

**THE EFFECT OF CAPITAL STRUCTURE ON PROFITABILITY  
OF OIL AND GAS MARKETING COMPANIES IN KENYA**

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## DECLARATION

I declare that this research project is my original work and has not been presented for examination in any other university or college.

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

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## **DEDICATION**

I do dedicate this research work to Regina Wambui my wife for her selfless support towards my education.

## **ACKNOWLEDGEMENT**

I thank God for this far in my academic journey. Several people have contributed immensely to my execution of this project; most importantly my Supervisor, Mr. James Nganga has guided and supported me throughout the project. I am very grateful for this.

My friends have encouraged and supported me throughout the course. I thank all of you and may God bless you.

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## **ABBREVIATION AND ACRONYMS**

<b>CBK:</b>	Central Bank of Kenya
<b>DER:</b>	Debt-Equity Ratio
<b>DFIs:</b>	Development Financial Institutions
<b>DR:</b>	Debt Ratio
<b>EPS:</b>	Earnings per Share
<b>ERC:</b>	Energy Regulatory Commission
<b>ICR:</b>	Interest Coverage Ratio
<b>LTDR:</b>	Long-term Debt Ratio
<b>NEMA:</b>	National Environmental Management Authority
<b>NOCK:</b>	National Oil Corporation of Kenya
<b>NSE:</b>	Nairobi Securities Exchange
<b>OTS:</b>	Open Tender System
<b>ROA:</b>	Return on Assets
<b>ROE:</b>	Return on Equity
<b>SPSS:</b>	Statistical Package for Social Science
<b>STDR:</b>	Short-term Debt Ratio
<b>VAT:</b>	Value Added Tax
<b>WACC:</b>	Weighed Average Cost of Capital

## ABSTRACT

Capital Structure is argued to have influence in profitability of firms across various sectors of an economy. It is however a very daunting task for finance managers to strike a good balance between debt the debt financing and the equity financing. For example, debt finance is cheaper than equity finance but again at higher levels debt can lead to financial distress of firms and wash away its enefits. The complexities around this balance in capital structure are worsened by the turbulent nature in oil and gas industries and the fact that it's a price regulated industry with wholesale margins being fixed by the energy regulatory commission. A comprehensive strategy around capital structure is therefore needed to ensure profitability is maximized and hence the value of the firms while at the same moment mitigating the risk of financial distress. This project seeks to establish the effects of capital structures on the profitability of oil and gas industries in Kenya. The study sampled ten oil and gas marketing firms out of which one has been listed in Nairobi Securities Exchange, one is government owned while the other eight are privately owned. Balanced panel data covering 2013-2018 period across the ten firms was obtained from respective firms' annual financial reports and other relevant secondary sources. Data was collected on these firms' Net profit after tax, equity, long and short term debts, total liabilities and assets. Multiple linear regression analysis used to establish the effects of various capital structures and components in the oil firms` profitability measured using ROA.. Long term debts to total capita has negative impact on the financial performances of the oils and gas marketing firms. This implies that continued increases in the long term debt to total capital ratios will harm financial performances of oil and gas marketing companies in Kenya. Both short terms and long-term debts to total liabilities have positive effects on the financial performances of oils and gas marketing firms.Its concludes that capital structure as a whole plays an insignificant part in the performance of oil and gas firms but long-term debts has an adverse negative effects and should be watched by finance managers closely.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Firms have to choose how they intend to finance their business activities including the balance to maintain between own capital and borrowed capital. A company should decide how to finance its operations i.e. how much should come from internal sources and how much should come from the outside specifically debt finance. For these decisions to be successful, an assessment of all the target loans and the owners' contributions that the company uses to finance its investments must be done. Abhor (2005) says that, these decisions are very important because they affect the returns of the company. Much research has been done on these subjects since having the right capital structure in any business is key to ensuring that the business is a commercial success, (Brigham & Gapenski, 1971).

Some researchers do not agree with this because they don't believe for instance optimal capital structure. Therefore, the notion is it's not possible to find the perfect mix of loans and owners' contributions (Modigliani & Miller, 1958). The two also strongly suggested that capital structure doesn't determine the value of a company. This theory later altered in 1963 to include how it was advantageous to finance through debt over equity financing (San & Heng, 2011). Over the years, many scholars do agree with this theory on the basis that the marketing conditions are never perfect.

The Kenyan oil and gas industries are always changing frequently, with prices always changing especially on an incremental manner. The determinants of these changes are always the Oil marketing companies (OMCs), political pressure from the government and from the public who consume these products. Inflationary pressures on these

industries have been a problem in Kenya leading to the capitalization of consumer's protection by creating a price control system for the Oil and Gas industries. Johnson (2002) agrees with the control of prices since the oil industry is known for its instability in pricing. Therefore, to ensure an optimal capital structure is attained, some controls must be employed for predictability of shareholder returns. A company's Inventory management is also a key determinant in ensuring its capital structure is at its optimum level since a high consumption and exchange rates positively affects the oil and gas firms and vice versa (Gatuhi & Macharia, 2013). The oil marketing companies listed in stock exchange can increase permanent capital by issuing out new shares or through issuing rights. The unlisted firms can do the same through private equity and inviting more venture capitalists. Financing through external debt can be obtained from commercial lenders, development financial institutions (DFIs) and offshore borrowing from other markets.

### **1.1.1 Capital Structure**

The concept of capital structure is used to ensure wealth of the shareholders is maximized by making sure the firm has an increase in its overall returns and a growth in the value of its stock price. It involves striking a balance between owners' equity and outside sources in the form of debt financing. Therefore, it's defined as the use of third party funds to finance an investment so as to increase returns (Barakat, 2014). It is done by managing the mix of capital supplied by the owner and borrowed capital used when financing the business and its operations (Al-Otaibi, 2013). A business entity can do this financing through equity and debt but it can also combine the two in response to the risks, style of management, tax exposure, and financial freedom, conditions in the market or for controlling rights. Measuring capital structure for determining and

predicting different variables is done through the proportion of debt and equity (Abhor, 2005). There are four capital structure theories, (Rehman, 2013).

