# Capital Structure on Financial Performance of Listed Energy and Petroleum Sector Firms in Kenya

**Ronald Amuliodo Luganji[*], Julius Bichanga Miroga (Ph.D)[**]**

[*] MBA Finance, Student, Jomo Kenyatta University of Agriculture and Technology, Kenya
[**] Lecturer, School of Business and Entrepreneurship, Jomo Kenyatta University of Agriculture and Technology, Kenya

*Abstract-* This research sought to determine how capital structure affected the financial performance of Kenyan listed energy and petroleum industry firms. The study's main objectives were to determine how debt financing affected the financial performance of listed energy and petroleum sector companies in Kenya and how equity financing affected financial performance of listed energy and petroleum sector firms in Kenya. The theories that served as a guide for the study were: Pecking order theory and trade-off theory. This study adopted a correlational research design while dealing with the research objectives. A census method was adopted for purposes of analyzing the audited financial statements that were downloaded from the firms' websites in arriving at detailed and well informed conclusions by employing Multiple regression, Correlation and Analysis of Variances techniques using the Statistical Package for Social Sciences (SPSS) software version 26 to establish the existence (or lack of it) of the study's link between the dependent and independent variables. The study conclusions showed that the independent variables had a statistically significant effect on the financial performance of Kenyan listed energy and petroleum companies. The model correctly predicted the association between the variables based as depicted by the F-test. Recommendations on the variables were made for management consideration for future decision making where the study majorly recommended that the firms should use more internal equity to grow profitability as it does not involve costs of acquisition compared with external equity and debt finance and that in cases where external financing is required, management should base decisions on the finance option with the lowest investment risk and proportional costs. The study results were geared towards contributing to the already existing findings from previous research works on similar areas and beyond as well as forming a basis for future scholars in the finance sector.

*Index Terms-* Capital structure, debt financing, equity financing, financial performance

## Introduction

Capital structure refers to how much debt and equity the company has. Although actual debt and equity levels may change over time, most businesses strive to maintain a financing mix that is near to a desired capital structure. Firms' capital structure decision includes its choice of a target capital structure, the average maturity of its debt, and the specific types of financing it decides to use at any particular time. As with operating decisions, managers should make capital structure decisions that are designed to maximize the firm's intrinsic value (Brigham & Ehrhardt, 2013).

A key problem in finance is capital structure and how it affects a firm's financial performance. Various theories have been proposed to explain this relationship. Modigliani and Miller (1958): The most significant hypothesis that demonstrates the connection between capital structure and business value is the MM hypothesis. They contend that a firm's capital structure has no bearing on the value of the company, although this argument is founded on limiting presumptions that do not hold true in practice. Even though, their work is marked as the beginning of modern capital structure research.

Later Modigliani and Miller (1963) adjusted their 1958 theory by considering the benefit of tax shield by decreasing net income before tax through deducting interest expense. This resulted from the tax code that allows corporations to deduct interest payments as an expense, but dividend payments to stockholders are not deductible. The differential treatment encourages corporations to use debt as a component of their capital structures (Pandey, 2015).

The Myers and Majluf (1984) pecking order theory and their model propose relying on internal sources of funding and to prefer debt to equity if external financing is required even firms may pass up valuable investment opportunities because of refuse to issue stock.

According to Jesen and Meckling (1976) the main benefit of debt is tax deductibility of interest and the costs are bankruptcy cost and agency cost. Jensen (1986) found that firms financed with cash and debt will generate larger benefits than those accomplished through exchange of stock.

Managers face problems in making decisions on the capital structure choice, because it has an effect on the financial success of firms. It has an indirect impact on shareholder return and risk. Nirajini and Priya (2013) discussed the importance of capital structure in

establishing a company's risk level, and concluded that fixed cost is a critical element whether it is included in the manufacturing process or fixed financial costs. Debt should be kept low if the management is likely to confront an uncertain environment but how low or how high is the basic question. The assets of the company can be financed from the owners of the firm or from the lender. The owners claim increase when the firm raises funds by issuing ordinary shares or by retained earnings which belong to the shareholders; the loaners claim increase when the company borrows money from the market using some instruments other than shares.

The Tax-based theory suggests that in a world with only corporate taxes and no personal taxes, the tax deductibility of interest for corporations creates a clear preference for debt in the corporate capital structure. Therefore, firms that are highly levered are supposed to outperform their counter parts that are less levered. (Rao, Yahyaee, and Syed, 2017).

Financial performance refers to an organization's financial strength which is mostly determined through financial analysis. Financial analysis is the process of evaluating a company's financial strengths and weaknesses by developing a proper relationship between the items on the statement of financial position and the income statement. A ratio is used as a benchmark in financial analysis to evaluate a firm's financial status and performance (Kifle, 2016).

The financing of all organizations is often achieved through the utilization of equity, debt, or hybrid securities. In his empirical investigation into the association between capital structure and financial performance of an organization, Banafa (2018) aimed to explore the potential impact of the former on the latter using one hundred companies in Pakistan, Banafa (2018) found out that all the three variables of capital structure, current liabilities to total asset, long term liabilities to total asset, total liabilities to total assets negatively impacts the earnings before interest and taxes, return on assets, earnings per share and net profit margin. One of the most important issues in corporate finance is responding to the question "how do firms choose their capital structure?" Locating the optimal capital structure has for a long time been a focus of attention in many academic and financial institutions that probes in to this area (Nirajini & Priya, 2013).

