# THE RELATIONSHIP BETWEEN CAPITAL STRUCTURE AND PROFITABILITY OF CONSTRUCTION AND ALLIED FIRMS LISTED AT THE NAIROBI SECURITIES EXCHANGE

**BY:**

**MWANGI ERIC MACHARIA**

**REG: D61/78937/2015**

**A RESEARCH PROJECT PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION OF THE UNIVERSITY OF NAIROBI**

**OCTOBER 2016**

# DECLARATION

This research project is my original work and it has not been presented for any academic award in any university or institution of higher learning.

Signature: ..... Date: .....

Mwangi Eric Macharia

D61/78937/2015

This research project has been presented for examination with my approval as the University Supervisor.

Signature: ..... Date: .....

Mohamed N. Mwachiti

Lecturer, Department of Finance and Accounting

School of Business

University of Nairobi

# ACKNOWLEDGEMENTS

I give God all the glory for enabling me to study MBA at the University Of Nairobi. Many thanks to my supervisor, Mr. Mwachiti for his invaluable support throughout the research period.

Many thanks to my parents and my immediate family for their patience and understanding throughout the entire postgraduate study period at the University. You truly are a great source of inspiration for me.

Finally, I wish to thank my employer through Patrick Mwirigi, General Manager, Internal Audit at Simba Corporation Ltd for the support during my entire MBA program. The timely approval of study leave and flexible working hours made it possible for me to achieve my MBA dream.

# DEDICATION

The research project paper is dedicated to my loving late grandmother Tabitha Mugure who taught me the value of education at a very young age; my parents and my siblings who made my academic dream a reality. God bless you all.

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF ABBREVIATIONS

| | |
|---|---|
| EBIT | Earnings before Interest and Tax |
| EPS | Earnings per Share |
| NCA | National Construction Authority |
| NSE | Nairobi Securities Exchange |
| ROA | Return on Assets |
| ROCE | Return on Capital Employed |
| ROE | Return on Equity |
| ROI | Return on Investment |

# ABSTRACT

Capital structure is a very debatable topic in finance mainly in regard to the optimal capital structure that will result to maximum value of a firm. Several theories have been postulated to try to contribute to this broad topic. The objective of the study was to determine whether relationship exist between capital structure and profitability of listed Constructions and Allied firms at NSE. The study used a descriptive research design covering a period of 10 years from 2006 to 2015. Secondary data for the five listed construction and allied firms was collected. It was analyzed using multiple Regression model and descriptive statistics. The independent variables were long term debt ratio and size of the firm and the dependent variable was Return on Assets. Descriptive statistics revealed that, listed construction and allied firms financed most of their assets through equity. The mean of long term debt ratio was 24%, the profitability as indicated by return on Assets (ROA) had a mean of 8% while the average size of the firms measured by Sales was at 16%.The study found capital structure and profitability of listed construction and allied firms at NSE to have a weak negative relationship. However firm size was positively related with profitability. Thus the study recommends that construction sector companies should finance most of the assets using other sources of finance such as equity, preferred stock and maintain long-term debts at minimum levels and their management should come up with strategies to drive their sales to increase their profitability. Commercial banks should be cautious as they lend long term loans to the construction sector.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Financing decision is a key decision function of financial management. Capital structure decisions involves deciding the debt level and equity amount to use to attain the optimal capital structure. The long term sources of finance which form the firm's capital structure include debt capital, preference share capital, and ordinary share capital. Use of each source come with cost therefore a firm has to ensure that the cost is minimized as much as possible. Capital structure decisions is a very debatable topic in finance mainly in regard to the optimal capital structure that will result to maximum value of a firm. Several theories have been postulated to try to contribute to this broad topic.

Modigliani and Miller (1958) developed proposition that capital structure irrelevance proposition which initiated further research on the topic. Other researchers have developed several capital structure theories. These include Pecking order theory which holds that financing decisions follow a hierarchy which starts with internal sources of finance (retained earnings) followed by external financing which starts with debt and finally issuance of new equity. Trade off theory holds that optimal capital structure exists at a point where benefits for debt financing are offset by the costs of using debt, resulting in the lowest cost of capital. Finally market timing theory holds that there is that best time to issue new equity in the market, therefore managers are always on the look for that time.

One of the major goal of a firm is profit maximization. Profit is the most commonly used measure of financial performance of any firm. It is determined by matching revenues and

costs associated in generating that revenue. In order to achieve the profit maximization goal firms are affected by various factors which determine their profitability levels. The management should therefore continuously monitor those factors to in order to remove those with negative influences and to enhance those with positive impact on profitability of the firm. Such factors include capital structure, inflation rates, liquidity, growth, size of the firm etc. This study focused on the listed construction and allied firms at the NSE.

According to Vijayakumar and Karunaiathal (2014) assets financing is a challenge faced by all businesses and can be solved by having a proper combination of equity and debt capital. In designing the capital structure, it is important to be guided by the goal of maximizing firm's value as well as the propositions of the various theories on capital structure. Vijayakumar and Karunaiathal (2014) found that firms' profitability is insignificantly positively related with capital structure.

Construction sector is a key pillar to the economy of Kenya as a developing economy. Government stimulates economic activities through development of infrastructures such as roads, railways, airports etc. The government has been undertaking very mega infrastructural projects on its road to attainment of the vision 2030. The study intended to examine capital structure and profitability of construction sector which is largely under researched in Kenya, as a developing country and provide literature on the subject.

### 1.1.1 Capital Structure

Saad (2010) defined capital structure as how a firm combines various capital sources like ordinary shares, debt and preferred stock to finance firm's assets. Firms which are purely equity financed, all the after tax profit is a benefit to the shareholders. However firms with

a portion of debt in their capital structure a portion of its profit is used to meet the debt payment obligation. Therefore it should be a balancing act in choosing various proportions of debt and equity as they work towards their optimal capital structure.

Optimal capital structure varies from one sector to another, this is mainly caused by the differences in the earnings ability and the assets structure which affects firms borrowing power (Schwartz, 1959). MacKay and Phillips (2002) study found that industry factors affect capital structure of a firm and thus they should be taken into considerations when making financing decisions. According to Gitman (2003) a lower cost of capital maximizes firm's value. However this can only be achieved if the firm has an optimal capital structure. Unfortunately, there is no well-defined formula for determining the optimal capital structure.

