

**LEVERAGE AND FINANCIAL PERFORMANCE OF  
COMPANIES LISTED IN THE ENERGY AND PETROLEUM  
SECTOR OF THE NAIROBI SECURITIES EXCHANGE**

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF  
THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION,  
FACULTY OF BUSINESS AND MANAGEMENT SCIENCES,  
UNIVERSITY OF NAIROBI**

**2021**

## DECLARATION


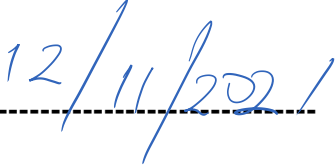
I hereby declare that this research project is my original work and has not been submitted to any other university for the award of a degree.

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## **ACKNOWLEDGEMENTS**

I thank God for guiding me throughout my academic life and for his steadfast love. I deeply appreciate the mentoring, contribution and guidance on academic writing from Prof Mirie Mwangi toward completion of this paper. Thank you to my Family for your encouraging words and prayers. May God reward you. To my friends, thanks for wonderful teamwork that enabled me to sail through the vigorous MBA.

## **DEDICATION**

Dedication of this paper is to my family for supporting me throughout the program and inspiring me immensely.

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## **ABBREVIATIONS**

<b>ANOVA-</b>	Analysis of Variance
<b>EBIT -</b>	Earnings Before Interest and Tax
<b>ERC -</b>	Energy Regulatory Commission
<b>ICR -</b>	Interest Coverage Ratio
<b>KenGen -</b>	Kenya Electricity Generating Company PLC
<b>KPLC-</b>	Kenya Power and Lighting Ltd
<b>NSE -</b>	Nairobi Securities Exchange
<b>ROA -</b>	Return on Assets
<b>ROE -</b>	Return on Equity

## **ABSTRACT**

Problems that finance managers face include decisions that guide on how a firm's operations will be financed. A key indicator of an organization that is achieving the objective of shareholder wealth maximization is improvement of financial performance. To improve financial performance of an organization, managers may consider the increment of the debt component of the company. The study determined the impact of leverage on the financial performance of four listed Energy and Petroleum Kenyan firms at the NSE from 2011 to 2020. Data retrieved from firm's annual reports was utilized and descriptive research was conducted. Leverage was assessed by employing the debt ratio and interest coverage ratio (ICR) while financial performance was estimated by return on Equity (ROE). Pecking Order Theory and Trade Off Theory are the theories on which this research was anchored. Regression and correlation analysis identified the influence of leverage on the financial performance of study population. The interest coverage ratio and the debt ratio's influence on ROE was positive while the increment of firm size resulted in a decrease in ROE. This study concluded that a positive influence of leverage on financial performance was found. As firms continue to rely on debt financing, their income and financial performance improves. This research recommends that finance managers should strive to achieve a balance between benefits of debt as a result of tax savings and costs of bankruptcy that are linked to borrowing when deciding on the leverage levels to adopt.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the study**

Leverage choices tend to be very important to a firm as they help in ascertaining the optimum capital structure of a corporation (Chadha & Sharma, 2015). In financial management, the sources of capital financing are equity and debt. When deciding on the suitable debt to equity mix, a dilemma arises when making financing decisions to influence financial performance (Nyamita, 2014).

Research on leverage and capital structure has intrigued finance academicians after the Modigliani and Miller (M&M) approach to capital theory which was developed in the year 1958. M&M assert that where perfect market conditions hold, an organizations value was not determined through the capital structure adopted. This theory was later challenged since perfect markets did not exist in real life (Hasan et al., 2014). M&M then amended the theory in order to incorporate taxes, since interest payments were tax deductible and a rise in leverage causes value increment (Modigliani & Miller, 1963). Leverage is vital to improve the performance of a company. Organizations that have plenty of assets, should fund their activities through borrowing in order to avoid risk of insolvency that could result in serious negative consequences on organizations operations as the trade off theory affirms.

The Energy and Petroleum industry is a key segment of the Kenyan economy. The industry requires enormous financing in its energy consumption stages. Leverage enhances earnings

for a firm. The sector is influential in politics and energy resources ownership. A country's government influences energy utilization by businesses and individuals with an aim to solve issues concerning the environment. Increase in energy costs leads to high operating costs, poor performance and declining profits for industries. The Energy and Petroleum sector is therefore the most influential on performance of other Kenyan industries (ERC).

The main duties of managers in an organization is structuring its capital structure components and ensuring maximization of shareholder's wealth. The study will establish influence of leverage on performance that is a measure of shareholder's wealth maximization. To examine the effect of leverage on listed firm's financial performance, we need to know the kind of connection that exists between the two variables.

### **1.1.1 Leverage**

Leverage is financing using debt and borrowing capital towards boosting firm's growth and profitability. A firm is said to be leveraged when it is financed partly by equity and debt (Kithandi, 2020). Low interest rates are more desirable to a company but is a risk of financial distress due to high leverage. A company may be declared bankrupt for failing to meet its service obligations to creditors in extreme cases (Hovakimian et al, 2002).

Leverage is the utilization of money borrowed to make a return on a company's investment. A company faces risk when it has a high leverage ratio. Leverage is described as the extent which an organization utilizes fixed income securities which includes preferential equity and borrowings. Big interest payments will result from utilizing a high level of leverage. Consequently, Earnings Per Share (EPS) is negatively affected by interest payments as it

is driven lower (Smith, 2002). According to Sultan and Adam (2015), Leverage is can be indicated by debt and equity ratios. They specify the equity value of a firm by assessing its debt portfolio. The ratios compare assets or outstanding shares to equity or debt.