In a study undertaken by Abdul (2017), the objective was to examine the correlation between capital structure decisions and business performance within the context of Pakistani companies. The findings of the research indicate that there exists a notable inverse correlation between financial leverage and business performance, as assessed using several metrics such as return on assets (ROA), return on equity (ROE), gross profit margin (GPM), and Tobin's Q (a method employed to estimate the fair value of a corporation). The empirical analysis revealed that there exists a non-significant negative association between financial leverage and company performance, as shown by the return on equity (ROE).

In a separate study, Javed and Gharaibeh (2015) conducted an examination into the correlation between capital structure and financial performance. The researchers reached the determination that a positive correlation exists between financial leverage, financial performance, growth, and the size of organizations. The research conducted in this study centered around the Karachi Stock Exchange in Pakistan. Correlation and regression tests were employed to analyze the financial data. The results of the investigation align with the principles and assumptions of the agency theory. However, this study specifically excluded other financing options and instead concentrated solely on the concept of financial leverage. In their study, Saeedi and Mahmoodi (2017) investigated the correlation between the capital structure and the performance of the listed companies in the Tehran Stock Exchange.

In a study conducted by Banafa (2018), the effect of capital structure on the profitability of industrial companies listed on the Amman Stock Exchange was examined. The findings of the study highlighted the significance of the capital structure decision for business organizations. This decision is crucial as it aims to maximize returns for different stakeholders within the organization, while also considering its implications on the organization's ability to effectively navigate its competitive environment. In order to enhance profitability, the study concluded that it is imperative to choose an optimal blend of capital structure.

The study conducted by Gill and Shah (2012) aimed to expand upon the research conducted by Abor (2007) in order to further investigate the effect of capital structure on profitability. The researchers conducted an analysis to investigate the effect of capital structure on the profitability of American Service and Manufacturing firms listed on the New York Stock Exchange. The empirical findings revealed a positive correlation between the proportion of short-term debt to total assets and profitability, as well as between the proportion of total debt to total assets and profitability. Chen and Ritter (2016) noted that organizations often use debt when constructing their capital structure, which helps lower total financing cost. In general, using debt helps keep profits within an organization and increases returns on equity for current owners and helps secure tax savings. Availability of long-term finance allows manufacturing firms to improve their productivity through purchasing of new capital and equipment thus helping to increase its productivity.

Gill (2016) studied the effect of debt on firms and concluded that moderate debt level improves welfare and enhances growth but high levels can lead to a decline in growth of the firm. Rainhart and Rogoff (2019) argued that while debt impacted positively to the growth of a firm only when it is within certain levels. When the ratio goes beyond certain levels financial crisis is very likely. The argument is also supported by Stern Stewart and Company which argues that a high level of debt increases the probability of a firm facing financial distress. Over borrowing can lead to bankruptcy and financial ruin. High levels of debt limit the firm from more investments and undertaking new projects that are likely to be profitable because of the inability to attract more debt from financial institutions.

While the majority of previous research on capital structure has focused on established financial markets, there have been some investigations into the association between capital structure and financial performance in emerging countries. According to the study conducted by Kyereboah-Coleman (2017), there exists a positive correlation between the degree of debt and the performance of micro-finance institutions in the sub-Saharan African region. On the other hand, empirical investigations conducted within the African context consistently indicate an inverse association between capital structure and financial performance of firms. For instance, Abor (2007) examined the cases of South Africa and Ghana, Amidu (2018) focused on Ghana, while Onaolapo and Kajola (2020) explored

the Nigerian context. In a recent study conducted by Ebaid (2021), it was determined that there exist a limited or negligible impact of capital structure on the overall performance of firms in Egypt.

In their study, Mwangi, Makau, and Kosimbei (2014) conducted an investigation into the correlation between capital structure and the performance of non-financial companies that are listed on the Nairobi Securities Exchange. The researchers employed the Feasible Generalized Least Square (FGLS) regression technique in their investigation. The findings indicated that there was a statistically significant inverse association between financial leverage and performance, as assessed by return on assets (ROA) and return on equity (ROE). Based on the findings, it is advised that managers of non-financial enterprises listed on the stock market should decrease their dependence on long-term debt as a means of financing. In a study conducted by Kaumbuthu (2019), the objective was to examine the correlation between capital structure and return on equity among the industrial and allied sectors at the Nairobi Securities Exchange. The research concentrated on the years 2014 through 2018. The debt-equity ratio was used as a metric to evaluate the capital structure, while the return on equity was used as a key indicator to assess financial performance. Examining the relationship between the debt-equity ratio and return on equity (ROE) in the industrial and allied sectors using regression analysis. There was a negative correlation between these two variables, according to the results. This study aims to investigate the impact of capital structure on the financial performance of energy and petroleum companies listed in Kenya. The research will be led by the following variables: debt financing, equity financing, growth opportunities and asset tangibility being an area least studied in Kenya.