There are several ratios used in relation to capital structure of a firm. Debt to equity ratio which measures equity and debt proportions used in financing firm's assets. Debt ratio which measures the proportion of a firm's debt to total assets while the equity ratio measures the proportion of equity used in financing the company assets. The debt component can be broken down into short and long term aspects.

### 1.1.2 Profitability

According to Kumar (2015) profitability is the firm's ability to consistently generate net income. Profit maximization is one of the key goal of any business. Managers continuously try to make choices which will result to increase in firms profit avoiding those that have negative effect on profits. Profitability of a firm is usually affected by various factors such as capital structure, inflation rates, firm size, competition etc. Profitability is usually

measured using ratios which assist in summarizing large volumes of financial data into meaningful figures for interpretation. Various stakeholders compute firm's profitability ratios in establishing firms' ability to generate profits which is an indicator of firm's performance. There are several profitability ratios such as: ROE ratio which shows the return shareholders' earns from their funds, ROCE determines firm's ability to generate return for the owners and Gross Profit markup is the net of revenue and cost of goods sold.

Ratios forms a very good way of profitability measurement. However comparing ratios across firms may be difficult because the firms may not be comparable. Data among companies may not provide meaningful comparisons because of factors such as use of different accounting policies and the size of the company. Therefore use of ratios should take into consideration such limitations.

### 1.1.3 Capital Structure and Profitability

The key objective of a firm is to maximize profits. Every capital decision is associated with its own costs which eventually affects profitability of a firm. Therefore this should be a balancing act in order minimize the financing costs. Scholars have developed several capital structure theories. According to Addae, Baasi and Hughes (2013) the relationship between the firms' profitability and capital structure can either be positive, negative or neutral relationship. Velnampy and Niresh (2012) study found that firm's profitability and capital structure are negatively associated. Yegon, Cheruiyot, Sang, and Cheruiyot (2014) as well as Shubita and Alsawalhah (2012 concurred that profitability and firms capital structure are negatively related.

Further empirical studies on capital structure and profitability carried out by Sarkar and Zapatero (2003) revealed positive association between gearing level and profitability of the firm. Abor (2005) conducted a similar study in Ghana concurred that short term debts and long term debts have a positive association with firm's profitability. Goyal (2013) conducted a study in India which revealed that a positive correlation relationship exist between short term debt and profitability. Mwangi (2010) conducted similar study at NSE where the study findings were that a firm gearing is positively related with ROE and ROI.

### 1.1.4 Constructions and Allied Firms Listed at NSE

Kenya construction industry is partially regulated by the NCA which was formed under an Act of parliament No. 41 in 2011.It is key mandate is to register contractors and new builders allowed to operate in Kenya. According to the Economic Survey (2016) building and construction industry registered a growth of 13.6 per cent in 2015 compared to an expansion of 13.1 per cent recorded in 2014.This growth was partly attributed to the ongoing such as Standard Gauge Railway (SGR) construction works as well as the roads constructions by both the County and National government. Cement consumption went up by 9.9 per cent from 5.2 million tonnes in 2014 to 5.7 million tonnes in 2015. There are five listed construction and allied firms at the NSE (Appendix 1)

## 1.2 Research Problem

Assets financing is a challenge faced by all businesses and can be solved by having a proper combination of equity and debt capital (Vijayakumar & Karunaiathal, 2014). In designing the capital structure, it is important to be guided by the goal of maximizing firm's value as well as the propositions of the various theories on capital structure. Use of debt or equity

is associated with different levels of risk, benefits, and control. The benefits and costs should be balanced towards achieving capital structure that is optimal as per the trade-off proposition.

Raheman, Zulfiqar and Mustafa (2007) did a similar study at the Islamabad Stocks Exchange covering a five years period 1999 to 2004 where sample size of 94 non-financial firms was used. The findings revealed that profitability is significantly affected by capital structure. Oguna (2014) conducted a similar study focusing on the listed construction & allied and manufacturing firms at NSE. The study results indicated that correlation between ROE and current debt was significant compared to the correlation between ROE and the long-term debts. Thus concluding that capital changes affect performance of a firm. Abor (2005) conducted a similar study in Ghana that revealed that short term debts and long term debts have a positive association with firm's profitability. Addae, Baasi and Hughes (2013) conducted a similar study in Ghana using Abor (2005) model which gave contradicting results that total debt and profitability are negatively related.

Murakaru (2013) conducted a similar research with the objective of establishing whether capital structure and profitability of listed Construction and Allied firms at NSE are related. The study period was 10 years from 2003 - 2012.Descriptive data analysis techniques and regression analysis were employed. It found out that there was significantly positive relationship between firm's level of short term debt, total debts, long term debt and firms profitability. This being a very under researched area it is important that more studies are conducted since even the dynamics in the construction sector in Kenya have really changed from the time Murakaru (2013) conducted his study covering the period up to the year 2012.According to the Economic Survey (2013) loans advanced to construction and allied

firms in Kenya was at Kshs 69.2 billion in 2012, while the cement consumption in 2013 was at 3.9 million tonnes. According to Economic Survey (2016) loans advanced to construction sector in 2015 was at Kshs 106.4 Billion translating to 54% increase from what was advanced in 2012, while cement consumption in 2015 was 5.7 million tonnes. Does it mean that construction and allied firms are financing more of their assets through debt and what is the impact of that on profitability? These are some of the questions the study sought to answer using a different model from what was used by Murakaru (2013) covering the period from 2006 to 2015.

Construction industry acts as economic catalyst for a country that is why the government spend a big chunk of its budget on infrastructure development. The effects of capital structure on firms' profitability cannot be ignored since profitability is a key determinant of survival for a firm. Several studies on capital structure conducted mostly internationally and few in Kenya have given contradicting results which justifies further research. Many studies done in Kenya have mainly focused on banks and other industries, thus construction and allied firms are under researched. More studies on capital structure should be conducted focusing on construction and allied firms in Kenya. This will help scholars and investors in the sector understand the relationship thus assisting them to make informed capital structure decisions. The study sought to answer the question; does relationship exist between capital structure and profitability of listed Construction and Allied firms at the NSE?