Barine (2012) indicated that an optimum structure refers to the best mix of tax benefits when utilizing leverage for a company and the costs related to financial distress. Companies lie at different points on the trade off curve. Increment in debt proportion results in firm value increase up to a certain point on the trade off line. Additional increment in leverage results to a decrease in cost of capital beyond that point.

### **1.1.2 Financial Performance**

It specifies the efficacy which an organisation will utilize resources which are limited in order to generate maximum revenue. The proxies that are used to determine the profitability of a firm are ratios which include ROE and ROA (Nwaolisa & Chijindu, 2016). Organizations financial performance is characterized by the organizations market competitiveness, increased revenue and profits, its business potentiality, its ability to meet financial obligations and its social corporate responsibilities, (Dufera, 2010).

Theoretically, the importance of financial performance is that it ensures that a firm fulfills its stakeholders needs while research on correlation among leverage and performance gathers momentum (Berger & Bonaccorsi di Patti,2006). It also refers to an organizations success and the generation of revenue by the organization periodically. Accountants use financial performance for comparison of different organizations in different industries or

in the same industry. Profit making organizations strive for efficient productivity (Yahaya & Lamidi, 2015).

Evaluating productivity enables decision makers to assess its operations and strategic approach in monetary and objective terms. It reveals whether management and board members have continued to effectively contribute and how committed they are to their role. Benefits of a sound financial management system are fewer fraud cases, increased investor confidence, lower cost of capital and efficient resource utilization (Stanwick, 2002).

### **1.1.3 Leverage and Financial Performance**

This study was interested in showing the kind of relationship either positive or negative that exists between leverage and performance of selected firms. According to Hutchinson (1995), financial leverage has an influence on ROE as long as the assets earning power surpasses interest charges of the firm's debt. In their study, Fengju, Fard, Maher and Akhteghan (2013), results disclosed a positive interrelation connecting productivity and leverage of organisations listed on Tehran Stock Exchange. Differences were found between leverage and profitability in smoothing and non-smoothing organizations. Managers put a lot of effort on reaching an optimum mix of financial resources and capital structure caused by the interrelationship of financial performance and leverage (Mohammadzadeh et al., 2013).

Wald (2000) observed that firms that had high profits were had a high likelihood to low leverage levels in comparison to organizations which had low profits given that the firms often utilize their profits when investing before considering financing from external

sources. Wald also observed that prices of the stock market are an indicator of the financial performance of a company. Organizations tend to issue equity as an alternative to debt so as to keep leverage levels low when stock market prices increase.

However, other researchers observe a negative correlation between the study variables. Fama and French (1998) argue that usage of enormous debt to finance activities is likely to cause agency problems between the creditors and the shareholders which will translate to an inverse interrelationship among productivity and firms leverage. Abor (2007) found a negative significance in the relationship between leverage and profitability in his research for Ghana and South African firms.

#### **1.1.4 Energy and Petroleum Firms Listed at the Nairobi Securities Exchange**

NSE is the only licensed Kenyan securities exchange. Companies listed at the NSE can make use the market to borrow money to expand their operations. The NSE has enabled privatization of firms and has enhanced entry of investments into the economy (Gakeri, 2012). The NSE equities platform is composed of various sectors. This are: Energy & Petroleum, Construction & Allied, Agricultural, Banking, Manufacturing & Allied, Investment, Insurance, Investment services, Real Estate Investment Trust, Exchange Traded Funds & Telecommunication (NSE,2021).

The energy and petroleum industry consists of firms that market and distribute petroleum products and those that sell other forms of energy in Kenya. ERC regulates the Energy and Petroleum sector in the country. They constitute local and multinational companies. The



Energy & Petroleum sector at the NSE comprises of Kengen, Kenya Power & Lightning, Total Kenya & Umeme Ltd (NSE,2021). The study findings are of importance to energy and petroleum companies both listed and non-listed. From the study findings, conclusions and recommendations, the companies will be able to identify effective financial management practices.

Financial performance of organizations in this sector depends on leverage and working capital among other factors. The inability of petroleum firms to make profit may lead to industrial actions, bankruptcy and being blacklisted by suppliers. High costs of operation, poor infrastructure, exchange rates fluctuation, government regulation and tax administration are the main problems confronted by the energy sector. Profitability in the energy sector has been made difficult by the challenges faced by the firms (Baffes et al., 2015).

ERC is in charge of regulating the energy and petroleum sector which is a crucial component in the Kenyan economy where petroleum is the principal source of energy in the country. By failing to meet its obligations, a firm will disrupt its distribution operations and marketing activities by disruptions such as labour strikes. Security issues such as terror attacks pose a challenge to the sector and influence leverage decisions since Kenya imports petroleum products (ERC).

## **1.2 Research Problem**

Financial performance transpires to be a notable challenge in non-financial listed firms in Kenya. About 39% of listed nonfinancial firms have continued to face numerous challenges

that range from delisting and suspension from NSE at 21.3% and declining after tax profits despite the political stability being enjoyed in the country and improved access to funding occasioned by the economic reforms that would make a wider range of financing instruments available to businesses.