## Statement of the Problem

The components of total asset for different companies come fully from owners or partially supported by external creditors. The combination of different sources of finance is referred to as mix of capital structure of the business (Znaye, 2018). Capital structure is thus the mix of company's long term debt, short term debt, common equity and preferred equity. The difficulty facing companies when structuring their finance is to determine how it affects their financial performance. Finance managers have a responsibility of determining the optimal mix of debt and equity that will ensure maximization of shareholders wealth.

In Kenya, there are studies conducted on the effect of capital structure on the financial performance in the case of different scopes by different researchers such as: Tufa (2021), Kifle (2020), Liku (2020), Melese (2018), Hailu (2017), Getahun (2016), Gebrehiwot (2016), Negasa (2016), Aragie, Beyene and Shiferaw (2015) but their findings contradict each other. There are also other researchers study on this topic and found different results, from these empirical studies some of them found positive relationship between capital structure and firms financial performance, it means the financial performance of the firms increase with increase in level of debt such as: Nirajini and Priya (2013), Abor (2005), Githire and Muturi (2015) and Adesina, Nwidobie, and Adesina (2015). On the other side, Rao *et al.,* (2017), Bhattarai (2016), Muritala (2016), Madah, Sultan, and Farooq (2015), Vătavua (2015), According to the studies conducted by Le and Phan (2017), Ebaid (2009), and Maina and Ishmail (2017), there exist a negative correlation between the capital structure and financial performance of the firms.

Based on the preceding discussions, it is evident that there exist a degree of variability throughout empirical studies, and the findings pertaining to this particular topic remain inconclusive. Due to the absence of a universally acknowledged theory, researchers' findings exhibit variability and discrepancies in their conclusions and recommendations. Therefore, this topic is still an unresolved issue. Limited research has been conducted in Kenya regarding the association between capital structure and the financial performance of energy and petroleum companies listed in the country.

This study aimed to enhance the body of empirical research and contribute to the ongoing discourse regarding the association between capital structure and financial performance. To achieve this, the study analyzed financial data spanning a seven-year period from 2015 to 2021. The data was obtained from audited and published financial statements of four companies operating within the energy and petroleum sector listed on the Nairobi Securities Exchange (NSE) in Kenya.

## General Objective of the Study

The primary objective of this study was to examine the effect of capital structure on the financial performance of energy and petroleum sector firms listed at the Nairobi Securities Exchange in Kenya.

## Specific Objectives of the Study

The specific objectives of the study were:
1. To determine the effect of debt financing on the financial performance of listed energy and petroleum sector firms at the NSE, Kenya.
2. To examine the effect of equity financing on the financial performance of listed energy and petroleum sector firms at the NSE, Kenya.

## Theoretical Review
## Pecking Order Theory

The theory was improved and made popular by (Myer & Maijluf 1984). The theory assumes that there exists asymmetrical information where company management has more information concerning the firm's financial position, risks and future outlook than investors. This theory attempts to provide an explanation of how firms raise money for new investments. Kamara (2019) suggest that company capital structure choice can signal company secret information to outside parties. Firms that can finance themselves adequately using internal fund send a strong message that they have adequate resources to finance themselves.

When the firm issues debt it shows that managers are certain that the performance of the firm is good enough to finance the fixed interest charged on debt. The issue of equity is interpreted to be a negative signal that company shares are overpriced which makes investor put a lower value on the new share issue thus lowering their price. This theory claims that a pecking order is followed by management in funding new investments; retained earnings are top in the hierarchy, then debts follow and lastly issuing new equity. When funding investments, internal funds are given preference over external funds. Obonyo (2017) averred that the preference for internal finance is because the company does not incur additional charges that are associated with external finance e.g. floatation charges and interest payments.

When it is necessary to use external finance the preference is firstly to consider debt, then convertible shares, then preferential shares and lastly ordinary shares. This order enables managers to retain control of the company and reduce equity issuing costs. Muraguri and Shiundu (2022) clarifies that the theory explains why debt is preferable when financing externally and also why firms which do well have more funds to finance themselves internally and therefore incur less debts. Firms that make less profit are likely to require more external finance.

**Trade-off theory**

Motanya (2019) posited that trade-off theory suggests that capital structure should be chosen by creating a balance between the tax protection of debts and the associated borrowing costs. Borrowing should be in moderation to manage this balance. Debt offer protection from tax because it is deductible as an expense before taxation and the firm will pay less tax hence it will have more after tax outflow but it also faces the costs associated with too much debt. Debts marginal benefits reduce with increase in debt levels and associated marginal cost increase such that firms that desire to increase their market value should establish a trade-off between debt and equity (Oyugi, Ngacho & Wafula, 2021). The target capital structure of the firm should try to balance the tax saving advantage of debt against the distress costs of borrowing.

Studies have suggested that companies in similar industries tend to have common leverage and tend to modify their leverage level towards the industry average. The theory was applied in this study to examine the debt and equity financing variables and their effect on the financial performance of energy and petroleum listed firms on the Nairobi Stock Exchange (NSE).