Miller approach which has two propositions. The first proposition states, no relevance of CS to firm's value instead, future earning it's what determines its firm's value and not CS. This is only when taxes are not put in place. The second proportion is that, averaging a firm's financial sources boosts its value since it reduces Weighed Average Cost of Capital (WACC). Tax information play a role in this. Capital structure is important to professionals since if it is properly done it can help in optimizing capital cost and therefore improve profitability.

### **1.1.2 Profitability of Firms**

This is the amount of returns that a company is able to generate in relation to the available resources in its control. All firms have the main the aim of maximizing profits as their main goal (Niresh & Velnampy, 2014). Farah and Nina (2016) say that profitability can only be seen through a firm's ability to produce earnings by using its assets over an empirical period of time. All the business operations of the firm must be accounted for and an average profit determined (Muya & Gathogo, 2016). Every entrepreneur expects to be rewarded in business and they are always motivated to venture into a business if the profit rewards are considerable. The performance index of a business entity is therefore measured among other things by its profits (Ogbadu, 2009).

Since profitability gives a clear vision on how the business is performing, it is important to all the stakeholders, owners and employees associated with the firm. Financial reports of many firms are reviewed through analyzing profitability (Farah & Nina, 2016). This paints profitability as a good indicator for firm's performance. Therefore,

profitability can be used as a proxy for companies' performance. Firms therefore strive to remain relevant in the business world and this can only be guaranteed if they turn out to be profitable.

Profitability can determine at what level and by how much the profits of a firm are in relation to its size. Where size is determined by among other things Capital employed and total assets. It measures if the firm will be a success or a failure by measuring its efficiency Versus profits made, (Horton, 2018). Horton further implies that a firm may be realizing profits but that does not mean the firm is profitable. The profitability of companies is done by assessing their Return on Assets (Ahmed et al, 2015).

### **1.1.3 Capital Structure and Profitability**

The determination of a firm's profit margin is by investment that is well aligned with its capital structure whether through loans or owners' funds. Managers should place much thought on how to achieve maximum profitability by having the best mix of financial resources at their disposal (Mohammadzadeh, 2013). San and Heng (2011) investigated how hard it is to achieve an optimal capital mix. This optimal mix of capital can only be achieved when the outlays that are followed during securing financial debt and the cost of securing equity for the firm's investment are met. This will ensure value and profitability of the firm is enhanced, (Bringham & Gapeski, 1996). Efficient firms will be able to compromise between use of loans and equity. This agrees with trade off philosophy that states that business institutions can change structure in order to increase their efficiency.

According to the MM2 theory (Modigliani & Miller, 1986) the value of an enterprise will sky rocket until the tax benefits enjoyed while using debt finance will be overtaken by bankruptcy costs. Debt financing has an attendant tax benefit that differs in different

jurisdictions. Equity financing on the other hand does not have deductible expenses on the dividends payable which makes it more enticing since it is safeguarded against insolvency costs and agency costs (Pandey, 2002).

Excessive application of debt financing will lead to agency challenges when it comes to monitoring the investing behaviors of management staff (Fama & French, 1998). The management may find themselves having more than enough cash flow and as a result they may start taking projects that would further their interests instead of creating wealth for their shareholders. The debts influence type and quality on investment that the management allows into their firms since they are forced to only allow investments that bring monetary and asset value to their shareholders. As a result, the profitability of a firm is enhanced extensively since agency and other related costs are minimized. (Jensen & Meckling, 1984).

CS and its effect on profitability it's a topic of discussion and research for very many years and all these researchers agree that profitability and capital structures are intertwined. An example is research by Eldomiaty and Azim (2008) which showed how capital structures are positively related to a firm's profitability. The CS of a business will always determine its profitability given the right conditions (Eldomiaty & Azim, 2008).

#### **1.1.4 Oil and Gas Business in Kenya**

Globally, petroleum and all its products are the primary sources of energy which makes the industry very important to the world's economy. This is true even in Kenya where petroleum imports accounts for approximately 30% of products imported (Hassan-Athmani, 2015). The industry comprises of local firms and multinational corporations with few key players. This sector is dominated by few big marketers in retail segment

Vivo Energy (28%), Total Kenya (24%) and Kenol Kobil (14%) with the remaining percentage belonging to local and small international firms (PIEA, 2018). Kenya has gone through a long oil and gas exploration journey. Kenya has moved from the state of oil exploration in the 1950s to discovery of Oil in Ngamia-1 in 2012 and in 2019 has exported the first batch of crude oil to the international market.

A rise in petroleum product pricing usually has a positive profitability impact on the producer countries while the importing country (Kenya) will face negative effects particularly on the demand side of the trade curve. The home country will have generated foreign exchange and the spending country will face investing constraints. Industries in the importing countries that depend on petroleum as fuel or raw material will report reduced profits due to a decrease in demand. Inflation may also occur forcing the Central Bank of Kenya to increase the interest rates affecting the market even more. An increase in interest rates leads to lower share prices and lower economic growth, (Huang, Masulis & Stoll, 1996). The industry is therefore very volatile and extremely competitive with at least 80 active oil marketing companies that are legally registered under Ministry of energy and petroleum. Contracts to import fuel into Kenya are issued out using the Open Tender System (OTS).

Oil prices are determined according to the international oil prices as published by Platt's International for the Arab Gulf market. The Energy regulatory commission (ERC) uses the Last Monthly Platt's prices to set prices for the next month. They regulate the prices in the market by fixing the Margin of the Oil marketing companies and thereby capping the maximum allowed Pump price. The retail space for Oil marketing companies is therefore a regulated space with a maximum fixed margin of KES 7/Liter for all companies. The thin and regulated margins underline the



importance of striking a good balance in capital structure to ensure maximum returns for the investors.

A VAT tax of 8% that the Kenyan government implemented in 2018 has also worsened the strain on the oil and gas industries. The tax together with the already existing duties and levies were key factors in the hiking of fuel prices all over the state (NSE, 2014). The income tax payable in Kenya for resident company is 30% and 37.5% for a non-resident company.

Another important aspect that underlines the importance of getting the capital structure right, is the heavy investment required in this industry. There is heavy investment in private Oil terminals at the coast and in the mainland in Nairobi to supplement the Government terminals which does not have enough capacity to serve all marketers. Further, oil marketers need to invest in retail stations across the country with a distribution channel that also requires a heavy investment in trucks and a robust Health and safety systems.