Decisions on leverage in energy and petroleum sector are important as they ensure availability of adequate cash flow which involves management of all liabilities in an organization. The purpose of leverage decisions is to guarantee continuity of operations and availability of cash flow that will satisfy forthcoming operational costs (Ganesan, 2007). Companies in the study population consider business and shareholders risk, tax considerations and the need for financial flexibility as debt financing key elements. Firms often adopt more debt so as to enjoy less tax on their income. This however exposes the firm to more financial and business risk (Nduati, 2010).

Previous studies on leverage and financial performance have given mixed results hence there is need to study this topic further. An agreement has not been reached on the optimal capital structure that can be adopted for all organizations. Despite the studies focusing on leverage and financial performance, the studies have been done outside Kenya and the local studies focused on different sectors like manufacturing and banking. Omesa et al. (2013) examined the effect of capital structure on performance among 20 companies in manufacturing.

Regionally, research has stipulated a significant correlation connecting firm profitability and performance. Findings vary depending on the country and industry that the study is being conducted (Khan et al., 2012). Many studies have been conducted in Kenya and

beyond but there has been little investigation on the correlation between profitability and financial structure of petroleum firms in Kenya. Aspects like to what extent does debt financing affects profits, what is the contribution of share capital to profits, what is the role of trade credit within the industry, what is the contribution of retained earnings in boosting firm profits are aspects that must be addressed in this study to ensure that the problem at hand is addressed.

Even though Kenya as a country aims to become an industrialized economy by the year 2030, petroleum firms are struggling with profitability hence the industry role as an important bedrock remain is doubt (Ngniatedema & Li, 2014). This creates the gap that this study sought to fill. The leverage ratio varies from one company to the other considering their different factors. This study will aim to determine the relationship between leverage and the financial performance of Kenyan Energy and petroleum sector firms listed in Kenya.

### **1.3 Research Objective**

To investigate the effect of leverage on the financial performance of Energy and Petroleum firms listed in the Nairobi Securities Exchange.

### **1.4 Value of the study**

Finance professionals will be guided in formulating and implementing financial policies that will increase revenues and profits of their organizations. It will also be used to enhance shareholders' confidence on the strategies used by company directors. The study will

explain impact of leverage decisions and measures towards maximizing shareholder's wealth.

Policy makers will use the study to review and reformulate monetary policies and reforms in order to improve accessibility of funds to companies. This helps the government draft laws that encourage the economic growth of the country. The stock market is expected to continually grow and contribute to the growth of the economy. It is worth looking at the NSE in the wake of new structural reforms due to the East African Integration and demutualization agreement.

Firms which are not listed in the NSE will utilize recommendations of the study to make choices on leverage that would result to improved performance. The study attempts to create awareness to these companies and build up knowledge and theories on leverage for the firms.

The study will inform research when establishing the degree to which leverage positively or negatively affects a company's financial performance. It will also be of value when finding gaps that will result in further studies. The study will leave room for the researcher to later relook at the study variables and do a comparison study. It will also contribute to knowledge on financial performance, leverage decisions and corporate financing.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter provides an assessment of literature and theories on leverage. It also discusses the factors that will influence financial performance which include working capital management, asset utilization and firm size.

#### **2.2 Theoretical Framework**

This section provided guidance in establishing the statistical relationship and supporting why the research problem exist by reviewing the theories adopted.

##### **2.2.1 The Pecking Order Theory**

The Pecking Order Theory (POT) originated from Myers and Majluf in 1984. It is presupposed on asymmetric information among the different stakeholders of the organization. Financial policies adopted by businesses aim at minimizing the costs brought about by asymmetric information. This includes preference to internal or external financing and adverse selection.

An assumption of the theory is that companies follow the following hierarchy: retained earnings, issuance of debt (non risky), issuance of debt (risky) and issuance of equity. This behavior results in a decline of company's share prices, prohibits distribution of dividend and limits access to loans hence reducing the cost of capital. Profit making organizations

will therefore enjoy availability of internal funds. The pecking order theory asserts that in order to steer clear of asymmetry of information on issuance of new shares, a firm will prefer debt issue instead of equity (Harris & Raviv, 1991). The reason debt is preferred after internally generated funds (retained earnings) is due to less information costs related to debt issuance (Smith, 2005).

In relation to the study, energy and petroleum firms can adopt the pecking order theory and thus use retained earnings to fund their activities. After these are depleted, companies can use leverage secured form borrowing and later equity. Internal financing does not attract interest nor does it dilute the value of a company's common shares. The only time when an organization should finance externally is in case of retained earnings insufficiency to finance a firm's operations (Gweyi & Karanja, 2014)

The significance of the theory is that less profitable firms use more debt compared to highly profitable firms. Debt capacity is a very critical and important aspect when considering borrowing as an option of raising funds, this theory fails to explicitly address the findings of Fama and French (2002) which argued that share capital option is a common phenomenon even in large business enterprises that are not under duress. This therefore is a clear indication that capacity to service debt is inadequate as an explanation given by the theory.

### **2.2.2 Trade-Off Theory**

Trade-Off Theory (TOT) was developed by Kraus and Litzenberg in 1973. This study considered the inefficiency created when equity and debt financing has no balance. It

argues that organizations with a large asset base should finance their operations using debt in order to avoid insolvency. This theory backs up Modigliani and Miller (1958) who maintained that perfect markets will enable an organization achieve an optimum capital structure by means of modifying the equity and debt levels in order to balance tax shield benefits and costs related to financial distress.

