THE EFFECT OF CAPITAL STRUCTURE ON FINANCIAL PERFORMANCE WITH FIRM SIZE AS A MODERATING VARIABLE OF NON FINANCIAL FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

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Abstract

The purpose of this study was to establish the relationship among capital structure, firm size, and financial performance of firms listed in the Nairobi Securities Exchange. The study first explored the relationship between capital structure and financial performance. The study then explored the moderating variable on this relationship. Capital structure had financial leverage as an indicator. Financial leverage is operationalized by the debt to equity ratio. Financial performance was measured by Tobin's Q. This study is anchored on a positivism research philosophy because it is based on existing theory and it formulates quantitative hypotheses to be tested. Correlational descriptive research design is used to describe the relationships as they exist between specific variables. Secondary data was for the period 2010 to 2017. Data was analyzed using descriptive statistics, multiple and simple regression analyses. The findings indicate a positive statistically significant effect of capital structure on financial performance. Furthermore, firm size (total sales) has a positive moderating effect on the relationship between capital structure and financial performance. Firm managers should seek to grow their firm sizes. This is because larger firms have consistently increased the use of debt in their capital structure. Lenders often perceive larger firms as less risky consumers of credit because of their superior collateral structure. The study, therefore, recommends that firm managers, shareholders, practitioners, the government and other regulators should ensure that they advise and embrace the best firm financing option that helps improve firm financial performance thereby enhancing shareholders value.

Keywords: capital structure, firm size, total sales, financial performance, Nairobi Securities Exchange.

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1.1   Introduction

Capital structure is an intensely controversial issue in finance (Myers, 2001). According to the Modigliani and Miller (1958) theorem, a firm's level of debt or equity is inconsequential from an economic point of view. This is due to the corporate tax shield resulting from debt financing and the increased cost of equity. The high cost of equity leads to an increased cost of capital. In their research, Modigliani and Miller evaluated two firms with varying capital structures, one having debt in its capital structure while the other firm's capital structure constituted no debt. The authors have concluded that the firm's financial performance is not determined by the financial decisions taken by companies and hence the market value. Ideally, M&M speculates that the forecasted cash flow is divided adequately between the firm's investors as per the capital structure while the company's value is not influenced by this share-out.

This dimension has however been opposed through several studies which argue that debt levels possess non-neutral impacts on the performance and behavior of the firm. Kosimbei *et al.,* (2014), argued that corporate failure in Kenyan firms has often had a connection with the behavior of financing in these firms. Great focus has been on the failing companies that have been on restructuring in their firm financing. A dilemma exists on the possibility of firms attaining an optimal capital structure, both short-term and long-term. This optimal capital structure and its effect on financial performance is also a matter under consideration. According to Harris (2017), higher firm performance is realized at higher levels of debt. Increased leverage leads to tax exclusion on interest paid on debt. This influences directly firm profitability hence financial performance. Simerly and Li (2000) on the contrary opine about the debt presence in the firm and how it causes decreased financial performance. This is due to the increased cost of equity that causes an increase in the cost of capital that ultimately causes a decline in firm financial performance.

The financial performance of nonfinancial firms is likely to be influenced by firm size. This indicates that firm size influences capital financing decisions embraced by a firm. Wahome *et al.* (2015) indicate that the use of leverage in financing operations is more common among large firms compared to small ones. Among the reasons identified for limited use of leverage among

small firms include asymmetric information (adverse selection), higher bankruptcy costs, huge costs of resolving informational asymmetries and greater agency costs. Dogan (2013) argues that a positive relationship exists between indicators of firm size such as total assets, total sales and numbers of employees with firms' profitability. Firm size has a strong moderating effect on financial distress and capital structure relationship of non-financial firms. This is premised on the notion that companies which are small in size are highly disadvantaged compared to the bigger ones. Firms that are bigger tend to have economies of scale; these companies have a bigger scope of operation and have stronger bargaining power. Therefore, bigger companies are more profitable than smaller companies (Mugai & Muriithi, 2017). Studies that have examined financing among corporates have nevertheless indicated that whenever the company value grows; there will be a decline in direct bankruptcy costs to the company value. The impact of these costs associated with bankruptcy is likely to be less manifested in smaller companies' than on bigger companies' decisions on borrowing, which strengthen their capability to be highly leveraged (Rajan & Zingales, 2005). On the flip side, companies that are smaller tend to deal with the realities of obtaining long-term debt.