### 1.3 Research Objective

To establish the relationship between capital structure and profitability of listed Constructions and Allied firms at the NSE.

## 1.4 Value of the Study

Most of the studies on the topic conducted in Kenya have focused on commercial banks while others have studied all firms listed at various stock markets. There are actually very few studies conducted in Kenya in regard to construction and allied firms. Therefore this study will contribute existing body of knowledge in regard to capital structure and profitability of construction and allied firms.

The study will also be useful to investors in the construction and allied firms industry. It will assist them with information on how various capital structure combinations affect the profitability of the firms they have or intend to invest in.

The study will also be useful to regulatory agencies such as Capital Market Authority as it will shed some light on how capital structure affect profitability of firms. Therefore as they approve new capital issues they can look at the impact the proposed structure will have on firms' profitability.

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Introduction

The chapter focused on the key literature of capital structure and profitability. First section covers theoretical review of various theories on capital structure, a review of determinants of profitability for firms under study. The second section covers the empirical studies and chapter summary.

## 2.2 Theoretical Review

Several capital structure theories have been put forward by different scholars and researchers. The study focused on three key theories of capital structure; Pecking order, trade-off and market timing.

### 2.2.1 Pecking Order Theory

Donaldson first postulated the theory (1961), later it was modified by Myers and Majluf (1984).It postulates that businesses will first utilizes internal financing sources before going for the external financing. According to Myers and Majluf (1984) businesses adopt a particular order to finance their firms. And due to the problem asymmetries of information firms will give priority to internal sources before going to financing externally. Myers and Majluf (1984) further argues that information asymmetric problem can be resolved if firms uses only internal sources of funds to finance its investments. These therefore mean the issuing new equity is usually expensive due to information asymmetries. Therefore should external financing be required, debt would be preferred over equity (Siro, 2013).

Sheikh, Shakeel, Iqbal and Tahir (2012) concurred with the pecking order theory that internal sources are given first priority followed debt issuance and finally equity in capital structure formulation. They further argued that in the strong market, the theory supports that issuance of new equity will not happen, while in the weak market form, it is acceptable to issue limited amount of new equity. Mbugua (2010) also concurs with the theory that the businesses gives priority to the internal sources of finance as their assets base, sales, liquidity and profitability levels increases and thus use low external sources.. Therefore companies with more internal funds first use them in financing their new projects while those which have limited internal funds have no choice but to use debt followed by equity in that order as guided by the pecking order propositions. Hence pecking order implication is that high profitable firms have low gearing ratio compared to the loss making firms.

Pecking order theory high preference for internal funds can therefore mean that firms with high amount of internal funds will not use external financing thus they will have zero debt ratio. This may not be achievable for the small micro enterprises and startups which are usually faced with working capital challenges. Pecking order predicts that high growth companies have high debt ratio since they will opt for more debt than equity (Fama & French, 2002).

### 2.2.2 Trade-Off Theory

It is also referred to us the Optimal capital structure theory. It suggests that firm optimal capital structure which maximizes its value exist (Tarek, 2013).It is reached through careful trade-off of cost of debts and equity with their respective benefits. Myers (2001) indicated that end point of borrowing or using debt is that point at which benefits of tax shields on

debts added are outweighed by the possible financial distress costs. Tax shield is a key benefit of using debt while on the con of debt is the financial distress cost (bankruptcy cost) which arise when the firm is unable to pay its debts. Other costs of using debt include transaction cost, informational asymmetry and agency cost. Agency costs are brought about by the differing interests among various stakeholders of the firm due to information asymmetry (Jensen & Meckling, 1976).

Titman and Wessels (1988) criticized these theory proposition that highly profitable organizations borrows more in order to get the benefit of tax deductibility on interest payments, their study found out that high profitable firms tend to borrow less which is actually not in agreement with the theory. Graham (2000) tried to establish the benefits level of using debt, the study found out that highly profitable and liquid firms use debt conservatively. This is contrary to the Trade-off theory.

### 2.2.3 Market Timing Theory

It was suggested by Baker and Wurgler (2002). It postulates that firms normally issue new shares the time they are deemed to be overvalued and later buy them back when deemed to be undervalued. This aspect of timing affect firm's capital structure due to the prices fluctuations. The theory is approached from two versions which lead to the same capital structure. The first version assumes that economic agents are rational thus firms will time their issuance of new equity after release of positive information in order to reduce information asymmetry problem among various stakeholders of a firm. Release of positive information leads to increased stock price hence the timing (Baker & Wurgler, 2002).Second version assumes that investors are irrational therefore due to irrational behavior sometimes the stocks are mispriced. Therefore new stocks are issued when cost

is deemed to be low irrationally and repurchased when cost is high irrationally (Baker & Wurgler, 2002). This is simply an act of timing the market. They also found out that external financing weighted average of historical market-to-book and current market leverage are negatively related, which is an evidence for market timing.

Alti (2006) in his study which he was trying to establish the impact of timing the market in relation to capital structure, which found market timing to be short term in nature. The study asserts that hot-markets have low leverage ratios than cold-market firms during IPOs a position that changes after public trading starts where hot-markets companies leverage increases. The effect of market timing to firms leverage is therefore transitory and it vanishes by the second year after going public. Several studies on market timing supports the notion that managers are always waiting for better conditions in the market before issuing new stocks. However the studies still lack theoretical models, hence more research needs to be done on the theory.

### 2.3 Determinants of Profitability of Listed Construction and Allied Firms

One of the major goal of a firm is profit maximization. Profit is a key indicator of financial performance of any firm. It is determined by matching revenues and costs associated in generating that revenue. In order to achieve the profit maximization goal firms are affected by various factors which determine their profitability levels. The following are some of the factors that determine profitability of a firm; capital structure, inflation rates, size of the firm, liquidity management etc.

### 2.3.1 Capital Structure

Before starting off any business, capital is the first thing that comes in. Therefore before the issues of profitability arise it can be said that capital is the starting point. The next question is how that that capital should be structured in order to maximize profit of a firm. According Siro (2013) financial performance of listed companies in Kenya is inversely related with the capital structure. The findings indicates that rise of gearing ratio will result to lowering of ROE, which means that a firm should use more equity than debt.