The oil and gas industry requires high amount of both core and working capital since the products are always in large amounts and the market is fluctuating. Since Kenya imports all of its petroleum products it's important to identify a favorable CS that will ensure that firms are profitable and the risk of possible financial distress is minimized (Baffes et al, 2015).

## **1.2 Research Problem**

This concept explores nexus between debt and equity sources of capital. While many scholars argue about the importance of capital structures, they do agree the right ratio between the two affects the value and profitability of firms.

Data collected from the NSE after analyzing using the statistical packages for social science, it was found that, mean value of equity to debts ratio and debt to total liabilities were 86.9% and 591.52 respectively. This result places debt at 5.915 times greater than equity capital. This may not be safe because the ratio is not supposed to surpass. It can therefore be concluded that in Kenya companies prefer more debt to equity (Musyoka, 2009).

The principle of increasing risk states that, an increase in debt can lead to higher potential for a decrease in gain yet these firms prefer more debt and go ahead to still perform well. Research done on this topic especially in Europe and America has no concrete results with a mix of results that are agreed upon. While some agree that indeed there exist a point of capital structure that is optimal, others do not and instead believe a firm's success is not dependent on its financing but instead depends on its hunger for success (Wagacha, 2001).

The oil and gas industry requires large amounts of capital to run the business hence the need for debt financing. At times, these long-term debts become a problem to the lending institutions since firms take a long time to repay (CBK, 2012).

Profitability is quite important to the oil and gas industry as it helps financiers determine whether a firm can repay a debt without default. On the other hand, equity providers depend on dividends that are dependent on profitability hence profits are an important measure of performance. Profitability in the Kenyan oil firms is dependent on several factors including interest rates, capital market conditions, tax inflation etc. These factors can lead to inconsistent profit margins

Since the oil and gas industry is a rapidly growing sector, it was the perfect sector to study capital structure and profitability due to its fast growing nature. Its profits are always on the rise and are predicted to continue doing so for the foreseeable future.

### **1.3 Research Objective**

To examine effects of capital structures on the profitability of oil and gas marketing firms in Kenya.

### **1.4 Value of the Study**

Financial managers and their teams in local oil and gas marketers industry may find useful insights from this research since it will provide a wide perspective on the importance and role of capital structure in the overall business profitability. Due to the volatility the industry experiences, to attain profitability capital structure will need to be efficiently applied. The study will offer them an informative baseline for their decision making models.

Kenyan government as the regulatory authority may also borrow some insights from the study and learn one or two ways of how to govern, manage and control the oil and gas industrial sector. To avoid economic shock, the industry must be carefully handled since oil and gas are very essential sources of energy and their absence will drastically affect the Kenyan economy. Policies can be informed by the research findings and in the process enhance the economy without causing damage to the performance of the firms involved.

Finally, the research will be beneficial to other researchers who may need to further explore the field above.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This study entailed theoretical review before proceeding to a discussion on determinants of profitability. Some selected empirical studies were then reviewed and summarized in a literature review.

#### **2.2 Theoretical Review**

Theoretical base of this work is grounded on four theories discussed in sections 2.2.1 through 2.2.4

##### **2.2.1 Modigliani and Miller (MM) Theory**

This theory suggests that in perfect market, securities are traded and diverse types of information relevant are availed to both internal and external stakeholders for decision making. That is, no information asymmetry is considered and transactional costs, taxation costs and bankruptcy costs are non-existent. Organizations as well as individual investors are able to lend and or borrow at a uniform interest rate that makes it possible for: homemade leveraging, organizations to operate at the same risk level and an even operating leverage, no taxes to be saved from interest payable on debt, and companies to have abide to 100% divided payout (Modigliani and Miller, 2017).

On the basis of these assumptions, the Modigliani and Miller theory attempts to justify that no defined optimal debt-equity ratio exists and for the shareholders wealth, capital structure is not relevant.. As such, the MM theory suggests that managers are at liberty to choose their own debt to equity financing composition without any concern on the optimal capital structure.

Therefore, Modigliani and Miller theory is theoretically sound but its foundation is more of unrealistic assumptions. It is no surprise that with its limitation and weakness, it has attracted criticism and subsequent development of other theories to enhance the capital structure theorem. Even so, the MM theory is still relevant because it forms the original informing idea of capital structure hence its inclusion in this study.

### **2.2.2 Traditional Approach Theory**

This theory holds that using debt financing to a given limit can significantly decrease the cost of capital. The eight assumptions on which this theory is grounded are: a firm only has two options to source its funds – debt and equity; total assets are provided and they are constant; 100% of the company's earnings are paid as dividends; the total financing is constant; there is no anticipated growth in operating profits; business risks are constant; the company continues to survive perpetually; and lastly it assumes a rational behavior of the investor (Muthui, Baimwera & Mutegi, 2017).

However, like in MM, some of the assumptions in the traditional approach theory of capital structure do not hold especially within the imperfect market situation. As such, the theory has also been criticized. By applying this theory in this study, the expectation is that use of debt financing by oil and gas marketing companies should decrease the capital cost up to a given point that maximizes a company's profitability. On other hand, given the increment in capital composition from equity/retained earnings and debt, this may lead to the companies investing more in interest generating assets thus increasing the interest income and consequently profitability.

### **2.2.3 Trade-off Theory**

The approach was authored by Myers (1984). The optimal capital structure is achieved through debt tax interest deductibility benefits as well as agency and bankruptcy costs (Fama & French, 2002). The trade-off theory mainly purposes to elaborate the organizational strategy used for financing investments which could be debt finance or equity finance.

This theory implies that an organization that is weak depends mostly on debt finance from banks. That is, for any weak organization, bank loan will dominate regardless of the structure been given priority. The theory views a firm as having a set debt-equity ratio target which the firm gradually seeks to attain. As such, the theory considers the firm as pursuing a level of debt finance that harmonizes the benefits of additional debt with the cost of a potential financial challenge.