The paper anchors on the tradeoff theory by Myers (1984). The trade-off theory of capital structure postulates that managers attempt to balance the benefits of interest tax shields against the net present value of the possible costs of financial distress (Myers, 2001). This theory was expounded more from the study of Kraus and Litzenberger (2011), who formally introduced the interest tax shields associated with debt and the costs of financial distress into a state preference model. According to Chakraborty (2010), the trade-off theory postulates that some form of optimal capital structure should exist according to the balance between the present value of interest tax shields and the cost of bankruptcy. The theory is relevant to this study because of the huge implications on the capital structure decisions firm managers make in carrying out firm operations. Firm managers can make use of the tradeoff theory to determine the debt-equity ratio to embrace to enhance shareholders' value. The tradeoff theory furthermore provides more insight on the amount of debt that should be employed by nonfinancial firms to avoid the possibility of facing bankruptcy.

1.2 Research Problem

Despite interventions, several inadequacies in choices of capital structure and financial performance problems among some nonfinancial firms have been witnessed in Kenya resulting in receivership/statutory management, hostile takeovers and government bailout. According to Onyango *et al.,* (2016) increased leverage in firms leads to increased financial performance. Furthermore, increased leverage causes financial performance decline. This indicates differences in the causal relationship between equity financing and debt financing of companies that are listed on financial performance. Firms that are highly leveraged and that were considered big such as Kenya Airways, Home Africa, ARM cement and Transcentury have had big losses and fallen into deep depth owing debts more than their net worth. These firms that have relied much on debt financing tend to be more liquid to pay their debt obligations. This leads to decreased financial performance. Firm size influences the financing decisions of firm managers by encouraging them to make use of more debt than equity to grow company performance. This is due to the interest tax advantage. Heshmati (2008) on the contrary argued that firms that are listed access the equity market easily, compared to firms that are smaller in size due to fixed costs that are low. Consequently, debt level and firm size have a negative relationship.

Fama and Jensen (2003) opine that big companies like to seek funding from equity sources rather than debt sources. This is due to the higher costs of transactions and information asymmetry that are lesser in big companies compared with small ones. Small firms also face shortcomings in accessing external financing (Cassar & Holmes, 2003). This, therefore, raises the moderating contribution of firm size in the nonfinancial firms' performance and capital structure relationship. Consequently, company managers are unable to decipher the contribution that capital structure has on the companies' financial performance (Kamuti & Omwenga, 2017). The inability of firm managers to make choices on capital structure can be linked to the difficulties in ascertaining exactly the debt and equity that is optimal in their companies that can help increase financial performance (Noreen, 2013). Firm size's moderating contribution in the financial performance and capital structure relationship of nonfinancial firms that are listed also adds to the challenge that firm managers grapple with seeking to improve the listed nonfinancial firms' financial performance. This study seeks to answer the question: what is the moderating role of firm size on

the relationships between capital structure and financial performance of the NSE listed nonfinancial firms?

1.3   Research Hypothesis

To address the above research question, the study addressed the objective through the following two null hypotheses:

H₁: There is no relationship between capital structure and financial performance of the NSE listed nonfinancial firms.

H₂: The relationship between capital structure and financial performance of the NSE listed non-financial firms is not moderated by firm size.