**Conceptual Framework**

A conceptual framework is a visual depiction or diagram that illustrates the interconnections among variables under investigation (Mrefu & Gicheru, 2022). The study independent variables were; Debt Financing and Equity Financing, while the dependent variable examined was the Financial Performance of Listed Energy and Petroleum Sector firms in Kenya as presented in figure below;
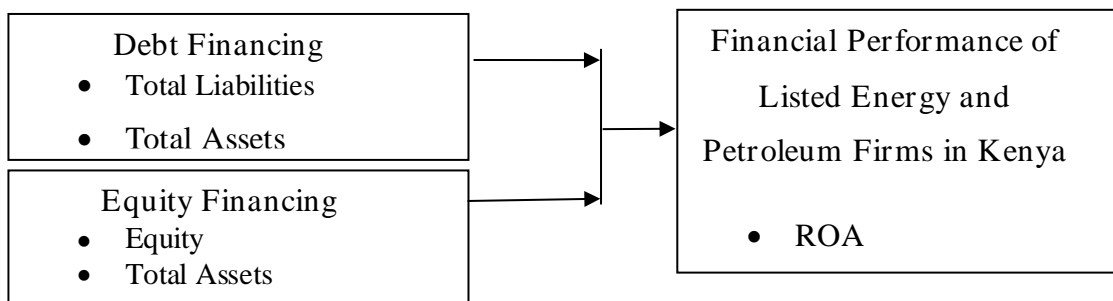


**Debt Financing on Financial Performance**

Debt, as a kind of capital and hence a component of a firm's capital structure, is classified as short-term and long-term debt. Short-term debt has been defined in a variety of ways, for example, Addae *et al*. (2013) define short-term debt as all things included in the current liability section of the financial statements of the listed firm. Githire and Muturi (2015), on the other hand, contend that short-term debt financing have a maturity period of one year or less, they must be repaid quickly within 90–120 days. Short-term debt includes bank overdrafts, trade creditors, commercial papers, accounts payable (Akeem, Terer, Kinyanjui & Kayode, 2018).

The cost of servicing short-term debt imposes a somewhat lower burden on the company. Short-term loans typically have reduced interest rates, and the majority of lenders do not impose interest charges until the credit allowance period has been exceeded. According to Kerosi (2018), the entrepreneur's perspective suggests that short-term debt is the most favorable financing strategy due to its perceived cost-effectiveness. According to Pindalo, Rodrigues, and Torre (2016), it is posited that short-term debt remains unaffected by the trade-off between tax benefits and bankruptcy expenses. Short-term debt remains unaffected by assets that could be provided as collateral. According to Musila (2015), repayment plan has a key role in building up the optimal debt structure of the firm since, if it is too short, the firm will end up again using short-term debt to finance long-term assets.

According to Githire and Muturi (2015), long-term debt refers to those items that are categorized as non-current liabilities on a company's statement of financial position. Long-term debt refers to the financial obligations owed to lenders for a duration exceeding one year, as indicated in the present statement of financial position (Githire & Muturi, 2015). Akeem *et al.* (2018) assert that long-term debts encompass various financial instruments such as corporate bonds and loans with extended maturities, typically exceeding

one year. The impact of long-term debt on enterprises is characterized by high servicing costs and typically exert a detrimental influence on the financial performance of firms, particularly within the sub-Saharan African context.

## Equity Financing on Financial Performance

Pandey (2015) defines equity as the contribution of the shareholders that start up a firm and enable it to be in operation. In other words, it is the component of capital derived by total capital minus debt meaning that it is the owners of the firm capital contribution. It is the ownership interest of shareholders that is the common and preferred stockholders.  Firms require more equity when starting but may not be able to attract debt financing at this initial stage. With time in operation, the firm expands/grows thereby its ability to access debt-financing goes up too. This is consistent with Kimki, (1997) study on "inter-generational succession in small family business: borrowing constraints and optimal timing of success."  As a result, a decision as to whether to use equity or debt can be decided by the management where and when it's found to be healthy for the firm.

A study on debt – equity choice by Armen, Tim and Sheridan (2001) showed that firms usually increase their equity depending on financial performance in that profitable firms have high equity – less debt and on the other hand firms that have high stock prices relative to their past stock price are more likely to seek more equity than debt and may even end up repurchasing debt.  Firms have different growth patterns, there are those that have high growth opportunities, others have low or no growth opportunities at all. According to Jensen (1986) firms with great investment opportunities have lower debt levels meaning that they employ more equity to debt.

The pecking order theory of capital structure, proposed by Myers and Majluf (1984), emphasizes the equity perspective and posits that firms adhere to a hierarchical sequence of financing options, with internal funds being the preferred alternative. Internal funds refer to the equity owned by an entity, which encompasses the accumulated profits (retained earnings) that have been maintained.. According to this theory the most important component of capital structure financing is equity; debt comes in when equity is not enough.

Seifert and Gonenc (2008) in their study titled, "The international evidence on pecking order hypotheses" found little support for pecking order behavior in the US, UK and Germany for the period 1980 to 2004. This was largely attributed to the information asymmetry due to widespread ownership of stock whereby insiders know more than outsiders especially the investors. They also found evidence supporting pecking order behavior in Japan during the 1980s and 1990s

According to a study by Anil and Zenner (2017) on debt capacity and tests of capital structure, bankruptcy and other agency costs provide firms with incentives to use less debt hence more equity and this is contrary to The trade-off theory posits that corporations are motivated to utilize debt as a financial strategy following a careful evaluation of the associated costs and advantages. The study on Capital Structure, known as Agency theory, was initiated by Jensen and Meckling (1976) as an extension of the earlier research conducted by Fama and Miller (1972). According to this theory, the actions of management can have a lasting effect on the equity of owners, as they may be inclined to prioritize personal incentives over the maximization of shareholder value (Myers, 2001).