### **2.2.4 Pecking Order Theory**

According to Myers & Majluf (1984) with the insights from Donaldson (1961) POT revealed that managers in most organizations opt for internally generated finance than external finance. The theory proposes that debt finance is less preferred compared to internal finance and goes on to argue that companies first exhaust internal finance, then debt and lastly ordinary share capital. Affirming this very proposition, Al-Tally (2014) asserted that companies would rather consider financing new investments using internal resources before they go for debt capital and they consider issuing equity capital as the very last resort.

The theory asserts that companies usually borrow if there are no sufficient internally mobilized finances to fulfill the investment needs. Confirming this, Myers (2001) demonstrated that indeed the DTR of the firm is a reflection of its external financing

and any company that has high profit alongside growth opportunities often use less debt finance. Moreover, the debt ratio is a reflection of the cumulative external financing since it also assumes that a firm does not have adequate accumulated external financing.

## **2.3 Determinants of Profitability**

### **2.3.1 Total Debt Ratio**

This measures capital structure as a ratio of total liabilities to capital (Long term Debt + Equity). There have been mixed results from past researches on capital structure concerning the effect of total debt ratio on profitability. For example, findings by Gatsi, Gadzo and Akoto (2013) indicated that debt ratio had positive effect on net interest margin while it had no statistically significant effect on ROA and ROE. Findings by Yegon et al (2014) revealed that profitability was not significantly affected by total debt ratio.

### **2.3.2 Short Term Debt Ratio**

This is a ratio of the total short term debt to liabilities which indicates the propensity of a firm to finance its activities using short term financing comparing to long term financing (Awunyo-Victor & Badu, 2012). Existing studies have also given inconsistent findings on impacts of short term debt ratio returns. For instance, from the findings by Yegon et al (2014) and Siddiqui (2012), the short term debts ratio was found to give significant positive effects over profitability of firms in Kenya, while Anarfo (2015) found it to have negative impact on profitability in Sub-Sahara African countries in general.

### **2.3.3 Long Term Debt Ratio**

This is the ratio of the total long-term debt to a firm's total liabilities which indicates the firm's propensity of financing its activities using long term debts. The pecking order theory suggests as reviewed in 2.2.4, organizations that are highly profitable would rather consider using finances generated internally than debt, implying a negative relationship on profitability and debt.

## **2.4 Empirical Literature**

This part explores some of the international studies as well local studies that are relevant to the study of capital structures. It reviewed the global perspectives and the local perspectives to the approach of capital structure.

### **2.4.1 International Studies**

A study done in the U.S.A by Gill, Bigger and Mathur (2011) investigated how profitability of American firms quoted in New York Stock Exchange was affected by the firms' capital structure. The findings may not necessarily reflect the precise situation in the case of oil marketers in Kenya since capital structure varies from one firm to the other.

Although this study covered oil and gas businesses, it only investigated listed Nigerian firms in the industry whose market dynamics including the capital markets may not be similar to the Kenyan market. Therefore, the findings cannot precisely describe oil and gas firms operating in the Kenyan market.

Ashraf, Ameen and Shahzadi (2017) explored the nexus between capital structure and firm performance in Pakistan cement market. The findings however cannot be generalized to oil marketers in Kenya given the contextual differences between the two countries as well as the industries. In Ghana, Musah (2017) investigated how



profitability of commercial banks was impacted by capital structures. Findings revealed that the banks were leveraged with high debt financing.

#### **2.4.2 Local Studies**

In Kenya, Yegon, Cheruiyot, Sang and Cheruiyot (2014) investigated how profitability of Kenyan banks is impacted by capital structure. The results showed that short term debts had a statistically significant positive impacts on profitability while long term debts exerted a significant negative effect on profitability. This study however being based on the banking sector cannot adequately represent the situation of oil marketers in the country. Moreover, it explained the relationship with profitability being exclusively measured in terms of ROE only which may not necessarily be similar where ROA is used as will be the case in this study.

Another research from Kenya done by Githire and Muturi (2015) evaluated interrelationship between profitability of firms quoted in NSE and capital structure expressed in the form of ROA while capital structure was measured in terms of equity financing, long-term debt financing and short-term debt financing.

#### **2.4.3 Research iGap**

From the empirical studies reviewed, there have been mixed results and explanations of the interrelationships existing between different capital structures measures and profit performance in different companies. Findings by Ashraf, Ameen and Shahzadi (2017) indicated that negative relationship between them. Moreover, there is scarcity of studies investigating the interrelationship between capital structure and profit performance of oil and gas marketing companies in Kenya, hence limited insights on the same. To address this scarcity of studies and provide applicable insights, this study will analyze the interrelationship between capital structure and profitability focusing on the oil and gas marketing companies in Kenya.