Firms that use debt in their capital structure enjoy tax deductibility on the interest payments thus reducing their taxable income and thus increased profitability. However high leverage exposes the firm to potential financial distress therefore it is an act of balancing of benefits and costs of using debt. Financial distress costs include legal fees, loss of tax shield, accountancy fees and administrative costs reduce the profit margins. This is coined well by the Trade-off theory. Construction and allied firms usually require huge capital outlay to start and operate. This implies that there is need to ensure capital structure decision are made in such a way that it is not in conflict with the profit maximization goal.

### 2.3.2 Inflation rates

Inflation is the general increase in price levels. High inflation rates affect the profitability of firms negatively since it reduces the purchasing power of customers. High interest rates results to high inflation rates which increase firms financing cost thus reducing firms profit margins. High interest rates also have negative impact on the general construction industry since most of the developments are usually debt financed thus when the interest rates are high the uptake of debt financing is low thus reduced activities in the sector. Thus reduced

sales for construction and allied firms. According to Perry (2002), impact of inflation on profitability depend on whether expenses as well as revenues increases at a high rate than the inflation rate and whether inflation is anticipated. The study confirms that inflation is one of the macroeconomic factor that affect firm's profitability. Masood and Ashraf (2012) found out inflation rate and profitability are positively related.

### 2.3.3 Size of the firm

Firm size can be described as the firm production capacity and ability to provide a variety of goods and services to its clients. Companies that are bigger in size are usually profitable than their small counterparts. This is because they are in a position benefit from advantage of economies of scale. Mesut (2013) revealed that size and profitability are positively correlated. Jonsson (2007) studied the relationship between profitability and firm size in Iceland and found that big firms are more profitable than small firms. However, Niresh and Velnampy (2014) found neutral relationship between profitability and firm size.

### 2.3.4 Liquidity Management

Liquidity management is one of the key role of the management of any organization. Proper liquidity management ensures that a firm is able to meet its financial obligations which include but not limited to operating expenses, current liabilities and non-current liabilities. Liquidity ratios are normally used as primary indicator of liquidity strength of a firm. All firms' stakeholders are keen on the company's liquidity position; suppliers are interested with their payments, employees are keen on the firm's ability to pay salaries while shareholders are concerned with the profitability for them to receive cash dividends. Njoroge (2015) found liquidity positively affects performance of listed construction and

allied firms at the NSE, the study further found that financial performance is positively affected by the current ratio. Thus, company should maintain adequate liquidity levels as it affects profit.

## 2.4 Empirical Review

The section summarizes literature of similar studies conducted on the topic both locally and internationally.

### 2.4.1 International studies

Arabahmadi and Arabahmadi (2013) conducted a case study at the Tehran Stock Exchange with the objective of establishing effect of capital structure on profitability. It sampled 252 firms in the non-financial sector covering period from 1999 to 2008.Data was analyzed using regression models. The study found long term debt and profitability to be negatively associated. Further studies should be conducted using different profitability and capital structure ratios.

Fareedet al. (2014) conducted a similar study in Pakistan focusing on the textile industry. The study used a sample size of 22 listed firms for the period from 2006 to 2012. Correlation and multiple regression helped to analyze the data. The study found firms leverage has a weak positive relationship with profitability. This therefore means that it should be a balancing act while deciding on the level of leverage to use in the capital structure. The sample size for the study was very small (20 firms).Therefore future studies should conducted using a bigger sample and cover a longer period.

Raheman, Zulfiqar and Mustafa (2007) examined capital structure effects on profitability listed firms at Islamabad. The study was a case study and it used a sample of 94 firms

focusing on non-financial sector covering the period 1999 to 2004. Analysis of data was done using regression model. The results were that capital structure strongly affect profitability of non-financial firms. Therefore firm should give due consideration in deciding on their capital structure as it has effect on profit levels.

Tailab (2014) conducted a similar study focusing on 30 energy firms in America for the period from 2005 – 2013. Multiple regression model was used to analyze data. The study found ROE and ROA to be significantly related with total debt, while size of the firm had negative effect on ROE. However short debt positively affected ROE. The sample size for the study was very small compared with the size of the energy sector in America thus future study should look at a bigger population as well as other sectors of the economy.

Pouraghajan, Malekian, Emamgholipour, Lotfollahpourand, Bagheri, (2012) conducted a similar study at Tehran Stock Exchange. The study sample focused on 12 industrial sectors covering the period from 2006 to 2010. The results found debt ratio and financial performance to be negatively related In addition, research results indicated that debt reduction can result to increase in profitability.

### 2.4.2 Local studies

Siro (2013) conducted a similar study on firms listed at NSE. The study used all the 61 listed firms duly registered with capital market authority of Kenya. The study period was the year 2012. The results obtained revealed that capital structure and financial performance listed firms at NSE are inversely related. The findings further indicated that highly geared firms have a low ROA which means that firms should employ more equity than debt.

Yegon, Cheruiyot, Sang, and Cheruiyot (2014) using a sample of 11 banks listed at NSE conducted a research to establish the relationship between capital structure and profitability of banks. The study period was from 2004- 2012 and analysis of the data was done using regression technique. The findings of the study revealed that short term debt and profitability are negatively related while long term debt a negative relationship with profitability. Sample size for this study was very small based on the fact that Kenya has over 40 banks. Future studies should be conducted incorporating all banks and sectors.

Oguna (2014) conducted a similar study focusing on companies listed at NSE under manufacturing, construction and allied category. It was a descriptive research study and data collected from 2010 to 2013 was analyzed using regression model. The data was analyzed using linear regression models using SPSS. The study findings was that correlation between return on equity and current debt was significant compared to the correlation between ROE and long term debts. Thus concluding that capital changes affect firm's performance.

Gichangi (2014) conducted a similar research using 40 listed non-financial firms listed at NSE. The study period was from 2008-2012 after financial crisis of 2007.It was a descriptive research that used a population of 40 listed non-financial firms. Descriptive data analysis techniques and regression techniques were used. The study concluded that long term debt and profitability are inversely related. The study period covered five years which was very small therefore a similar study should be replicated for a longer period and specific to various industry sectors.