The theory supports use of leverage when making capital structure decisions owing to the associated benefits. Balanced interest payments reduce the cost of issuing debt. Leverage has its advantages to the firm since the debt-tax-shields are used to reduce tax and increase profit (Modigliani & Miller, 1958). Deesomsak et al. (2004) found out that there is evidence which confirms the assumptions of this theory and can thus influence the financial structure of the concerned firms.

Further this theory notes that time has a role that it plays in a single period model. In this model, suitable finance decisions depend on finance margins anticipated in future periods. Some firms are expected to pay funds in the next financial year, as other firms keep on expecting to raise finances they can raise such from either debt or even share capital (Luigi & Sorin, 2009).

The theory asserts that adequate debt level is found by comparing expenses associated with financing via debt against potential advantages to the firm. Consequently, a firm with large profits can use a high amount of leverage for investment financing. As stated by the trade off theory, organizations try to find a balance between tax advantages against the costs that come with leverage utilization when financing its investments (Aliu, 2010).

## **2.3 Determinants of Financial Performance**

Financial performance measures the general health of a firm at a specified time. It is mainly influenced by three main factors highlighted below. These are firm size, asset utilization and working capital management.

### **2.3.1 Firm Size**

Size impacts financial performance when determining the optimal capital structure. Large firms raise funds from capital markets easily thus reducing reliance on retained earnings (Al-Tally, 2014). The size of the firm relates to its market structure, asset structure, sales volume and personnel size of the company (Chandrapala & Knapkova, 2013)

Firms that are small in size suffer while attempting to secure loans due to their asset base and inferior tangible collateral thus making commercial credit a remote option. In considering the advantages that are enjoyed large enterprises in access of debt, these firms are likely to perform better as their financial distress levels are practically low when put in comparison to smaller firm in size (Maina & Ishmail, 2014).

With numerous studies indicating that when measuring the size of the firm, profitability can also be used as an objective indicator of performance with findings indicating a significant interrelation between size and performance and the financial structure adopted by respective firms (Vijayakumar & Tamizhselvan, 2010). Papadogonas (2007) sampled 3035 manufacturing firms in Greece and conducted a study which found that for all organizations, their size affects profitability.



### **2.3.2 Asset Utilization**

According to Jose, Hongman Gao, Xiaochuan, Bahram and Haibo (2010), use of assets significantly influences a company's financial performance. Ellis (1998) asserts that asset utilization is the measure of assets which are able to produce and the end product of their utilization. On the hand, not using the assets leads to losses in investment and revenue which leads to inefficiencies in resource utilization (Ellis, 1998).

Heaney and Mc Cosker (2005) indicated that improper use of assets increases agency costs since the management seldom perform towards company owner interests. Following Ang, Cole and Wuh Lin (1999) and Singhand Davidson (2003), the asset utilization ratio is used. A high asset utilization ratio shows that a firm is making investment decisions that are not optimal or that the firms are investing in projects that are not productive.

### **2.3.3 Working Capital Management**

One organization objective is to maximize the shareholders' value and maintaining its liquidity. An optimum balance between profitability and liquidity should be reached for the company to adhere to the going concern principle. Profitability must be pursued together with liquidity to prevent the company from facing insolvency and bankruptcy leading to losses and closure. Therefore, working capital influences financial performance and is significant to an organization. Organizations should aim for an optimum working capital level that will maximize its value (Afza & Nazi, 2007)

Deloof (2003) indicated that many organizations inject huge cash flows in working capital management and adopt accounts payables as the major source of funds which influences a

company's performance. Operating profitability indicates how the management performs when it comes to managing working capital of the firm, Lazaridis and Tryfonidis (2006).

## **2.4 Empirical Evidence**

Modigliani and Miller (1958) showed the inapplicability of capital structure to the wealth of shareholders. Therefore, a levered firm's value is similar to that of the unlevered firm and the management should not factor capital structure when selecting debt and equity composition. To conduct the empirical analysis, data was collected from the same sectors in the same country by utilizing uniform financial information of firms in USA. The sample included 256 companies in the electric sector and 223 companies from the oil sector. In order to establish the correlation between firm value and leverage, a linear model was used. Then multiple regression analyses were done. The MM theorem was tested and results showed significant correlation between firm value and leverage and therefore failed to underpin MM's proposition.

Maina and Kadongo (2013) studied the influence of debt to equity ratio and productivity of listed firms in NSE with an aim to prove the Miller-Modigliani theory applicability in Kenya. Their sample involved all listed firms at the NSE from 2002 to 2011. Results specified a significantly negative coefficient among performance measures and leverage. There was collaboration to the Miller-Modigliani theory which asserts that capital structure influences firm performance. They also argued that publicly quoted companies in the Nairobi Securities Exchange use current liabilities more often in comparison to non-current liabilities.

To test the trade-off theory, MacKie-Mason (1990) did tests based on incremental financing decisions made by firms. The sample was extracted from new securities issued publicly where the sample contained 1418 securities from the years 1977 to 1984, covering 613 new securities from different companies. Tests on the effect of tax policies on financing were conducted in an analysis of capital structure changes using the incremental choice approach. The incremental choice approach reduces the bias from the simultaneity of financial and investment decisions. The results revealed that tax policy significantly affect financing decisions. Higher debt ratios were found in companies that had high marginal tax rates while those that issued more equity had low marginal tax rates.