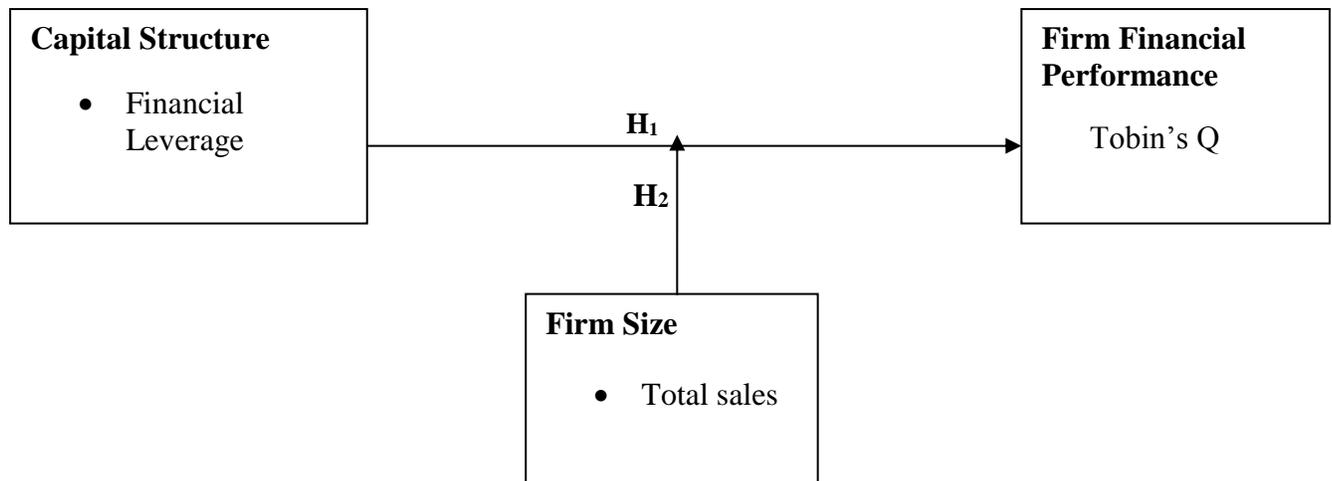The hypothetical relationships were as presented in Figure 1 below.

Figure 1: Conceptual Framework

2.1   Methodology

Quantitative secondary data on the study variables was obtained from the NSE website. Data on capital structure was determined by obtaining debt and equity employed by the listed nonfinancial companies in their various operations. The book values of total equity and total assets were employed to determine the listed nonfinancial companies' financial performance. Firm size was determined by total assets and total sales. Total assets can be operationalized by the natural logarithm of total assets and total sales can be operationalized by the natural logarithm of total sales. Secondary data on capital structure and financial statements was used

because it gives reliable results as compared to primary data. Secondary data was mainly a seven-year (2010-2017) annual historical data on the listed firms' financial performance. A census survey was conducted since the size of the population is small. There are a total of fifty three (53) non-financial companies on the NSE listing as of 31st December 2017. The study period 2010 to 2017 was chosen because many nonfinancial firms faced financial distress, bankruptcies and takeovers. Analysis of data was done through the use of descriptive analysis. Regression was also done to determine the nature and magnitude of the relationships between the study variables and to test the relationships that were hypothesized. Pearson's correlation analysis was done to ascertain the degree of the linear relationship among the variables.

To determine the relationship between capital structure and financial performance (objective i), hypothesis (H_1) the following model was used;

$$Y=\beta_0+\beta_1X_1+\varepsilon...2.1$$

Y=Firm financial Performance,

B_0=intercept, X_1=CS, β_1, β_2, β_3, β_4= coefficients, ε= Error term

Where Y and CS are vectors for firm financial performance and capital structure respectively. Multiple regression model was employed to decide of firms size's moderating effect (objective ii) in concurrence with the methodology by (Baron & Kenny, 1986). The second hypothesis (H_2) was done by the following model;

$$Y= \beta_0+\beta_1X_1+\beta_2X_2+ \beta_3U+\varepsilon...2.2$$

Y=Firm financial Performance,

B_0=intercept, X_1=CS, X_2=Firm Size, β_1, β_2, β_3= coefficients, U=interaction term of Capital Structure & Firm Size= Error term

Where Y and CS are vectors for financial performance and capital structure respectively.

3.1   Diagnostic Tests

Correlation analysis was done to determine whether the variables had a linear relationship. The null hypothesis for the test was that there is no linear relationship. The test statistic for the linear relationship between the predictor variable and firm financial performance (explanatory variable) are shown in Table 1 below.

Table1: Test for Linearity

Reference Variable: Firm Performance	Coefficient of Correlation	P-Value
Capital structure	0.506	0.000
Firm size(total sales)	0.619	0.000

From table 1 above, capital structure indicates a coefficient of correlation of 0.506 and firm size (total sales) shows a coefficient of 0.619. The values exceed 0.5000 meaning a correlation that is positive exists. The respective coefficient of correlation p-value is 0.000 which is lower than 0.05. Thus the capital structure has a significant positive correlation with financial performance at five percent level of significance. Therefore the predictor variables and the explanatory variable move in the direction which suggests a linear relationship. This positive correlation indicates that the signage coefficient of the predictor variables in the simple regression model is positive.

