dependent, independent and moderating variables used in this study are presented in the table below;

Table 3.1: Variables and their Measurement

S/No.	Proxy	Type	Measurement	Source
1	Return on Asset (ROA)	Dependent	Net income after tax divided by total asset.	Chandrasekaran & Munawer (2023).
2	Leverage (LEV)	Independent	Total debts divided by total assets.	Ghardallou (2023).
3	Board Size (BSIZE)	Independent	Total number of board members.	Khatib et al.(2020).
4	Board composition (BCOMP)	Independent	Board Composition ratio of independent board to board size.	Beretta, Demartini Sotti (2023).
5	Firm Size (FSIZE)	Moderating	Natural log of total Assets of the company	Long et al. (2023).

Source: Author (2022).

Data Presentation, Analysis and Interpretation

Table 4.1: Summary of Descriptive Statistics

Variables	Mean	Std Dev	Minimum	Maximum	Skewness
ROA	4.5230	2.4567	0.11	15.12	1.1932
LEV	0.2774	0.1791	0.09	1.57	2.4702
BSIZE	6.2410	2.8231	9.00	17.00	3.0931
BCOMP	8.3123	2.9823	5.00	13.00	2.1937
FSIZE	10.7596	0.7746	11.23	12.37	-0.6679
OBS	100	100	100	100	100

Source: Result output from STATA (2022).

The result from table 4.1 shows that the mean values of all the variables as shown in the table ranges from minimum of 0.2774 for leverage to a maximum of 10.7596 for firm size. The average profitability as proxied by ROA is about 4.5230 with standard deviation of 2.4567. This implies that there exists a significant variation among the values of profitability among the sampled firms during the study period.

The mean value of leverage is 0.2774. This implies that, there were moderate differences among the values of leverage as measures by total liabilities to total assets across the sample industrial goods firms under the study and this is confirmed by its standard deviation of 0.1791. The analysis of board size shows a mean value of 6.2410 with the standard deviation of 2.8231. The size of the board varies widely across the sample companies and the minimum is 9.0000 and the maximum is 17.000. The important factor that explains the large disparity of the size could be as a result of wide difference of the sample firms' size as represented by their total assets. Similarly, the mean value of board composition of the sampled industrial goods firms is 8.3123 and the standard deviation of 2.9823. The statistics indicate that about 64% of directors serving on the board of sampled industrial goods firms are independent. In respect of the mean value of firm size is 10.7596 with a standard deviation of 0.7746. This shows that there is large variation across the sample of listed industrial goods firms in Nigeria. Hence, the highly deviated size may have significant impact on the profitability of listed industrial goods firms in Nigeria as this will be reflected in our regression result.

Correlation Analysis

The correlation coefficient represents the linear association or relationship between two variables (explained and explanatory) and also between the explanatory variables themselves. The most widely used type of correlation coefficient is Pearson(r) which is also called linear or product moment correlation. The correlation values are derived from the Pearson correlation of two tailed significances.

Table 4.2: Correlation Matrix

Variables	ROA	Lev	BSize	BComp	FSize
ROA	1.0000				
Lev	-0.5411	1.0000			
BSize	0.6521	0.4021**	1.0000		
BComp	0.5016	0.4290*	0.7242	1.0000	
FSize	-0.6046*	0.5082	0.4972**	0.4260	1.0000

Source: Correlation matrix result using STATA output (2022)

*Correlation is significant at 0.01 level (2-tailed)