Jensen and Meckling (1976) identified a second form of agency conflict, which arises from the divergence of interests between debt holders and equity holders. On the debt contract agreement between equity holders and debt holders is investing in the firm through turning of the debt into equity. In cases where firms exhibit strong financial performance, surpassing the cost of debt, equity holders stand to gain. Conversely, when a firm's financial performance falls below the cost of debt, debt holders incur losses.

A firm's growth influences the capital structure composition in terms of the needs of the firm which in turn dictate whether debt or equity will be utilized. Firms with expected growth are not supposed to collateralize their assets hence more equity than debt and this is true in relation to a study by Rajan and Zingales (1995) which noted that firms with expected growth should be equity financed than debt financed. In their study on the determinants of capital structure and its influence on financial performance, Swain and Das (2017) utilized secondary data from a sample of 50 manufacturing firms listed on the Indian stock exchange over a ten-year period. Employing a regression model, the researchers found that equity financing, as measured by the equity ratio, exhibited a statistically significant and positive association with firm performance.

## Financial Performance of Listed Energy and Petroleum Sector Firms

Financial performance is the measure of a company's capacity to create revenue that exceeds its expenses by effectively utilizing its available resources. The goal of most organizations being maximization of profits (Niresh & Velnampy, 2014). Financial performance is also referred to as profitability which involves the capacity to make benefits from all the business operations of an organization, firm or company (Muya & Gathogo, 2016). Since profit is what motivates business owners to invest, it is critical to note that it is not something that can be wished away as businesses exist to generate revenue profitably. Profits thus motivate not only the investors but also the other parties in a business enterprise. Profits are used as an objective indicator of firm performance since businesses that are not generating profits are seen as less desirable and in the long run they are likely to be abandoned altogether (Motanya, 2019).

Hence it is clear that the profit is the positive difference between revenues and total business expenses, and that whenever the costs are high than revenue that business becomes less desirable as compared to when the revenues are high than the costs (Oyugi, Ngacho & Wafula, 2021). Firm profitability is usually expressed in terms of either the accounting profits or economic profits and both are critical for any business enterprise (Anene, 2017). Thus over time financial performance has been used as a measure of firm management efficiency as management is under normal circumstances concerned with converting the firm's resources to profits (Muya & Gathogo, 2016). Thus, firms are likely to gain a lot of benefits related increased profitability (Niresh & Velnampy, 2018). One important precondition for any long term survival and success of a firm is profitability or financial performance. Profit making firms attract investors and are most likely to survive for a long period of time (Farah & Nina, 2016).

Profitability as a concept is founded on objective comparison of the cash outflows and cash inflows of any firm as far as implementation of strategic objectives is concerned (Ahmad, 2019). Profitability is one of main aspects of financial reporting for many firms (Farah & Nina, 2016). Financial performance is usually vital to the firm managers as well as the owners and other stakeholders that are involved or associated with the firm since it gives a clear indication of business performance. Profitability ratios are normally used to measure revenues over a given period of time usually a financial year numerous scales are used as indicators ranging from sales level, employed capital, earnings per share (EPS) among others. There exists other profitability ratios that measure the earning capacity of the firm which once positive and favorable are normally considered as success indicators (Musila, 2015).

Different accounting ratios have also been used to measure profits of the firm depending on what is under consideration for example when returns on assets are being considered or even return on investment are under consideration both have been used to indicate the level of efficiency of management as far as generation of income is concerned (Sehrish, Irshad & Khalid, 2018). Return on assets measures the level of efficiency of the firm management besides showing how effective and practical the firm management is under the prevailing circumstances.

The financial performance of Kenya's listed energy and petroleum enterprises was measured using return on assets (ROA) in this study. Return on assets (ROA) has long been used to demonstrate how a firm's profits compare to the amount invested in terms of capital, thus, it is in comparison to what the investors have invested in the firm. ROA being what the firm shareholders focus on as their return for investing in the organization. Thus a firm with low ROA is seen as more risky as compared with a firm whose ROA is higher. Therefore, the higher the ROA the better the firm in profit generation (Khrawish, 2018). A good ROA in terms of ratio Net profit especially after Taxation is divided by Total firm assets. Which now represents the rate of return on the invested funds. Thus it is clear that ROA reflects the effectiveness of firm management in utilization of invested funds in an organization. Hence it can be concluded that higher ROA is an indicator of good management while the opposite is true as far as management of investments is concerned.

## RESEARCH METHODOLOGY

### Research Design

This study adopted a correlational research design while dealing with the research objectives. The research methodology was significant for obtaining required data that was utilized to obtain information concerning the current status of phenomena with the goal of characterizing "what exist" with respect to study variables (Znaye, 2018).