Muchai (2016) examined the impact of leverage on performance of the listed manufacturing firms at the NSE. It covered the years 2010 to 2014. Analysis on the data was done through analysis of financial ratios, correlation, descriptive statistics and regression analysis. The findings established a significantly negative coefficient among profitability and financial leverage.

Booth (2001) found that an organization that utilizes equity capital can improve its market performance as it has direct control and that shareholders possess the remaining right on net cash flows of a firm. A company must always consider decisions which lead to maximization of shares market value and the wealth of shareholders.

Chesang and Ayuma (2016) studied leverage and productivity of Kenyan listed Agricultural firms. Non-current liabilities and the debt equity ratio was applied as a leverage measure. Findings stipulated a significant influence of the debt-equity ratio on

profitability and non-current liabilities were not associated with listed agricultural firm's productivity.

Mwangi, Makau and Kosimbei (2014) examined influence of leverage on profitability of Kenyan non-financial listed firms in Kenya. Research design utilized was a non-experimental explanatory design. Study population was 42 listed non-financial companies. Research findings showed an inverse interrelation among leverage and performance. This indicated that increased leverage resulted to decreased performance.

Abu-rub and Abbadi (2012) explored capital structure and performance of corporations in Palestine. Results indicated a weak correlation between return on equity and loans and correlation between loans and market value. This meant that bank loans had no effect on their efficiency. A correlation between efficiency and ROA was found. Study results were consistent with other research and ascertained positive significant correlation coefficient among capital structure and efficiency.

Kipsha and Moshi (2014) also studied the connection between performance and capital structure of Tanzanian banks. Findings show Tanzanian banking institutions borrow more to fund their activities instead of using equity. The banks used more short term debt which comprises of customer's deposit customers compared to long term debts. They concluded that the relationship depended on proxies used to measure the variables. The debt equity ratio measured capital structure and ROE and cost efficiency measured performance. Results indicated a positive interrelation among ROE and the debt to equity ratio.

Chinaemerem and Odita (2012), in their attempt to research influence of leverage on performance of non-financial companies listed in Nigeria from 2001 and 2007, found that

although asset turnover is a vital determinant of performance, the firms did not utilize the fixed assets to impact positively on their firms' performance thus concluding negative relationship.

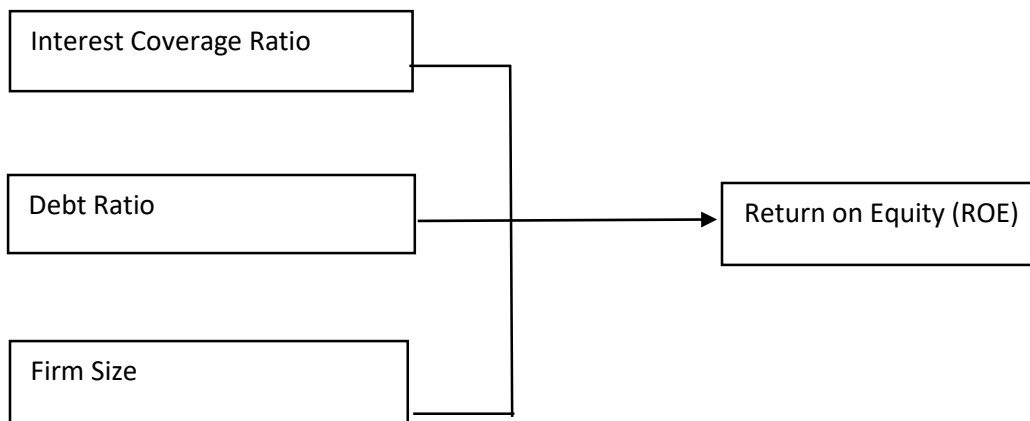
In their study, Yegon, Cheruiyot and Cheruiyot (2014) found a significant and negative association among debt acquired in the long term and firm's performance. A positive interrelation among performance and short-term debt was also found. Results showed that current liabilities were less costly compared to non-current liabilities. Thus, debt has no association to the productivity of a firm owing to the unique characteristics of debt.

## 2.5 Conceptual Framework

This section illustrates the dependent variable, independent variables and their relationship in a research study through a diagram, (Mugenda & Mugenda, 2003).

### Independent Variables

### Dependent Variable



*Figure 2. 1: Conceptual Framework*

## **2.6 Summary of Literature Review**

Research which focused on impact of leverage on performance established a significantly positive association among leverage and firm performance. Few previous scientific studies showed a significantly negative association among study variables. Chinaemerem and Oditia (2012) recorded a significantly negative correlation between study variables while Kipsha and Moshi (2014) and Yegon, Cheruiyot, and Cheruiyot (2014) proved a positive interrelation between the variables.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter describes population, research design and approach involved in data collection and analysis.

#### **3.2 Research Design**

It guides the researcher by indicating a framework that helps them in assessing a research problem (Coopers & Schindler, 2006). The descriptive design used helps in measuring the relationships among variables. It answers what, when, where and how research questions.

#### **3.3 Population**

Kothari (2004) defines the target population as specific possible elements whose information is desired. Creswell (2003) defines population as a set of elements, events or households to be examined. Study population comprised of the four Energy & Petroleum firms listed in the NSE from 2011 to 2020.

#### **3.4 Sample Design**

A sample refers to the true representation or subset of the population of a study (Serakan, 2010). Our population of interest was the four Energy & Petroleum firms selected since no sampling was done.