## 2.5 Conceptual Framework

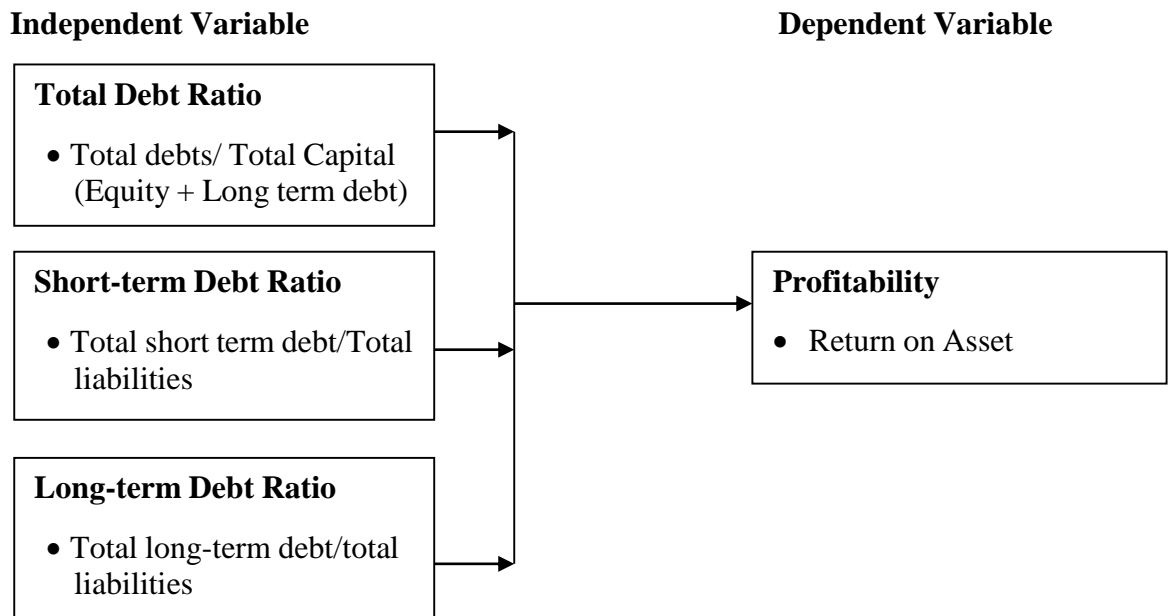


Figure 2.1: Conceptual framework

## 2.6 Summary of Literature Review

The existing literature indicated that quite a lot has been documented pertaining to capital structures and profits both in theories and empirical studies that have been conducted. However, it is not possible to extrapolate the findings from a single study to accurately describe this relationship and in any particular industry especially the case of oil and gas marketing firms in Kenya. This is further complicated by the fact that majority of the studies locally and internationally have been done in the banking sector and listed companies in general. Thus, the existing literature does not adequately explain with precision the correlation between capital structure and profitability of oils and gas marketing businesses in Kenya. This forms the subject of the investigation in this study.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This part discusses research design, population, sample and sampling techniques, data collection and analysis.

#### **3.2 Research Design**

This section relied on non-experimental quantitative research design using secondary data. Non-experimental design is preferred because through the design, the researcher is unable to control manipulate or alter independent variable. Moreover, non-experimental design allows generalization to large population.

#### **3.3 Population and Sampling Procedure**

The petroleum industry in Kenya has approximately 80 oil marketers. Out of these, two have been listed in Nairobi Stock exchange being Total and Kenol Kobil. In 2019 however, Kenol Kobil has delisted after a buy-out by French multinational called Rubis Energy. Population will be the 80 Oil marketing companies in Kenya. It is the intention of the study to conduct a census of the 80 oil marketing companies (Appendix 1). To ensure balance panels, a firm will have to be in existence between 2013 and 2018 with data available on target variables for the 6 years.

### 3.4 Data Collection

The objective was achieved through collection of secondary information from published financial statements and management reports of players in the oil marketing industry. Data s collected on net profits, total debts, total equities, total liabilities, and total assets for the period 2013 to 2018.

### 3.5 Data Analysis

Statistical Package for Social Science (SPSS) and multiple regression analysis will be done to explore how the dependent variable ‘profitability’ is influenced by the independent variable (capital structure) Independent variables (total debt to equity ratio, long term debt to total liabilities ratio and total short term debt to total liabilities ratios) were regressed against the profitability.

#### 3.5.1 Analytical Model

The multiple linear regressions helped in explaining how the dependent and the independent variables relate with each other. The coefficient of correlation and that of coefficient of determination helps in determining the exact nature and extent of the relationship.

The multiple regression model is as follows;

$$ROA_{it}(Y) = \alpha + \mu_1 X_1 + \mu_2 X_2 + \mu_3 X_3 + \varepsilon$$

Where;

\*ROA(Y) is profits expressed as the ratio Net profits to the total assets.

\* $\alpha$  is the constant term,

\* X1 expresses the total debt to total capital (equity + long term debt) ratio,

\*X2 is the Total short term debt financing/total liabilities

\* X3 represents Total long-term debt as a ratio of the firm's total liabilities.

\*  $\epsilon$  is the error term which shows the unexplained variation in the model.

$\alpha$  represents the constant. On the other hand  $\mu_1$ ,  $\mu_2$ , and  $\mu_3$  represent changes in the variables X1, X2, and X3 because of changes in ROA

Findings will be presented in tables and graphs and interpreted in the light of the study objective.

### **3.5.2 Test of Significance**

The test will interpret the sign and magnitude of the parameters resulting from estimation of equation (3.5.2 above) accordingly. In particular the F-test will be used to establish if a linear relationship exists between the dependent variable and the independent variables. This test will use the P-Value to indicate whether the results were achieved by chance.

## CHAPTER FOUR

### DATA ANALYSIS, RESULTS AND DISCUSSION

#### 4.1 Introduction

This chapter captures the synthesis of data in terms of descriptive statistics, trend analysis, correlation matrix and inferential statistics. Descriptive statistics entail measures of central tendency (mean) and measures of dispersion (standard deviation). Inferential statistics involved regression analysis and in particular it brought out the coefficients of the estimates involved in hypothesis testing. Last part of this chapter provides brief discussion of the findings in relation to the inferential statistics.

#### 4.2 Descriptive Statistics

Table 4.1 demonstrates descriptive statistics of the variables used for the 10 firm oil marketing industry for the periods 2013 and 2018. ROA for the 10 firms between the period 2013 and 2018 averaged approximately 0.16 with a standard deviation of 0.64. The maximum ROA for the 10 firms stood at 3.13 with a minimum negative value of ROA of 0.1923. On the average, long term debt to total capital ratio registered 0.24 with a standard deviation of 0.29 with a maximum ratio of 1.0664 and lower ratio of 0.000. Short term debt to total liability ratio had an average of 0.364 with a standard deviation of 0.248. Descriptive statistics further indicates that long term debt to total liability ratio for the 10 firms had a mean of 0.172 with standard deviation of 0.208.

At maximum, short term debt to total liability registered a ratio of 0.8587 with minimum value of 0.000. On the other hand, long term debt to total liabilities had a maximum ratio of 0.9158 with least ratio registered at 0.000. This illustrates that on the average, long term debt to total liability was higher than the short term debt to total liabilities for the 10 firms in the oil marketing industry.