### Target Population

The study targeted the four listed firms at the NSE, Kenya, under the Energy and Petroleum sector whose 7-year audited financial statements period running from 2015 to 2021 was the focus of the study. Since the target population was only four listed firms, no sampling was required but instead a census method was adopted for purposes of analyzing the audited financial statements in arriving at detailed and well informed conclusions.

Data was sourced through downloads from respective firms' websites. Data that was derived exclusively from audited financial statements that were prepared in accordance with the International Financial Reporting Standards (IFRS) using a data collection sheet as a data collection tool.

### Data Analysis and Presentation

Data analysis was conducted using Microsoft Excel and the Statistical Package for Social Sciences (SPSS; version 26) software. Data output from the software was then analyzed using descriptive and inferential statistical tools (Arithmetic Mean, Standard Deviation, ANOVA and Regression & Correlation Analysis).

The measurement of debt financing involved the utilization of the debt ratio, which is calculated by dividing total liabilities by total assets; equity financing was measured by equity ratio, which was obtained by dividing equity by the total assets. Return on Assets (ROA) as the major ratio signifying financial performance of listed energy and petroleum sector firms in Kenya was used to measure the firm's financial performance. ROA is a ratio of income to its total assets (Khrawish, 2017; Osoro, 2018). Khrawish and Osoro continued by saying ROA both shows how efficiently the resources of the company are accustomed to generate income and denotes the efficiency of a company's management in generating net income from all institution resources. A higher ROA is a reflection of efficiency in the utilization of the resources by the firm. Correlation and regression analysis were employed to ascertain the relationship between the research variables.

## RESEARCH FINDINGS AND DISCUSSION

### Turnover

Turnover data for the firms used in the study was collected. The firms used in this study had an annual turnover of not more than Kshs. 145 billion. KP&LC reported the highest turnover of Kshs. 144.120 billion for the period under study while KenGen Ltd reported the smallest turnover of Kshs. 29.957 billion over the same period. The average turnover per firm for the 7-year period was also calculated and tabulated as shown in the table below;

|  | Kshs. 000 |
|---|---|
| Total (K) Ltd | 97,238,545 |
| Umeme K) Ltd | 51,307,057 |
| KenGen (K) Ltd | 41,895,059 |
| KP&LC Ltd | 126,590,052 |

## Earnings after Tax

The earnings after-tax for the 7-year period for the companies under study was computed. The companies that formed the scope of the study had the highest after-tax earnings of over Kshs. 18 billion reported by KenGen Ltd with KP&LC Ltd reporting a loss of over Kshs. 1.335 billion. The average after-tax earnings figure per company over the 7-year period was as tabulated below;

|  | Kshs 000 |
|---|---|
| Total (K) Ltd | 2,495,724 |
| Umem (K) Ltd | 3,971,159 |
| KenGen Ltd | 8,717,059 |
| KP&LC Ltd | 2,750,199 |

## Total Assets

The firms used in the study had the greatest asset base of Kshs. 425.658 billion (KenGen Ltd) with Kshs. 34.225 billion (Total (K) Ltd) as the lowest. The average asset size of the firms' data was tabulated as shown in the table below;

|  | Kshs. 000 |
|---|---|
| Total (K) Ltd | 39,323,345 |
| Umeme (K) Ltd | 78,542,819 |
| KenGen Ltd | 386,478,327 |
| KP&LC Ltd | 317,673,273 |

## Research Findings
## Summary of Descriptive Analysis

The summary of the descriptive statistics from the analysis was presented in the table below;

**Table 4.6: Descriptive Statistics**

| Variable | RATIO | N | MIN | MAX | MEAN | STDEV | SKEW |
|---|---|---|---|---|---|---|---|
| Debt Financing | Debt Ratio | 28 | 0.35 | 0.83 | 0.69 | 0.03 | 0.065 |
| Equity Financing | Equity Ratio | 28 | 0 | 0.65 | 0.38 | 0.05 | -0.853 |

| Financial Performance | ROA | 28 | 0 | 0.13 | 0.04 | 0.02 | 0.384 |

The descriptive statistics of the study are presented in the table above. The descriptive statistics encompassed various measures, including the mean, minimum values, maximum values, standard deviation, and skewness of the variables. The table encompasses all the enumerated companies within the energy and petroleum sectors, spanning the time period from 2015 to 2021. The table displays the debt ratio, which varied between 0.35 and 0.83. The mean debt ratio was calculated to be 0.69, with a standard deviation of 0.03. Additionally, the debt ratio distribution was positively skewed, with a skewness value of +0.065. Conversely, the equity ratio exhibited a range of values between 0.00 and 0.65. The average equity ratio was calculated to be 0.38, with a standard deviation of 0.05. Furthermore, the distribution of equity ratios displayed a negative skewness of -0.853. The variable of Financial Performance, as measured by Return on Assets (ROA), exhibited a diverse set of values ranging from 0.00 to 0.13. The mean value of this variable was calculated to be 0.04, with a standard deviation of 0.02. Furthermore, the distribution of ROA demonstrated a positive skewness of +0.384.