### **3.5 Data Collection**

This study utilized secondary information from annual financial reports. Data was derived from published financial statements of Energy & Petroleum listed firms from 2011 to 2020.

### **3.6 Validity and Reliability**

According to Mugenda and Mugenda (2003), validity is the significance of inferences and their accuracy that are normally based on research findings. Reliability is the consistency of measurement items in a given set (Hair, Bush & Ortinau, 2000). Reliability refers to consistency met when an object is put through same conditions with related objects, that is, uniformity of the measurements. This study used published annual reports.

### **3.7 Data Analysis**

Multiple linear regression was adopted and helps in drawing inferences on the relationship the study variables for the ten-year period (2011 to 2020).

#### **3.7.1 Analytical Model**

The model used is as indicated below:

$$Y_{it} = \beta_0 + \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \epsilon_{it}$$

Where:

$Y_{it}$  = Financial Performance (ROE) for firm  $i$  in time  $t$ .

$\beta_0$  = Constant of the regression equation



$X_{1it}$  = Interest Coverage ratio (EBIT / Interest Expense) for firm i in time t.

$X_{2it}$  = Debt Ratio (Annual total debt / annual total assets) for firm i in time t.

$X_{3it}$  = Size (Natural log of sales) for firm i in time t.

$\beta_1, \beta_2$  and  $\beta_3$  = Regression equation coefficients

$\epsilon_{it}$  = The error term.

### **3.7.2 Test of Significance**

A t-test statistic at a confidence level of 95% determined the statistical significance of the coefficients estimated by time series regression analysis. The ANOVA and the F-test statistic was applied to test the regression equations significance at a confidence level of 95%. Correlation analysis was employed to estimate the direction and strength of connectivity among the variables. Coefficient of determination ( $R^2$ ) measured how much variability in the dependent variable was caused by its relationship to independent variables.

### **3.7.3 Diagnostic Tests**

Diagnostic tests were conducted to determine whether the model is significant. Durbin Watson test examined autocorrelation in the residuals of the statistical regression analysis.

## CHAPTER FOUR

### DATA ANALYSIS, RESULT AND DISCUSSION

#### 4.1 Introduction

The chapter discusses analysis of study data, results and their discussion. This research used inferential and descriptive statistics to conduct data analysis. Findings were summarized and was presented in tables.

#### 4.2 Descriptive Analysis

The researcher conducted descriptive analysis which helps in understanding the data better.

*Table 4. 1: Descriptive Statistics of the Study Variables*

<b>Variables</b>	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Median</b>	<b>Std Dev.</b>	<b>Variance</b>
<b>Return on Equity</b>	40	-0.017	0.293	0.099	0.089	0.071	0.005
<b>ICR</b>	40	0.317	145.656	12.549	3.589	26.963	727.023
<b>Debt Ratio</b>	40	0.351	0.831	0.635	0.674	0.135	0.018
<b>Size</b>	40	13.033	18.956	17.066	17.876	1.949	3.800

Source: Research Study Findings (2021)

From Table 4.1, Return on Equity evaluated registered an arithmetic mean of 0.099, standard deviation of 0.071, a maximum of 0.293 and a minimum of -0.017. Interest Coverage Ratio posted an arithmetic mean of 12.549, standard deviation of 26.963, a minimum of 0.317 and a maximum of 145.656. For the Debt ratio, an arithmetic mean of 0.635 with standard deviation of 0.135, a minimum of 0.351 and maximum of 0.831 was posted. Size registered a mean of 17.066, standard deviation of 1.949, a minimum of 13.033 and a maximum of 18.956.

### 4.3 Correlation Analysis

Correlation indicates the extent of the association between two variables. The number ranges from -1 to +1.

**Table 4. 2: Correlation Matrix of Variables**

	Return on Equity	Interest Coverage Ratio	Debt Ratio	Size
Return on Equity	1			
Interest Coverage Ratio	-0.218	1.000		
Debt Ratio	0.472	-0.705	1.000	
Size	-0.844	0.512	-0.342	1.000

Source: Research Study Findings (2021)

The correlation matrix showed a positive association between ROE and the Debt ratio at 0.472. This implied that listed firms can improve financial performance by boosting the Debt ratio. The matrix showed a negative correlation between ICR and ROE as shown by -0.218 and between size and return on equity at -0.844.

### 4.3.1 Diagnostic tests

The Durbin Watson test examined the occurrence of auto-correlation in the residuals. There exists a positive serial correlation when  $d$  is less than 2, no serial correlation if  $d$  is 2 and a negative serial correlation when  $d$  is more than 2. According to our model, Durbin Watson,  $d=1.062$ . Results indicate a positive serial autocorrelation in the residual.

### 4.4 Regression Analysis

Regression identified the interrelation among the variables. Ordinary least square method (OLS) was used since it is a linear unbiased coefficient because of its efficiency and consistency. The method determines the models' line of best fit.

**Table 4. 3: Study Model Summary**

Model	R	R Square	Adjusted R Squared	Standard Error of Estimate
1	.668	0.446	0.400	0.055

Source: Research Study Findings (2021)

The coefficient of determination and correlation of the dependent variable (ROE) and combined independent variables (Interest Coverage ratio, Debt ratio and size) were assessed. Research findings indicate that 44.6% of the variations in financial performance of selected firms were described by independent variables examined. The other 55.4% is not explained by the model.