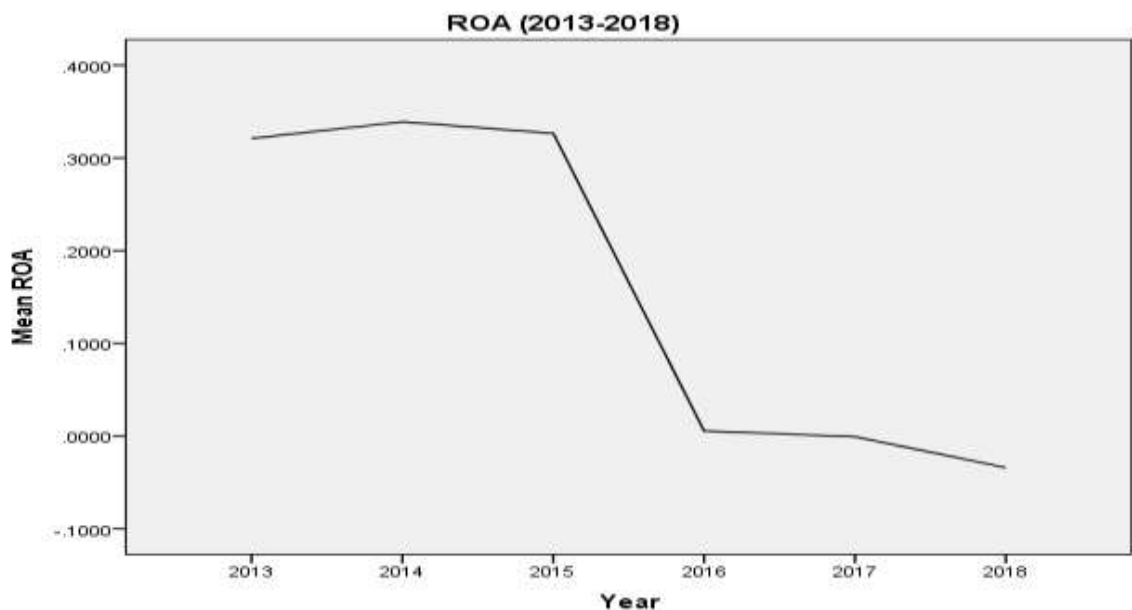
**Table 4:1:Descriptive Statistics**

	N	Minimum	Maximum	Mean	Std. Deviation
ROA	60	-.1923	3.1396	.159556	.6419268
Long Term Debt/Total Capital Ratio	60	.0000	1.0664	.242180	.2976699
Short Term Debt/Total Liabilities	60	.0000	.8587	.364781	.2479135
Long Term Debt/Total Liabilities	60	.0000	.9158	.172403	.2080613
Valid N (listwise)	60				

#### **4.2 Trend Analysis**

Figure 4:1 illustrates that ROA for the 10 firms in oil marketing industries stabilized at 0.300 between the periods 2013 and 2015. However, there was a sharp persistent decline in ROA in 2015 from 0.3000 to around 0.000 in 2016. There was continued decline in ROA and for the periods 2016 to 2018, ROA registered negative ratio as demonstrated in the graph.

**Figure 4:1: ROA Trend (2013-2018)**



Long term debt to total capital ratio continued increasing from 0.700 in 2013 to 2.80 in 2014 (Figure 4.2). However, there was a slight decline in long term debt ratio from 2014 to 2016 with long term debt ratio rising from 2016 to 2018 to a ratio above 0.3000.

**Figure 4:2: Long Term Debt Ratio**

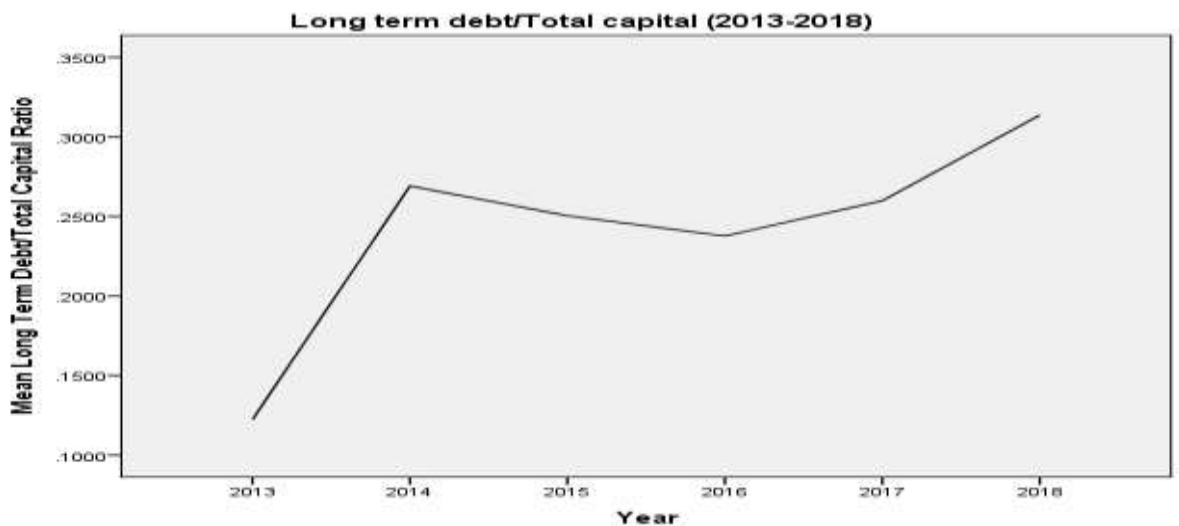


Figure 4.3 illustrates that short term debt has been on downward trend between the periods 2013 and 2015 with the ratio picking up in the year 2015 to 2016. After 2016, short term debt ratio begins to decline up to 2018.