Githire, and Muturi (2015) conducted a similar study at NSE. Explanatory non-experimental design was used research where data was extracted from the listed firm's financial statements for the period 2008-2013. Multiple regression technique analyzed the data. The results revealed that financial performance is positively affected by long term debt and equity and significantly negatively affected by short term debt. The study conclusion was that use of long term to finance a business helps to improve firm's financial performance.

### 2.5 Summary of Literature Review

The literature review indicates a significant relationship exist between capital structure and profitability of a firm although some studies contradicted findings. The theoretical review looked at various capital structure theories. The theory states that firms will first utilizes internal finance sources before going for the external financing. Pecking Order Theory further holds that issuance of new equity would not occur, while in market weak form, it is acceptable to issue limited amount of new equity. Trade-off theory holds that an optimal capital structure exists at a point where the benefits of debt financing are offset by the costs of using debt, resulting in the lowest cost of capital. Finally market timing theory holds that there is that best time to issue new equity in the market, therefore managers are always on the look for that time. The existing theories of capital structure have not been developed with specific industry sectors in mind.

Empirical studies revealed contradicting results which can be attributed to the fact that they were conducted under different conditions focusing on different variables. Both local and international studies have shown contradicting results, some studies indicating positive relationship while other revealed a negative relationship. Profitability is usually determined

by various factors such as capital structure, inflation rates, size of the firm and liquidity. Constructions and Allied Firms are unique based on the way they operate and how their products demand is diverse. Many studies have been conducted on other sectors especially banking industry with few in constructions and allied firms in Kenya. Therefore with this gap, this study sought to establish the relationship between capital structure and the profitability of listed constructions and allied firms at NSE.

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

The chapter details how the research was carried out with the objective of establishing the relationship between capital structure and profitability of listed construction and allied firms at NSE. It covers the study research design, population, sample design, data collection techniques and data analysis. It also highlight the analytical model used in the study and the tests of significance.

## 3.2 Research Design

Descriptive research design was used to conduct the study. The design was chosen due to the reliability of results associated with it. It is very good in describing linkages between different factors and variables as it emphasize on accuracy in measurement of phenomena and require unbiased and reliable observations.

## 3.3 Population

The study population constituted the five listed Construction and Allied firms at the NSE, thus no sampling was required. (Appendix 1)

## 3.4 Data Collection

Secondary data was used in the study. The data was extracted from the audited Statements of financial position and statements of comprehensive income for a ten years period from 2006 to 2015.Net profits after tax and sales figures were extracted from the statement of comprehensive income while total assets and long term debts figures were extracted from the statement of financial position.

### 3.5 Data Analysis

Multiple Regression analysis and correlation coefficient were used to determine the relationship nature between the independent and dependent variables. Significance of the relationship was tested at a confidence level of 95%. Descriptive statistics was used to analyze data by computing median, mean, range and standard deviation of the study variables. A multiple regression equation had been developed using profitability (ROA) as dependent variables, long-term debt ratio and size of the firm as the independent variables.

#### 3.5.1 Analytical Model

The following Multiple Regression Equation was applied in this study;

$$ROA = \beta_0 + \beta_1 LDA + \beta_2 SIZE + \varepsilon$$

**Where:**

ROA: Net profit after tax/Total Assets

β0: The intercept of equation.

β: Coefficients for independent variables.

LDA: Long-term debt/Total assets.

SIZE: Size measured as Natural Logarithm of firm's sales – Control Variable

ε: Error term

### 3.5.2 Test of Significance

The regression model was used to determine the nature of the relationship between Capital structure and profitability of Construction and Allied firms listed at NSE. Analysis of Variance (ANOVA) was computed to determine the effect independent variables has on the dependent variable in regression analysis. Analysis of Variance (ANOVA) will help in establishing the reliability of the regression model in analyzing the variables.

# CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

## 4.1 Introduction

This chapter contains data analysis section and the results of the study. The study data was extracted from the Statements of financial position and statements of comprehensive income for a ten years period from 2006 to 2015.

## 4.2 Descriptive Statistics

The section discusses the results of descriptive statistics for the data analyzed for the ten year period. The table below presents the summary of the descriptive statistics for both dependent variable (ROA) and the independent variables;

**Table 4.1: Descriptive Statistics**

| | **ROA** | **LDA** | **SIZE** |
|---|---|---|---|
| Mean | 0.079 | 0.235 | 15.820 |
| Median | 0.063 | 0.208 | 15.655 |
| Standard Deviation | 0.078 | 0.158 | 0.869 |
| Sample Variance | 0.006 | 0.025 | 0.755 |
| Kurtosis | 2.279 | -1.204 | -0.680 |
| Skewness | 1.026 | 0.308 | 0.477 |
| Minimum | -0.070 | 0.001 | 14.340 |
| Maximum | 0.329 | 0.509 | 17.484 |

The descriptive statistics results above show that over the study period, the profitability as indicated by return on Assets (ROA) had a mean of 7.9% with standard deviation of 7.8%. The Long-Term Debt ratio (LDA) mean was 24 % with a standard deviation of 16%. This shows that 24% of assets in the construction and allied sector are financed using debt. The range of the variables is identified by the median row and the table further indicate the maximum and minimum values of the study variables.

Average size of the firms measured by Sales was 15.8.The maximum value of size was 17.48 and the minimum value was 14.34 which is an indication that firms in the Construction and Allied sector are close in size.

### 4.3 Correlation Analysis

**Table 4.2: Correlation Analysis**

| | **ROA** | **LDA** | **SIZE** |
|---|---|---|---|
| **ROA** | 1 | | |
| **LDA** | -0.142798 | 1 | |
| **SIZE** | 0.314442 | 0.0901082 | 1 |

Multicollinearity check is important in testing whether two variables are highly correlated. The rule of thumb on multicollinearity is that if correlation coefficient exceeds 0.7 for any two independent variables then there is a problem of multicollinearity. Therefore either of the variable should be dropped while performing regression analysis. From the matrix, Long term debt (LDA) has low negative correlation coefficients against Return on Assets

(ROA) while Size has positive correlation against both ROA and LDA. There is no problem of multicollinearity between any variable.