To test what level of multicollinearity that would be tolerated in the models estimated, VIF of less than 10 indicates tolerable levels of multicollinearity (Robinson & Schumacker, 2009). Multicollinearity test finds applications only in multivariate regressions, VIF statistics are the only ones reported because the regressions have independent variables that are more than one.

Table 2: Test for Multicollinearity

Variables	VIF
Capital structure	1.280
Financial Performance	1.712
Firm Size(Total sales)	1.007

Table 2 above shows that the VIF for all models are between the acceptable ranges of 1.007 to 1.712 This indicates that the results of the VIF are between the ranges of 1 to 10 (Robinson & Schumacker, 2009). This indicates that multicollinearity was not exhibited by the variables. Therefore regression analysis could be carried out. Were the VIF factor >10, it would imply serious multicollinearity. Serious multicollinearity can be dealt with by dropping collinear variables or obtaining additional data.

4.1   Analysis and Discussion of Findings

4.1.1   Descriptive Statistics

To visualize the dataset, descriptive statistics were generated as shown in table 3.

Table 3: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
FP	367	.00	5.62	1.3511	1.19312
TSALES	367	.00	5.23	2.1252	.86823
CS	367	.01	4.79	1.7916	.83616
Valid N (listwise)	367				

The results presented in Table 3 above show descriptive statistics for secondary data for 7 years from 2010 to 2017. Table 1 gives the descriptives for the main research study variables. The table shows that the average Tobin's Q is 1.3511. This indicates that on average, NSE listed companies fairly have an impressive financial performance. Tobin's Q mean of 1.3511 suggests that the firm's market values are more than the firms' book values. The market price to book value ratio is more than one, which means that the market value of these companies expects that they will increase in the future because the future earnings are taken into account using the current price. For Capital structure, the average is 1.7916, meaning that most NSE listed non-financial companies have a large debt amount compared to equity. On average the mean for total sales of listed firms at the NSE is indicated by a log of 2.1252 indicating that the firms have fairly high total sales.

4.1.2   Pearson moment Correlations between Financial Performance and Capital Structure

The strength and direction of the variables' relationship were investigated. This was done using a correlation coefficient. This was significant to assess whether any relationship exists between the variables before proceeding with further analyses. The study employed the following

classification: strong if 0.7 and above; moderate if 0.4 but less than 0.7 and weak if 0 and less than 0.4.

Apart from analyzing the direction and strength of the relationship, correlation analysis was also used to find out the existence of multicollinearity. Multicollinearity exists if independent variables are highly correlated. (r=or greater than 0.75).Multicollinearity reduces the importance of predictors, making it difficult to assess the individual importance of a predictor. Multicollinearity may lead to poor regression modeling (Dancey & Reid, 2011). The results in table 4 below show that there is no multicollinearity since all the predictor coefficient results are below 0.75.

Table 4: Capital Structure and Financial Performance

		FP	CS	TSALES
FP	Pearson Correlation	1	.556[**]	.316[**]
	Sig. (2-tailed)		.000	.000
	N	367	367	367
CS	Pearson Correlation	.556[**]	1	.370[**]
	Sig. (2-tailed)	.000		.000
	N	367	367	367
TSALES	Pearson Correlation	.316[**]	.370[**]	1
	Sig. (2-tailed)	.000	.000	
	N	367	367	367

As shown in table 4 above a strong positive correlation exists between financial performance and capital structure(r=0.556). Financial performance and capital structure relationship moved in the same direction as hypothesized in the study. The correlation between financial performance and total sales is also weak but positive(r=0.316). All the correlations were significant.

4.1.3 Capital Structure and Financial Performance

The study resorted to determine the effect of capital structure and financial performance of the NSE listed nonfinancial firms and it employed panel data design. Panel data was used in establishing financial performance which was measured by Tobin's Q. Debt/equity ratio was used to measure capital structure. The study sought to identify the effect of capital structure on financial performance. The following hypothesis was developed:

H₁: Capital structure does not affect the financial performance of nonfinancial firms listed on the NSE.