## Correlation of Variables

The study data analysis carried out included the testing of the strength of the association between the variables using the Pearsons' correlation matrix and the findings presented in a table as shown below:

**Correlation Matrix**

| | | | Debt Financing | Equity Financing | Financial Performance |
|---|---|---|---|---|---|
| Pearmson's rho | Debt Financing | Correlation Coefficient | 1.000 | .618** | .586 |
| | | Sig.(2-tailed) | | .001 | .015 |
| | | N | 28 | 28 | 28 |
| | Equity Financing | Correlation Coefficient | .618** | 1.000 | .779* |
| | | Sig.(2-tailed) | .001 | | .005 |
| | | N | 28 | 28 | 28 |
| | Financial Performance | Correlation Coefficient | .586 | .779 | 1.000 |
| | | Sig.(2-tailed) | .015 | .005 | |
| | | N | 28 | 28 | 28 |

Both the dependent and independent variables of the study related positively as shown by positive coefficients in the Pearsons' correlation matrix above. This implied that changes in the independent variables (Debt Financing, and Equity Financing) affect the dependent variable (Financial Performance) to move in the same direction with the independent variables thereby the dependent variable being predicted by the independent variables accordingly. The financial performance and equity financing, for example, is significant as shown by the Pearson's' correlation of 0.779 implying that an increase in debt increases financial performance and vice versa. The findings indicated no negative relationship between the variables.

## Goodness of Fit Test

The study carried out an F-statistic (ANOVA) test as a measure of the goodness of fit of the model. The ANOVA results were then extracted from the analyzed data and presented as shown below;

**ANOVA**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 51.325 | 1 | 51.325 | 11.016 | .003[b] |
| | Residual | 125.789 | 27 | 4.659 | | |
| | Total | 137.114 | 28 | | | |

a. Dependent Variable: Financial Performance
b. Predictors: (Constant); Debt Financing, and Equity Financing

The ANOVA results were as per the table above. The results indicted that the regression model adopted by the study very well predicted the outcome variable. This was evidenced by the F-statistic value of 11.016 which was greater than the F-critical value of 4.20 the p-value of .003 was also less than the 0.05 significance level which implied that the application of the model was significant enough in predicting the dependent variable (Financial Performance) measured by ROA.

**Multiple Regression Model**

The study adopted a multiple regression model in which the relationship between the dependent and independent variables was measured. The results were presented in a table as shown below:

**Regression Analysis**

|  | Coefficients | Std Error | t-Statistic | P-Value |
|---|---|---|---|---|
| Constant | 1.423527 | 0.05673 | 4.16253 | 0.00015[a] |
| Debt Financing | 0.24198 | 0.04367 | 3.15912 | 0.00151 |
| Equity Financing | 0.34652 | 0.03231 | 5.8328 | 0.00017 |
| Multiple R | 0.83871 |  |  |  |
| R-Square | 0.70343 |  |  |  |
| Adjusted R-Square | 0.70564 |  |  |  |
| Standard Error | 0.04861 |  |  |  |
| Observations | 28 |  |  |  |

The following regression equation was established from the analysis:

$Y= 1.4235+ .2420X_1 + .3465X_2$

The regression analysis table above indicated that equity financing with a p-value of .0002 was the most influential variable of the study at .3465 to the dependent variable. The table further revealed that holding other variables constant, financial performance of the listed companies in the energy and petroleum sectors had a constant or intercept value of 1.4235.

The regression results also showed that a single unit increase in debt financing would result in a .2420 factor increase in financial performance, a .3465 factor increase in equity financing.

These results implied that the constant and the independent variables significantly contribute to the model. The model was concluded to be paramount in the provision of relevant information/data for the prediction of financial performance from the independent variables (Simiyu, Namusonge & Sakwa, 2017).

**Model Summary**

From the multiple regression table above, the model summary was further extracted where the coefficient of determination (R_Square) was obtained. The R_Square is a measure of the explanatory power of the independent variables explaining the dependent variable. The model summary was as presented in the table below:

Table 4.10: Model Summary

| Model | R | R_Square | Adjusted R_Square | Std Error of the Estimate |
|---|---|---|---|---|
| 1 | .8387[a] | .7034 | .7056 | .0486 |

a. Predictors (Constant), Debt Financing, Equity Financing

According to the model's summary results, financial performance had an $R^2$ (coefficient of determination) of .7034. The research findings indicated that the adjusted coefficient of determination (Adjusted R-Square) was .7056, implying that 70.56% of the variations in the dependent variable (financial performance) was explained by the independent variables, However, around 29.44% of the variations in financial performance remained unexplained, suggesting that other factors beyond the scope of the study may have influenced these variations. From the findings, it was concluded that there was a positive correlation between capital structure and financial performance of the energy and petroleum sector firms listed on the NSE, as assessed by the return on assets (ROA) metric.

## Discussion of the Findings

### Debt Financing on Financial Performance

The first objective of the study was to examine the effect of debt financing on the financial performance of Kenyan listed energy and petroleum sector firms. From the research analysis findings, debt financing showed a .24198 coefficient value, t~3.15912 and the p-value of .00151 at .05 significance level. The result revealed a positive but moderate relationship between debt financing and financial performance as measured by ROA which was in agreement with Oyugi, Ngacho and Wafula (2021) findings..