**Table 4. 4: ANOVA Table**

<b>Model</b>	<b>The Sum of Squares</b>	<b>df</b>	<b>MS</b>	<b>F</b>	<b>Significance</b>
<b>Regression</b>	0.089	3	0.030	9.666	0.000081
<b>Residual</b>	0.110	36	0.003		
<b>Total</b>	0.199	39			

Source: Research Study Findings (2021)

Table 4.4 shows the mean sum of squares to be 0.030 and sum of squares due to regression to be 0.089. Mean sum of squares due to residual is 0.003 and sum of squares due to residual is 0.110. Calculated F-value is 9.666 and value of significance registered was 0.000081. P-value is less than 0.05 which asserts that at 95% significance level, the association between the variables is significant in connection to the study objective.

**Table 4. 5: Coefficients Results**

	<b>Coefficients</b>	<b>Standard Error</b>	<b>t - statistic</b>	<b>P-value</b>
<b>Intercept</b>	0.4911	0.1047	4.6912	0.000038
<b>ICR</b>	0.0008	0.0004	2.1160	0.041325
<b>Debt Ratio</b>	0.0323	0.0765	0.4225	0.675167
<b>Size</b>	-0.0248	0.0048	-5.1292	0.000010

Source: Research Findings (2021)

Table 4.5 reveals that the numerical relationship among the variables is given by the equation below:

$$\text{Financial Performance} = 0.4911 + 0.0008 X_1 + 0.0323 X_2 - 0.0248 X_3 + 0.1047$$

The equation revealed that when Interest Coverage ratio increased by a unit, financial performance increased by 0.0008 units. An increment of the debt ratio by a unit, results to an increment of financial performance by 0.0323 units. Whereas financial performance decreases by 0.0248 units when size increased by a unit. The model revealed that holding both independent and control variables constant, the mean performance would be a constant at 0.4911.

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

Study findings show that Interest Coverage Ratio (ICR) had a significantly positive impact on ROE of listed selected firms as evidenced by the coefficient of determination for the years 2011 to 2020. ICR when used as predictor to ROE ( $\beta=0.0008$ ) and has a t-statistic of

2.116 which is significant at 5% significance level. It denotes that increment in interest coverage ratio results to a rise in ROE.

It was noted that a negative association among financial performance and firm size exists. Size had a negative coefficient in the regression model ( $\beta = -0.0248$ ) indicating that an increase in firm size had a negative influence on ROE. This association is significant at 5% significance level since the t-statistic is -5.1292. Amato and Wilder (1990) found that as a firm expands in size, x-inefficiency is developed and leads to poor performance. Financial performance was estimated by ROA while net assets estimated size.

The correlation coefficients among the variables showed an insignificant and positive interrelation between ROE and the debt ratio. A positive coefficient in the regression ( $\beta = 0.0323$ ) was found. However, the t-statist was 0.4225 which was insignificant at 5% significance level. This study results concur with Saad et al (2015) whose study revealed that financing through equity resulted to a positive influence on performance of businesses while the connection of dent financing and performance was insignificant.

Coefficient of multiple determinations,  $R^2$  was tested. It showed that 44.6% of variations in performance was described by independent variables while 55.4% of variations were described through factors not within the model. Therefore, the independent variables were not the paramount determining factors of financial performance in the selected firms. ANOVA findings indicated a relatively high F-value of 9.666 and asserted the model significance in interpreting the relationship of the study variables.

## **CHAPTER FIVE**

### **SUMMARY CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

The chapter shows a summary of research findings, presents the conclusion and recommendation, states limitations experienced and the suggestions toward further research.

#### **5.2 Summary of Findings**

Study findings established the impact of leverage on a firm's performance. It adopted a research design that is descriptive to analyze the interrelation among the variables. Data was analyzed over a ten-year period. To determine the relationship of the variables, regression and correlation analysis was carried out. Majority of the firms listed increased their profitability levels in the course of the period studied. Data was also analysed for descriptive statistics.

The study findings show that 44.6% of the ROE of listed firms affiliated to the Energy and Petroleum sector from 2011 to 2020 was associated to study's independent variables. F calculated registered a value of 9.667 and a significance value less than 0.05 which implied that the relationship of the variables was significant at a level of significance of 95%. The Debt ratio was insignificant since it registered a P-value greater than 0.05. Interest Coverage ratio and the Debt ratio positively interrelated to return on equity ratio of firms analyzed while Size was correlated negatively to ROE of the listed firms.



When all factors are constant and at zero, ROE registered a value of 0.4911. This research found that when other independent variables are held at zero, an increase of 0.0008 in financial performance will result from an increase in Interest Coverage ratio by one unit. An increase of 0.0323 in financial performance of the firms will be registered when Debt ratio increases by a unit in the listed firms. Also, it was found that a 0.0248 decline in financial performance will result from an increment of firm size by a unit.

### **5.3 Conclusions**

Independent variables had different levels of impact on financial performance of selected firms as shown by research findings. Interest Coverage ratio and the Debt ratio positively impacted Return on Equity (ROE) ratio of firms listed while size had a negative impact on ROE.

Research study results are similar to past studies that showed a positive correlation between the study variables. Harelimana (2017) stated that profitability of banks and the level of debt were strongly related. The study concluded that the Bank of Kigali performed better than I&M Bank. Akhatar, et al (2012) established that the debt ratio positively affected ROA and ROE ratios. The research study analyzed all institutions in the fuel and oil industry in Pakistan.