The maximum Likelihood regression Model was employed in data analysis. Test statistic regression results with the dependent variable and the independent variable are reported in Table 5 below:

Table 5: Panel data results for Capital Structure and Financial Performance

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.567[a]	.321	.319	.98432

a. Predictors: (Constant), CS

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	167.231	1	167.231	172.602	.000[b]
	Residual	353.643	365	.969		
	Total	520.874	366			

a. Dependent Variable: FP
b. Predictors: (Constant), CS

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.589	.077		7.602	.000
	CS	.715	.054	.567	13.138	.000

a. Dependent Variable: FP

The coefficients in the model are shown in table 5 above. The study results show that capital structure is a significant predictor because the p-value is 0.000. This is lesser than 0.05(level of significance). Furthermore, the results indicate R^2 of 0.321 which implies that capital structure explains 32.1% of the variability in financial performance. The null hypothesis has been accepted giving the implication that capital structure has an effect that is significant on the financial performance of nonfinancial firms listed at the NSE as shown below:

$Q_{it} = 0.589 + 0.715CS_{it}$

Where:

Q= Financial Performance

CS= Capital Structure

4.1.4   Capital Structure, Firm Size and Financial Performance

This study sought to determine the effect of firm size (total sales) on the relationship between capital structure and financial performance with the following hypothesis:

The moderating effect of firm size (total sales) on the relationship between capital structure and financial performance was assessed using the centered approach by (Wu & Zumbo, 2008). This involves the following two steps. Step 1 involves the independent variables and the moderator variables being regressed against financial performance. Step 2, on the other hand, entails the introduction of the centered approach in the model with the predictor, moderating variable and interaction term being factored. Results of the regression results are shown below in Table 6.

Table 6: Panel Data Results for Financial Performance as Dependent Variable and Capital structure and Firm Size (Total Sales) as the predictor variables.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.591[a]	.349	.345	.96512

a. Predictors: (Constant), TSALES, CS

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	181.825	2	90.912	97.603	.000[b]
	Residual	339.049	364	.931		
	Total	520.874	366			

a. Dependent Variable: FP
b. Predictors: (Constant), TSALES, CS

Coefficients[a]

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	.098	.145		.675	.500
	CS	.717	.053	.568	13.431	.000
	TSALES	.230	.058	.167	3.958	.000

a. Dependent Variable: FP

Results in Table 6 above show an R^2 of 0.349 and an adjusted R^2 of 0.345. Table 6 above shows the coefficients of capital structure and total sales as 2.088 and 0.057 respectively. The p values for capital structure and firm size (total sales) are 0.000, indicating statistical significance for capital structure and firm size (total sales) because the p-value is less than 0.05. Results for step 2 are displayed in Table 6 below, where the interaction term is introduced.

Table 7: Panel Data Results for Financial Performance as the Dependent Variable, Capital Structure and firm size (Total Sales) as the Predictor Variables, Centered Approach

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.594[a]	.353	.348	.96351

a. Predictors: (Constant), TSALES_CENTRED, CS_CENTRED, CS_TSALES_CENTERED

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	183.884	3	61.295	66.026	.000[b]
	Residual	336.990	363	.928		
	Total	520.874	366			

a. Dependent Variable: FP

b. Predictors: (Constant), TSALES_CENTRED, CS_CENTRED, CS_TSALES_CENTERED

Coefficients

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.351	.050		26.855	.000
	CS_TSALES_CENTERED	.082	.055	.068	1.489	.137
	CS_CENTRED	-.694	.056	-.550	-12.501	.000
	TSALES_CENTRED	-.204	.061	-.148	-3.364	.001

a. Dependent Variable: FP

Results from table 7 above show R squared show change from 0.349 to 0.353 which is a change of 0.004(0.4% change) and adjusted R squared changed from 0.345 to 0.348 which is a change of 0.003(0.3% change) occasioned by the interaction term. This is also confirmed by the p-values which are less than 0.05 which means firm size (Total sales) moderates the relationship between capital structure and financial performance significantly. The regression model for the moderation effect of firm size (total sales) is shown below:

$Q_{it} = 1.351 + -0.694CS_{it} + -.0204SALES_{it} + 0.082 \, CS \, SALES_{it}$

5.1 Findings and Discussion

The first objective of the research was to determine the influence of capital structure on the financial performance of NSE's listed nonfinancial firms. This was achieved through analyzing the panel data. The indication from the results is that a significant positive relationship exists between capital structure and financial performance. Findings on the influence of capital structure on financial performance also showed a statistically significant relationship. These studies are consistent with other similar ones. For example, Saeedi and Mahmoodi (2011) found a relationship that is positive between capital structure and financial performance of firms listed at the Teheran Securities Exchange. The positive significant effect of capital structure on financial performance is due to the increased level of leverage by firms. This leads firms to utilize a greater amount of debt thereby obtaining the debt tax benefits. Consequently, the tax benefits lead to increased profitability hence financial performance.