### 4.4 Regression Analysis

Multiple regression analysis was done to help to establish the relationship between capital structure and profitability of construction and allied firms listed at the NSE. MS Excel was used to perform regression analysis.

#### 4.4.1 Regression Output

Below is a summary of the regression statistics output;

**Table 4.3: Summary of Regression Output**

| Regression Statistics | |
|---|---|
| Multiple R | 0.35832832 |
| R Square | 0.12839919 |
| Adjusted R Square | 0.09130979 |
| Standard Error | 0.07442001 |
| Observations | 50 |

R which is the correlation coefficient is used to indicate the nature of relationship between the variables in the study in this case, from the results in the table above there was a weak positive correlation of 0.36. Coefficient of determination measured by adjusted R squared illustrates the variance level in the dependent variable that can be explained by the independent variables changes. The adjusted R squared was at 0.09, which indicates that 9% of profitability changes of construction and allied companies listed at NSE is caused

by the changes in long-term debt level and firm size at 95% confidence interval. This shows that profitability of Construction and Allied firms listed at NSE is not affected much by these variables.

### 4.4.2 Statistical significance of the model

The significance of the estimated model can be summarized in the below ANOVA table;

**Table 4.4: Analysis of Variance**

| | df | Sum of Square | Mean Square | F | Significance F |
|---|---|---|---|---|---|
| Regression | 2 | 0.038346169 | 0.01917308 | 3.46188 | 0.039578948 |
| Residual | 47 | 0.260301899 | 0.00553834 | | |
| Total | 49 | 0.298648068 | | | |

The results of the ANOVA in the table above indicates that the model significance level was 0.0396 which is an indication that the model can be relied to make conclusions on the populations since the significance level value is less than 5%.Since the model is significant it shows that long term debt and natural logarithm of sales are significantly related to the profitability of Construction and Allied firms listed at the NSE.

### 4.4.3 Estimated Model Coefficients

Below are regression model coefficients;

**Table 4.5: Estimated Model Coefficients**

| | Coefficient | Standard Error | t Stat | P-value | Lower 95% | Upper 95% | Lower 95.0% | Upper 95.0% |
|---|---|---|---|---|---|---|---|---|
| Intercept | -0.3698 | 0.1938 | -1.9079 | 0.0625 | -0.7598 | 0.0201 | -0.7598 | 0.0201 |
| LDA | -0.0853 | 0.0676 | -1.2618 | 0.2132 | -0.2213 | 0.0507 | -0.2213 | 0.0507 |
| SIZE | 0.0296 | 0.0123 | 2.4133 | 0.0198 | 0.0049 | 0.0544 | 0.0049 | 0.0544 |

From table above the equation is derived is;

ROA = -0.3698- 0.0853LDA +0.0296SIZE + ε

From the above equation, return on assets would be -0.3698 if size of the firm and the long term debt ratio are held at constant zero. It can be observed that profitability is negatively related with long term debt ratio. Profitability and size of the firm are positively related for the listed construction and allied firms at the NSE. One unit increase in long term debt would result to a decrease in the ROA of 8.53% while growth in size would result to a rise in ROA by 2.96%

**4.5 Discussion of Research Findings**

From the analysis conducted, it was found out that there was a weak positive correlation coefficient of 0.36 between the study variables. Further analysis of the model coefficients shows that long-term debt ratio affect profitability negatively which concurs with Yegon, Cheruiyot, Sang, and Cheruiyot (2014) who concluded that that short term debt is positively related with profitability. The findings however contradicts with Murakaru (2013) conducted a similar research with the objective of establishing whether capital structure and profitability of listed Construction and Allied firms at NSE are related. The study period

was 10 years from 2003 - 2012.Descriptive data analysis techniques and regression analysis were employed. It found out that there was significantly positive relationship between firm's level of short term debt, total debts, long term debt and firms profitability. The results further contradicts with Abor (2005) who conducted a similar study in Ghana that revealed that short term debts and long term debts have a positive association with firm's profitability. It is clear from the results that long term debt and size of the firm are not the major profitability determinants for the Construction and Allied firms listed at NSE.

# CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

## 5.1 Introduction

The chapters summarizes the results, study conclusions, study limitations and policy recommendations as well as the suggestions for future research.

## 5.2 Summary of Findings

The research objective was to establish the relationship between capital structure and profitability of listed Construction and Allied firms at NSE using using descriptive research methodology. The study used Secondary data which was analyzed using a multiple regression model and descriptive statistics. The descriptive statistics results indicated that ROA which was used as the measure of profitability had a mean of 7.9%, while the Long term debt/ Total asset ratio which was used as a measure of capital structure had a mean of 23.5% implying that 24% of assets of listed construction and allied firms are financed through long term debt and remaining 76% through equity.

There was a weak positive correlation which was at 0.36 between the study variables. The ANOVA results of significance level was 0.0396 which is an indication that the model can be relied to make conclusions on the populations since the significance level value is less than 5%.The coefficient of determination was at 0.09, which indicates that 9% of profitability changes of construction and allied companies listed at NSE is caused by the changes in long-term debt level and firm size.

The regression equation results indicates that profitability is negatively associated with long term debt ratio and positively related with size of the firm for the listed construction and allied firms at the NSE. Increase in long term debt would result to a decrease in the ROA of 8.53% while increase in size would result to a rise in ROA by 2.96%.The findings shows that Construction and Allied firms that increase their long term debt ratio will result in reduction of the firm's profitability since the ROA will be negatively affected.

### 5.3 Conclusions

The study findings revealed that an increase in long term debt negatively affects profitability of listed construction and allied firms, thus the study concludes that there is negative relationship between long term debt and profitability of the listed construction and allied firms at NSE. The study also revealed that size of the firm are positively related with the profitability of listed construction and allied firms at NSE.

From the study findings it can be concluded that there exist a weak negative relationship between capital structure and profitability of Construction and Allied firms. This means that there are other factors which affect profitability of Construction and Allied firms more than capital structure. These other factors may include technology level, economic growth, taxation level, competition level, government regulations and inflation. These factors should be included in other future studies relating to profitability of Construction and Allied firms.