**Figure 4:3: Short Term Debt Ratio**

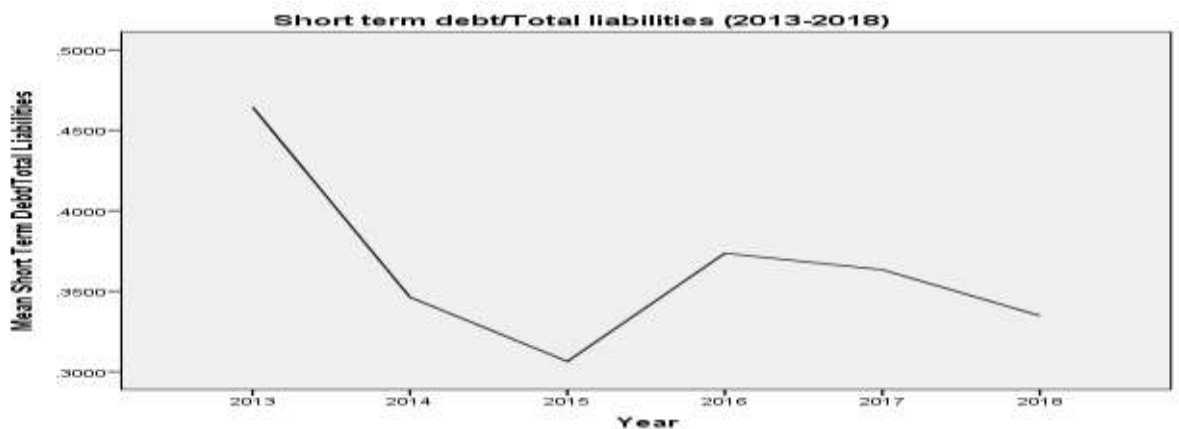
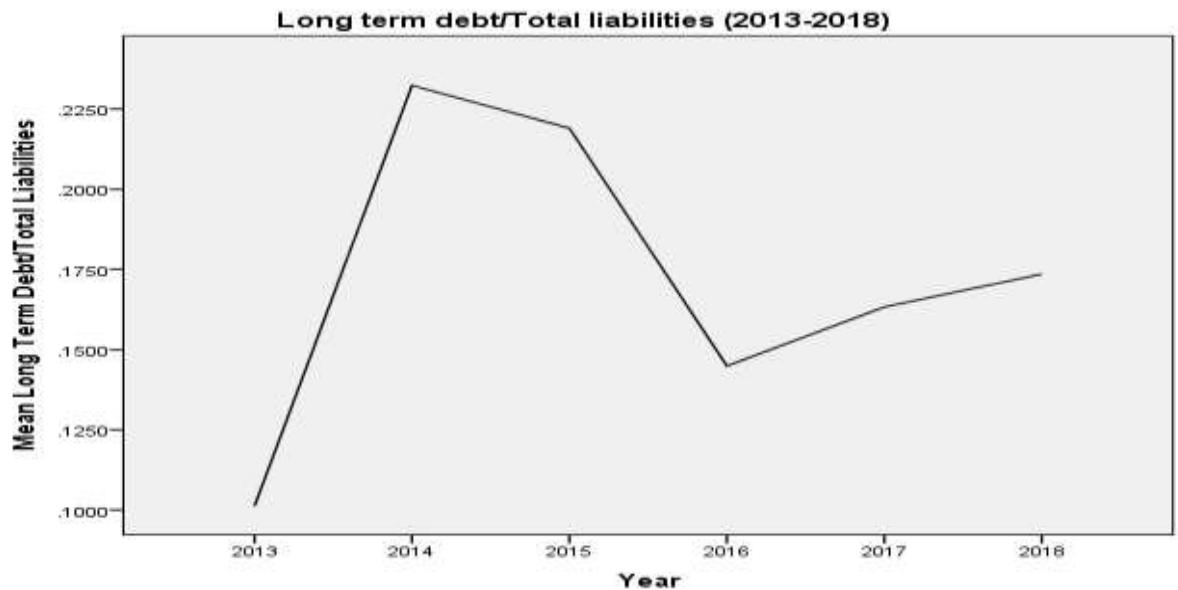




Figure 4.4 demonstrates that long term debts ratio had a continued rise from below 0.1000 in 2013 to a ratio above 2.2250 in 2014. However, long term debt to total liabilities started to decline in 2014 until 2016 when it picked up and had upward trend till 2018.

**Figure 4.4: Long Term Debt Ratio**



### 4.3 Correlation Analysis

I employed correlation analysis in this study to examine behavior between ROA and the independent variables in the study. Table 4.2 provides correlation coefficient based on pearson correlation. The result indicates that all the independent variables have positive association with ROA. However, the association between ROA and the explanatory variables is weak since all the values of correlation coefficient are below 0.5.

**Table4:2: Correlation Matrix**

**Correlations**

		ROA	Long Term Debt/Total Capital Ratio	Short Term Debt/Total Liabilities	Long Term Debt/Total Liabilities
ROA	Pearson Correlation	1	.130	.083	.174
	Sig. (2-tailed)		.324	.529	.184
	N	60	60	60	60
Long Term Debt/Total Capital Ratio	Pearson Correlation	.130	1	-.178	.898**
	Sig. (2-tailed)	.324		.174	.000
	N	60	60	60	60
Short Term Debt/Total Liabilities	Pearson Correlation	.083	-.178	1	-.279*
	Sig. (2-tailed)	.529	.174		.031
	N	60	60	60	60
Long Term Debt/Total Liabilities	Pearson Correlation	.174	.898**	-.279*	1
	Sig. (2-tailed)	.184	.000	.031	
	N	60	60	60	60

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

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

**4.4 Regression Analysis**

Regression analysis estimates the magnitudes of the coefficients of the variables included in our proposed model in chapter three. Student’s t-distribution and probability value was used at 95% confidence interval to test the significance of the explanatory variables. Regression analysis also produced model summary in terms of coefficient of determination. Coefficient of determination (R-squared) measured the proportion of ROA that is explained by the variation in the independent variables included in the regression model. Analysis of variance (ANOVA) provided F-statistics that specifies the fitness or significance of our regression model.

#### 4.4.1 Model Summary

Model summary in Table 4.3 indicates coefficient determination of 0.056. This implies that 5.6% of the total variation in ROA is attributed to the changes in the explanatory variables included in the regression model. This indicates that 94.6% of the total change in ROA for the 10 firms is caused by other independent variables not considered in the model. The result further reveal potential sample selection biases and therefore there exist weak relationship between the variables selected and the ROA for 10 firms. The value of durbin-watson statistics of 0.745 indicates the variables residuals are not serially correlated.

**Table 4:3:ModelSummary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.237 <sup>a</sup>	.056	.005	.6401606	.745

a. Predictors: (Constant), Long Term Debt/Total Liabilities, Short Term Debt/Total Liabilities, Long Term Debt/Total Capital Ratio

b. Dependent Variable: ROA

#### 4.4.2 Analysis of Variance

Analysis of variance in Table 4.4 gives a significance value of 0.353 which is greater than 0.05. Therefore the model is not statistically significant in predicting the effect of capital structure on the profitability of oil and gas marketing companies in Kenya.