Conversely, this study results have a contradiction to some studies done earlier for instance Ahmad et al. (2015) whose objective was to study leverage and the performance of Pakistan firms that manufactured cement. A negative and significant interrelation was found among variables of firms that had been sampled. In his research study, Tangut (2017) concluded

that the returns were influenced negatively by leverage and that shareholders of firms that have utilized high levels of debt may be disadvantaged when it comes to dividends and capital gains.

## **5.4 Recommendations**

The study results showed a positive interrelation among the debt ratio, interest coverage ratio and ROE of selected firms. Results revealed that leverage affected a firm's financial performance positively. The implication is that as firms continue to rely on debt financing, their income and financial performance improves. Therefore, firms should only use leverage when the finances are intended for the increment of asset utilization of existing assets. This is to ensure that a balance between the need to borrow and utilization of assets is achieved.

ICR had a significant positive correlation with ROE. Organizations should have high profits in order to cover their interest payments so as to survive financial distress that could arise in the future due to high gearing. The capability of an organization to meet obligations such as interest and principal repayment is a vital factor as it influences shareholder returns and the solvency of the company. When a firm is struggling with its obligation, the managers may decide to use the retained earnings or to borrow funds in an attempt to stay afloat. The research recommends that managers should strive to achieve a balance between benefits of debt as a result of tax savings and costs of bankruptcy that are linked to borrowing when deciding on the leverage levels to adopt.

## **5.5 Limitations of the Study**

This research targeted all energy and petroleum listed firms in Kenya between 2011 to 2020. Nevertheless, Kenol Kobil was delisted from the NSE in 2019. This followed after the acquisition of 100 percent of the shares by Rubis Energie which disqualified Kenol Kobil from operating as a listed entity. The firm was consequently excluded from the population to avert inconsistency of the data.

## **5.6 Suggestions for Further Research**

The study explored the impact that leverage decisions have on performance of selected firms. The researcher was not able to include firms that are unlisted in the research. Fellow researchers can conduct an analysis on how leverage influences other firm's financial aspects. Other researchers could examine the influence of leverage on performance while using alternative proxies of financial performance estimation that were excluded in this research. Secondary data was employed hence when studying the association between financial performance and leverage, other researcher should consider using primary data.

A more extensive research study across the sector is needed on the connection between leverage and the performance of other firms that are listed in the NSE. Other studies could target other sectors such as manufacturing and investments. They should examine the impact of factors specific to an industry on performance of companies since different sectors are established and regulated uniquely.

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## **APPENDICES**

### **Appendix I: Firms Listed in the Energy and Petroleum sector of the NSE in Kenya**

1. Total Kenya Ltd
2. KenGen Ltd
3. Umeme Ltd
4. Kenya Power and Lighting Company Ltd

Source: NSE (2021)

## Appendix II: Data on Dependent and Independent variables

<b>Total Kenya Ltd</b>										
<b>Financial Year</b>										
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Return on Equity</b>	-0.01	-0.01	0.09	0.09	0.09	0.12	0.13	0.10	0.10	0.12
<b>Interest Coverage Ratio</b>	1.04	0.96	6.48	9.36	65.42	145.66	76.79	32.14	22.12	31.38
<b>Debt Ratio</b>	0.74	0.57	0.62	0.50	0.49	0.47	0.44	0.42	0.35	0.38
<b>Size</b>	18.48	18.60	18.86	18.96	18.74	18.52	18.74	18.73	18.79	18.39

Source: Research Findings (2021)

<b>KenGen Ltd</b>										
<b>Financial Year</b>										
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Return on Equity</b>	0.03	0.04	0.07	0.04	0.08	0.04	0.05	0.04	0.04	0.09
<b>Interest Coverage Ratio</b>	3.71	2.35	2.34	2.61	3.89	4.60	4.35	4.87	3.31	2.67
<b>Debt Ratio</b>	0.57	0.57	0.61	0.69	0.59	0.53	0.51	0.50	0.51	0.49
<b>Size</b>	16.48	16.59	16.62	16.67	17.19	17.41	17.59	17.63	17.64	17.60

Source: Research Findings (2021)

<b>Kenya Power and Lighting Company Ltd</b>										
<b>Financial Year</b>										
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Return on Equity</b>	0.11	0.11	0.07	0.12	0.13	0.11	0.12	0.05	0.00	-0.02
<b>Interest Coverage Ratio</b>	16.08	7.99	3.63	3.54	3.47	3.08	2.93	1.70	0.32	1.03
<b>Debt Ratio</b>	0.67	0.68	0.74	0.75	0.79	0.78	0.82	0.82	0.83	0.83
<b>Size</b>	18.11	18.38	18.30	18.47	18.49	18.50	18.61	18.69	18.71	18.71

Source: Research Findings (2021)

<b>Umeme Ltd</b>										
<b>Financial Year</b>										
	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
<b>Return on Equity</b>	0.21	0.24	0.29	0.22	0.21	0.17	0.06	0.18	0.17	0.05
<b>Interest Coverage Ratio</b>	2.42	2.84	4.36	3.98	4.03	3.19	1.46	3.11	4.47	2.29
<b>Debt Ratio</b>	0.81	0.68	0.68	0.74	0.72	0.73	0.74	0.71	0.67	0.70
<b>Size</b>	13.03	13.66	13.78	13.79	13.96	14.09	14.21	14.22	14.39	14.32

Source: Research Findings (2021)