** Correlation is significant at 0.05 level (2-tailed)

*** Correlation is significant at 0.05 level (2-tailed)

In correlation analysis, high level and strong form of relationship between dependent and independent variables are expected while low level and weak form of relationship between and among independent variables are expected. According to Porter (2009), a correlation coefficient between two independent variables above 0.80 is considered excessive and thus certain measures are required to correct the likely presence of collinearity and Multicollinearity. The significance level of this result is indicated in the table. Leverage is negatively correlated with profitability and statistically significant at all levels of significance with 54.11% (ROA) as shown in the table above. This implies that the higher the level of leverage, the lower the profitability of sampled firms proxied by ROA. The highest negative percentage is board size which has a significant negative relationship with ROA as shown by coefficient of -0.6521. This implies that larger board size will lead to lower return on Assets of the sampled industrial goods in Nigeria. The board Composition has correlated positively with the profitability by coefficient of 0.5016 based on the correlation matrix result that shown in Table 4.2 above. This means that more independent directors on board will enhance better performance of the sampled firms. Whereas, the firm size as measured by natural log of total assets. The coefficient of correlations between firm size and profitability of listed industrial goods is -0.6046. This implies that firm size is negatively related to profitability up to the tune of 60.46%. The result therefore revealed an inverse relationship between firm size and return on asset. Therefore, leverage, board size, board composition and firm size are strongly correlated with dependent variable (ROA).

Presentation of Regression Results

Table 4.3: Random Effect Model

Variables	Coefficient	St. Error	Z-Value	P-Value
Constant	25.0103	3.1349	4.98	0.000
Lev	-2.0998	1.0227	-1.87	0.005
BSize	-0.2654	0.3006	0.19	0.005
BComp	0.1458	0.1327	0.18	0.022
FSize	-1.1145	0.0381	-3.54	0.000

R ² :				
Within		0.2734		
Between		0.5307		
Overall		0.3940		
Wald Chi		46.05		
Wald-Sig		(0.000)		

Source: Result output from STATA (2022)

The result of random effect model is provided in table 4.4. Variables such as leverage, board size, board composition and firm size are significant in this model. Leverage (LEV), Board size (BSIZE) and Firm size (FSZE) are significant at 1% while Board composition (BCOMP) is significant at 5% level of significance. The within R² of this model is 27.34%, between R² is 53.07% while the overall R² of the panel is 39.40%. This model is also significant as indicated by Wald chi² of 46.05 at 1% level of significance.

Table 4.4: Summary of Hypotheses Testing

Variables	VIF	TV(1/VIF)	Expected Sign	Reported sign	Sig./Not Sig.	Remarks
Leverage	1.29	0.726996	-	-	Sig(1%)	Hyp. 1 Rejected
Board Size	1.27	0.880241	-	-	Sig(1%)	Hyp. 2 Rejected
Board Comp	1.01	0.940962	-	+	Sig(5%)	Hyp. 3 Rejected
Firm Size	1.12	0.833382	-	-	Sig(1%)	Hyp. 4 Rejected

Source: Result output from STATA (2022)

Conclusion and Recommendations

This study was conducted to investigate the capital structure, corporate governance on profitability of listed industrial goods firms in Nigeria with the effect of firm size as a moderating variable. Sample of ten (10) listed industrial goods firms were selected from a total of thirteen (13) industrial goods firms from the period 2013- 2022. Panel data techniques (random effects model) indicate that variables such as leverage, board size, board composition and firm size are significant determinants of profitability for industrial goods firms in Nigeria. Leverage (LEV), board size (BOARD SIZE) and firm size (FSZE) are negatively significant at 1% level significance. While board composition (BCOMP) is positively significant at 5% level.

In the light of the analysis and findings, the following recommendation are made;

- Listed industrial goods firms should reduce the level of leverage in their capital structure and focus more attention on equity financing. This is because leverage

has negative significant impact on their return on asset. Their capital structure should be majorly financed by equity rather than debt as well as selecting debt financing with cheaper cost attached to it.

- The industrial goods firms should minimize the board members. Due to the negative relationship board size and return on asset of the sampled firms. Therefore, any increase of board size will decrease the profit. So that larger board size should be discouraged.
- The findings of this study revealed a significant impact of board composition on the return on asset of industrial goods firms in Nigeria. This implies that industrial firms in Nigeria should maintain more independent directors, because effective board composition will reduce such unethical practices by managers through closely monitoring of their activities.
- The management of industrial goods firms in Nigeria should decrease their assets and reduce the scope of their activities by providing few branches in order to decrease their size. Because this study revealed that the size of firms under the study indicated that capital structure and corporate governance with the effect of firm size were negatively influences their profitability.

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