### 5.4 Policy Recommendations

The study conclusion was that there exist a weak negative relationship between capital structure and profitability of Construction and Allied firms. The major goal of any firm is to

maximize profits; therefore more studies should be conducted to understand other determinants of profitability of companies in the construction industry. Long term debt ratio and profitability were negatively related thus firms in the construction sector should finance most of their assets using other sources of finance such as equity, preferred stock and maintain long-term debts at minimum levels. Construction firm's management should come up with strategies to drive their sales up since profitability and the size are positively related.

The outcomes also provide very useful information to the Capital Market Authority who approves issuance of long term debt instruments such as bonds; they should do so taking into consideration the negative effects long debt has on the profitability of the firms in the construction sector. Commercial banks should also exercise high level of caution as they lend long term loans to the construction sector.

### 5.5 Limitations of the Study

Data was obtained from Capital Market Authority since the firms studied are listed. The source is credible however it has its own limitations such as the formats the financial statements were in PDF format thus it was time consuming converting them into a spreadsheet for analysis.

The study was conducted on part time basis since the researcher is a full employee thus posing the challenge of time, however despite all the challenges the study achieved its objectives.

### 5.6 Suggestions for Further Research

The research focus was on Construction and Allied firms listed at NSE. Further research should be conducted on all construction and allied firms including the non-listed firms. The

study findings indicated that profitability of construction and allied firms is not significantly affected by capital structure. This means that there are other major determinants of profitability other than capital structure, studies should be done incorporating these factors e.g. liquidity, economic growth, inflation, taxation, government regulation etc.

Further sector based studies should be conducted focusing sectors like manufacturing, commercial services, agricultural and investments. A similar study should also be replicated covering different periods.

# REFERENCES


Abor, J. (2005).The Effect of Capital Structure on profitability. *Journal Risk Finance*, 6,438- 445.

Addae, A.A., Baasi, M.N., & Hughes, D. (2013).The effects of capital structure on profitability of listed firms in Ghana. *European Journal of Business and Management*, 5(31)

Alti, A. (2006). How Persistent Is the Impact of Market Timing on Capital Structure? The Journal of Finance, 61(4), 1681-1710.

Arabahmadi, F. & Arabahmadi, A. (2013). The relationship between capital structure and profitability (Case Study in Tehran Stock Exchange).*Technical Journal of Engineering and Applied Sciences.*

Baker, M., & Wurgler, J. (2002). Market timing and capital structure. *Journal of Finance*, 57(1), 1-32.

Fama, E. F., & French, K. R. (2002). Testing trade-off and pecking order predictions about dividends and debt. The *Review of Financial Studies* 15(1), 1-33.

Fareed, Z., Aziz, S., Naz, S., Shahzad, F., Arshad, M., & Amen, U. (2014).Testing the relationship between profitability and capital structure of textile industry of Pakistan. *World Applied Sciences Journal*, 29 (5), 605-609.

Gichangi, N. (2014). The relationship between capital structure and profitability of listed non-financial firms in Kenya. Unpublished MBA project, University of Nairobi, Kenya.

Githire, C. & Muturi, W. (2015). Effects of capital structure on financial performance of firms in Kenya: evidence from firms listed at the Nairobi Securities Exchange.*International Journal of Economics, Commerce and Management,* 3(4).

Gitman, L.J. (2003) *Principles of managerial finance*. Boston: Addison Wesley/Pearson's education.

Government of Kenya, (2016). Economic Survey 2013*:* Government printer, Nairobi.

Government of Kenya, (2016). Economic Survey 2016*:* Government printer, Nairobi.

Goyal, A.M. (2013). Impact of capital structure on performance of listed public sector banks in India. *International Journal of Business and Management Invention,* 2(10), 35-43.

Graham, J. R. (2000). How Big Are the Tax Benefits of Debt? *Journal of Finance,* 55, 1901-1941.

Jensen, M.C., & Meckling, W.H. (1976).Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* 3, 305-360.

Jonsson, B. (2007). Does the size matter? The relationship between size and profitability of Icelandic firms. *Bifrost Journal of Social Science*, 1, 43‑55.

Kumar, S.N. (2015). Capital structure and its impact on profitability. *International Journal of Science, Technology & Management*, 4(2), 24-30.

MacKay, P. & Phillips, G. (2002).Is there an optimal industry financial structure? NBER Working Paper No. 9032.

Masood, O., & Ashraf, M. (2012). Bank-specific and macro-economic profitability determinants of Islamic banks: The case of different countries. *Qualitative Research in Financial Markets*, 4 (2/3) 255-268.

Mbugua, E. (2010). An investigation into application of pecking order concept by companies listed at Nairobi Stock Exchange. Unpublished MBA project, University of Nairobi, Kenya.

Mesut, D. (2013).Does firm size affect the firm profitability? Evidence from Turkey. *Research Journal of Finance and Accounting*, 4(4).

Murakaru, M.E. (2013). The relationship between capital structure and profitability of construction and allied companies listed at the Nairobi Securities Exchange. Unpublished MBA project, University of Nairobi, Kenya.

Mwangi, M. (2010). The relationship between capital structure and financial performance of firms listed at the Nairobi Stock Exchange, Unpublished MBA Research Project of the University of Nairobi

Myers, S.C., & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics,* 13, 187-221.

Niresh, J., &Velnampy, T. (2014).Firm size and profitability: A study of listed manufacturing firms in Sri Lanka. *International Journal of Business and Management,* 9(4)

Njoroge, I. (2015). The effect of liquidity on the financial performance of construction and allied companies listed at the Nairobi Securities Exchange. Unpublished MSC project, University of Nairobi, Kenya.

Oguna, A. (2014). Examining the effect of capital structure on financial performance: a study of firms listed under manufacturing, construction and allied sector at the Nairobi Securities Exchange. Unpublished MBA project, University of Nairobi, Kenya.

Perry, P. (1992). Do Banks Gain or Lose from Inflation. *Journal of Retail Banking*, 14(2), 25-30.