Similarly, Cyril (2016) established that capital structure has an effect on both ROA and AT of the conglomerates but did not find any effect on return on equity (ROE) and earnings per share (EPS) of the conglomerates. The study difference in the study findings by Cyril (2016) is due to business factors that affect a particular industry depending on where the firm operates. This is due to the different tax benefits obtained in the debt-equity mix in various industry sectors. Furthermore, differences in the study findings are due to differences in the operationalization of financial performance between the accounting-based and market-based measures.

The study indicates that the use of leverage in financing operations is more common among large firms compared to small ones. Among the reasons for limited use of leverage among small firms include asymmetric information (adverse selection), higher bankruptcy costs, huge costs of resolving informational asymmetries and greater agency costs. The study findings, therefore, indicate that firm size exhibits a statistically significant positive moderating effect on the relationship between capital structure and financial performance, and the effect is statistically significant. The positive effect of firm size is confirmed by Mugai and Muriithi (2017) who assert that firm size has a strong moderating effect on the relationship between capital structure

and the nonfinancial firms' financial distress. The indication from this study is that larger companies report increased profitability in comparison to smaller companies. Similarly, Abbasi (2015) found out firm size to have a moderating effect on the relationship between firm growth and performance in Pakistan. Findings from the study show that increases in firm size lead to a commensurate growth in company profitability. This is because big firms can attract exemplary human resources that will significantly contribute to their financial performance.

Big companies can gain as a result of economies of scale, operation scope, and stronger bargaining power. Consequently, smaller firms are less profitable than bigger firms. Relatively bigger companies tend to embrace diversification; consequently, they have fewer insolvency risks. Larger firms can also attract exemplary human resources that will significantly contribute to their financial performance. Large companies face fewer bankruptcy risks since they undertake massive diversification compared to smaller companies. Bankruptcy levels that are low assist companies that are big to have increased profitability. Similarly, Wahome *et al.*, (2015) studied the effects of risk and firm size on the decisions regarding capital structure among the Kenyan Insurance companies. Results from the research indicated that the use of leverage in financing operations in big insurance companies is more common compared to those that are smaller and this led to increased companies profitability. Among the reasons identified for limited use of leverage among small firms include asymmetric information (adverse selection), higher bankruptcy costs, huge costs of resolving informational asymmetries and greater agency costs. From the study findings, the increase in financial performance is a result of the increase in firm size is due to the reason that big companies do not face increased bankruptcy even with increased leverage levels since they undertake massive diversification compared to smaller companies. This massive diversification helps in risk mitigation that leads to growth in profitability of the listed nonfinancial firms.

5.2   Conclusions and Recommendations

From the research findings, capital structure is vital to the firm financial performance of the NSE listed nonfinancial companies. Firms should strive to increase their leverage since it has a statistically significant positive effect on the financial performance of the NSE listed nonfinancial companies. This is because from the results of the study firms utilize higher debt.

This is indicated by a higher debt to equity ratio. This enables them to obtain the tax benefits associated with debt. Consequently, the tax benefits lead to increased profitability hence financial performance. Firm managers should seek to grow their firm sizes. This is because larger firms have consistently increased the use of debt in their capital structure.

The findings have indicated that capital structure and financial performance have a positive relationship. The recommendation of the research is that company managers, other practitioners and investors should focus on the need to make the right capital structure decisions that involve increased debt levels that will help increase firm financial performance. The positive capital structure indicates that a firm is utilizing more debt than equity in its financing decisions. The implication of this is that to achieve growth and improved financial performance, firms should be highly leveraged. Regulators, policymakers, investors and other practitioners should emphasize the right capital structure choices and seek to grow firm size by increasing firms' total sales and total assets to maintain, if not improve high firm performance. The indication from the study is that choosing the best decisions on firm financing can help firm managers take actions that are in harmony with shareholders' interest which is enhancing firm value.

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