**Table 4:4: Analysis of Variance**

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	1.363	3	.454	1.109	.353 <sup>b</sup>
	Residual	22.949	56	.410		
	Total	24.312	59			

a. Dependent Variable: ROA

b. Predictors: (Constant), Long Term Debt/Total Liabilities, Short Term Debt/Total Liabilities, Long Term Debt/Total Capital Ratio

#### 4.4.3 Regression Coefficients

Regression coefficients are presented in Table 4.5. We test the individual significance of explanatory variable using t-statistics at 95% confidence interval. By rule of thumb, t-value greater than 2.0 indicates that the parameter is statistically different from zero and therefore we conclude that the variable is statistically significant at 5% level. The probability value less than 5% (0.05) implies the corresponding variable is statistically significant at 5% level. From Table 4.5, the estimated model is given as:

$$ROA = -0.096 - 0.422LTD/Capital + 0.408STD/Liabilities + 1.213 LTD/Liabilities$$

(t=-0.526)

(t=-0.653)

(t=1.149)

(t=1.282)

(p=0.601)

(p=0.516)

(p=0.255)

(p=0.205)

**Table 4.5: Regression Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.096	.183		-.526	.601
1 Long Term Debt/Total Capital Ratio	-.422	.645	-.196	-.653	.516
Short Term Debt/Total Liabilities	.408	.355	.158	1.149	.255
Long Term Debt/Total Liabilities	1.213	.946	.393	1.282	.205

a. Dependent Variable: roa

The result indicates that the average ROA for the ten oil and gas marketing companies is negative 0.096 other factors held constant. Long term debt to total capital ratio has a negative and non-significant effect on ROA. The result implies a unit increase in long term debt to total Capital ratio will lead to 0.422 unit decrease in the profitability of the oil and gas marketing companies in Kenya. Short term debt to total liabilities has a positive and insignificant effect on the financial performance of oil and gas marketing firms. This result shows that a unit increase in short term debt to total liabilities ratio will lead to 0.408 unit increase in the profitability of the companies. Lastly, long term debt to total liabilities ratio has a positive but insignificant effect on the financial performance of oil and gas marketing companies in Kenya. The result implies that a unit increase in long term debt to total liabilities will result to 1.213 unit increase in financial performance of oil and gas marketing firms in Kenya.

#### **4.5 Discussion of the Research Findings**

Aim was at examining effects of capital structure on the profitability of the oil and gas marketing companies in Kenya for the periods 2013 and 2018. The study considered ten firms and the profits of the firms was proxied by a ROA while capital structure of the companies was assessed by short-term and long-term debt to total liabilities and long-term debt to total capital gain. Correlation coefficient revealed that ROA has positive but weak relationship with the capital structure of firms. Only 5.6% of the total change in the profitability of the oil and gas marketing companies is explained by the variation in the capital structure of the firms..

Our findings is in line with studies by Siddiqui (2012) and Sayeed (2011) who found a negative relationship between organizational profitability and long-term debt ratio. Similar result was also found by Ashraf, Ameen and Shahzadi (2017) who explored the link between capital structure and firm performance in Pakistan cement market.

This finding is in contrast to a study by Githire and Muturi (2015) who evaluated the interrelationship between profitability of firms quoted in NSE and capital structure. Instead, they found negative relationship in short term debts ratios with the profitability of the companies listed at NSE.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATION**

#### **5.1 Introduction**

This work was motivated to examine effects of capital structure on profitability of oil and gas marketing companies. This section therefore entails summary of the study, conclusion and recommendation based on the statistical findings from chapter four.

#### **5.2 Summary**

It targeted ten companies dealing in oil and gas marketing for the periods 2013 and 2018. The profitability of the firms was measured in terms of ROA while capital structure of the companies was proxied by the short term debt to total liabilities ratio, long term debt to total liability ration and long term debt to total capital ratio. Secondary data was obtained from the financial statements of the companies various ratios were computed by the researcher. Collected data was analyzed using SPSS 24. Both descriptive and inferential statistics was obtained and interpreted. All the interpretation significance test was done at 95% level of confidence.

Positive but weak association was established in the capital structure and the profitability of these companies. The coefficient of determination illustrated that capital structure has weak effect on the profitability of the oil and marketing companies. Regression coefficients showed that a unit increase in long term debt to total Capital ratio will lead to 0.422 unit decrease in the profitability of the oil and gas marketing companies in Kenya.

### **5.3 Conclusion**

It concludes that capital structure plays insignificant role in the profitability of the oils and gas marketing companies in Kenya. Long-term debt to total capital has negative impact on financial performance of these companies. However, the effect is insignificant at 5% level. This means that continued in increment in long-term debt to total capital ratio will harm the financial performance of oil and gas marketing companies in Kenya. Both short-term and long-term debt to total liabilities have positive effects on the financial performances on these companies.

### **5.4 Recommendations from the Study**

It found out that both short-term and long-term debt to total liability ratios have positive effects on the financial strength these marketing firms. This work recommends that firm's decision-making unit should strike a balance between short-term and long-term debts to capital ratios to other operation costs. Companies' debt should be maintained at a level that improves the financial performance of oil and gas companies. There is need for oil and marketing firms to increase their asset base through acquisition both tangible and intangible assets.



### **5.5 Limitations of the Study**

two out of 84 companies in this industry are listed. This made it difficult to obtain data from private companies as such the study settled for only 10 companies. A bigger sample would have been preferable to give more reliable results. Additionally, this study covered only 6years, 2013-2018 due to limitations of data availability.

It was noted that very few studies have been conducted specifically on the Oil sector in Kenya, many studies have focused on other sectors or a wider scope of sectors with Oil as one of them. As such there was scarcity of literature to make reference to for this study.

### **5.6 Recommendations for Further Study**

This study considered only 10 companies in the Oil and gas industry which has 84 active participants. Additionally the study covered only 6years period, 2013-2018. Further studies should be conducted to get a bigger coverage of companies in this industry as well as a longer time span, this will give more pervasive results.

Further studies should be conducted in the context of oil and gas sector in Kenya. This will provide scholars with enough literature to refer for future research. Similarly, policy makers and finance managers in the oil sector will have additional research information to make better business decisions.

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