Pouraghajan, A., Malekian, E., Emamgholipour, M., Lotfollahpour, V. &Bagheri, M. (2012).The relationship between capital structure and firm performance evaluation measures: evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce,* 1(9) 166-181.

Raheman, A., Zulfiqar, B. & Mustafa (2007).Capital structure and profitability: Case of Islamabad Stock Exchange. *International Review of Business Research Papers,* 3(5) 347-361.

Saad, M. (2010).Corporate governance, compliance and the effects to capital structure international. *Journal of Financial Economics*, 2(1), 105-114.

Sarkar, S., & Zapatero, F. (2003). The Trade-Off Model with Mean Reverting Earnings: Theory and Empirical Tests. *The Economic Journal*, 113 (490), 834–60.

Schwartz, E. (1959). Theory of capital structure of the firm. *The journal of finance*, 14(1).

Sheikh, J., Shakeel, A. W., Iqbal W., & Tahir, M. M. (2012). Pecking at Pecking Order Theory: Evidence from Pakistan's Non-financial Sector. *Journal of Competitiveness*, 4 (4), 86-95

Shubita, M.F., &Alsawalhah, J.M. (2012).The relationship between capital structure and profitability. *International Journal of Business and Social Science,* 3(16), 104-112.

Siro, R. (2013). Effect of capital structure on financial performance of firms listed at the Nairobi Securities Exchange. Unpublished MBA project, University of Nairobi, Kenya.

Tailab, M.K. (2014).The effect of capital structure on profitability of energy American firms**.** *International Journal of Business and Management Invention* 3(12), 54-61.

Tarek, G. (2013).The Capital Structure through the Trade-Off Theory: Evidence from Tunisian Firm, *International Journal of Economics and Financial Issues*, 3(3), 625-636

Titman, S., &Wessels, R. (1988). The Determinants of Capital Structure Choice. *The Journal of Finance, 43*(1), 1-19.

Velnampy, T., &Niresh, J.A. (2012).The Relationship between Capital Structure &Profitability. *Global journal of management and business research,* 12(13), 67-74.

Vijayakumar, A., &Karunaiathal, A. (2014).The effect of capital structure on profitability: An empirical analysis of Indian paper industry. *International research journal of business and management,* 7(13), 28-42

Yegon, C., Cheruiyot, J.,Sang, J., & Cheruiyot, P.K. (2014).The effects of capital structure on firm's profitability: Evidence from Kenya's banking sector. *Research Journal of Finance and Accounting,* 5(9)

# APPENDICES

## Appendix i: List of Construction and Allied Firms Listed at the NSE

1. Athi River Mining  Cement Limited
2. Crown Paints Kenya Ltd
3. Bamburi Cement Company Ltd
4. East African Portland Cement ltd
5. East African Cables Ltd

**Appendix ii: Data Collection Form**

**Name of the Company**…….

| **Data (Kshs)** | **2006** | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** |
|---|---|---|---|---|---|---|---|---|---|---|
| Net profit after tax | | | | | | | | | | |
| Sales | | | | | | | | | | |
| Total Assets | | | | | | | | | | |
| Long term debt | | | | | | | | | | |

## Appendix iii: Data Used in the Analysis

**ROA: Net profit after tax/Total Assets**

| S/N | Names of the Firms | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Athi River Mining Limited | 0.062 | 0.094 | 0.079 | 0.053 | 0.065 | 0.056 | 0.046 | 0.045 | 0.040 | (0.056) |
| 2 | Bamburi Cement Limited | 0.329 | 0.184 | 0.121 | 0.217 | 0.159 | 0.175 | 0.113 | 0.085 | 0.095 | 0.140 |
| 3 | Crown Berger Limited | 0.047 | 0.049 | 0.016 | 0.046 | 0.046 | 0.058 | 0.059 | 0.073 | 0.005 | 0.007 |
| 4 | East Africa Cables Limited | 0.149 | 0.130 | 0.152 | 0.084 | 0.041 | 0.063 | 0.084 | 0.082 | 0.058 | (0.041) |
| 5 | East African Portland Cement Limited | 0.045 | 0.085 | 0.059 | 0.152 | (0.024) | 0.000 | (0.070) | 0.110 | (0.025) | 0.310 |

**LDA: Long-term debt/Total Assets**

| S/N | Names of the Firms | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Athi River Mining Limited | 0.423 | 0.370 | 0.375 | 0.384 | 0.509 | 0.487 | 0.495 | 0.479 | 0.271 | 0.286 |
| 2 | Bamburi Cement Limited | 0.272 | 0.117 | 0.219 | 0.194 | 0.127 | 0.126 | 0.120 | 0.128 | 0.125 | 0.110 |
| 3 | Crown Berger Limited | 0.051 | 0.067 | 0.049 | 0.053 | 0.040 | 0.041 | 0.021 | 0.005 | 0.001 | 0.046 |
| 4 | East Africa Cables Limited | 0.175 | 0.209 | 0.209 | 0.138 | 0.193 | 0.129 | 0.127 | 0.146 | 0.206 | 0.248 |
| 5 | East African Portland Cement Limited | 0.506 | 0.436 | 0.427 | 0.367 | 0.374 | 0.426 | 0.499 | 0.355 | 0.350 | 0.258 |

**SIZE: Natural Log of Sales**

| S/N | Names of the Firms | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Athi River Mining Limited | 14.773 | 15.172 | 15.346 | 15.454 | 15.601 | 15.917 | 16.249 | 16.467 | 16.436 | 16.506 |
| 2 | Bamburi Cement Limited | 16.618 | 16.912 | 17.128 | 17.217 | 17.150 | 17.396 | 17.440 | 17.340 | 17.400 | 17.484 |
| 3 | Crown Berger Limited | 14.340 | 14.553 | 14.687 | 14.749 | 14.937 | 15.165 | 15.305 | 15.456 | 15.614 | 15.723 |
| 4 | East Africa Cables Limited | 14.529 | 15.057 | 15.184 | 14.849 | 15.098 | 15.419 | 15.274 | 15.320 | 15.444 | 15.130 |
| 5 | East African Portland Cement Limited | 15.637 | 15.672 | 15.790 | 15.908 | 16.057 | 16.135 | 15.957 | 16.036 | 16.019 | 15.946 |