### Equity Financing on Financial Performance

The second objective of the study was effect of equity financing on financial performance. The purpose of this objective was to determine the effect of equity financing on the financial performance of Kenyan listed energy and petroleum sector firms. Equity financing was measured by equity ratio computed by equity divided by total assets. The results established a value coefficient of .3465, t ~ 5.8328 and a p-value of .00017 was obtained at a significance level of .05. The association was the strongest of the four variables and it was both positive and significant on financial performance of energy and petroleum sector firms listed on the Nairobi Stock Exchange, as evaluated by ROA..

### Conclusion

The conclusion for each explanatory variable were as follows:

### Debt Financing on Financial Performance

The study analyzed the effect of debt financing, as the first independent variable, on financial performance of energy and petroleum sector firms listed on the Nairobi Securities Exchange (NSE) in Kenya. The results revealed a statistically significant and positive relationship between debt financing and the financial performance of the listed firms in the energy and petroleum sector, as indicated by the coefficient value. The study concluded that the debt ratios of the listed corporations were well controlled and had a significant effect on the financial performance of listed energy and petroleum companies in Kenya.

### Equity Financing on Financial Performance

Based on the coefficient value and a significance level of .05, there existed a correlation between equity financing and the financial performance of the energy and petroleum sector firms listed at the NSE. Kenya which was considered significant. This led to a conclusion that the firms raised funds from shareholders as the first alternative before considering other options like borrowing or reserves to finance their projects.

### Recommendations

The study drew the following recommendations:

### Debt Financing

The study findings of indicated a positive relationship between debt financing and financial performance, however the strength of this association was comparatively weaker than that of the equity financing variable examined in the study. The study recommended that Kenyan listed energy and petroleum sector firms should restrain from utilizing long-term debt as it negatively affected their profitability. That is, increasing long-term debt reduced profitability due to interest costs incurred in repayment.

### Equity Financing

The study findings indicated a robust and statistically significant correlation between equity financing and financial performance. Given its significant effect on financial performance among the four variables, it was recommended that firms should prioritize the utilization of equity in order to enhance profitability. This approach was preferable as it does not entail the expenses associated with obtaining debt. However, the study recommended that in cases where external financing is required, management should base its decision on the finance option with the lowest investment risk and proportional costs.

### REFERENCES

[1]   Abdul, G. K. (2017). The Relationship of Capital Structure Decisions with Firm Performance: A Study of the Engineering Sector of Pakistan. *International Journal of Accounting and Financial Reporting,* 2(1), 2162-3082

[2]   Abor, J. (2007). Debt policy and performance of SMEs: Evidence form Ghanaian and South African firms, *The Journal of Risk Finance,* 8, (4), 364-379.

[3]   Abor, J. (2005). The Effect of Capital Structure on Profitability: An Empirical Analysis of Listed Firms in Ghana. *The Journal of Risk Finance*, 6(5), 438-445.

[4]   Addae, A. A, Nyarko-Baasi, M. & Hughes, D. (2013). The Effect of Capital Structure on Profitability of Listed Firms in Ghana. *European Journal of Business and Management*, 5(31), 215-229.

[5]   Adesina, J. B., Nwidobie, B. M., & Adesina, O. O. (2015). Capital Structure and Financial Performance in Nigeria. *International Journal of Business and Social Research*, 5(2), 21-31.

[6]   Ahmad, F. N. (2019). Extension of Determinants of Capital Structure: Evidence from Pakistani Non-financial Firms. *African Journal of Business Management*, 5(28), 11375-11385.

[7]   Akeem, L. B., Terer, E., Kinyanjui, M. W., & Kayode, A. M. (2018). Effects of Capital Structure on Firm's Performance: Empirical Study of Manufacturing Companies in Nigeria. *Journal of Finance and Investment Analysis*, 3(4), 39– 57.

[8]    Anil, S., & Zenner, M. (2017). How to Choose A Capital Structure: Navigating the Debt Equity Decision. *Journal of Applied Corporate Finance, 17*(1), 26-35.

[9]    Aragie, M., Beyene, A., & Shiferaw, N. (2015). Does Capital Structure Matter on Performance of Banks? Study Conducted on Commercial Banks in Ethiopia. *International Journal of Scientific and Research Publications*, 643.

[10]   Banafa, A. S. (2018). Determinants of Capital Structure on Profitability of Firms in the Manufacturing Sector in Kenya. *International Journal of Current Business and Social Sciences, 1*(3), 175-192.

[11]   Brigham, E. F., & Ehrhardt, M. C. (2013). *Financial Management: Theory & Practice*. Cengage Learning.

[12]   Chen, J. & Ritter M. S. (2016). Determinants of Capital Structure of Chinese Petroleum Firms, *Journal of Business Research, 57,* 1341- 1351

[13]   Ebaid, E. I. (2009). The Impact of Capital Structure Choice on Firm Performance: Empirical Evidence from Egypt. *The Journal of Risk Finance*, 10(5), 477-487.

[14]   Gill, A. B. N. (2016). *The Effects of Capital Structure on Profitability* : Evidence from United States from the United States.

[15]   Gill, A., & Shah, C. (2012). Determinants of Corporate Cash Holdings: Evidence from Canada. *International Journal of Economics and Finance*, 4(1), 70-79

[16]   Githire, C., & Muturi, W. (2015). Effect of Capital Structure on Financial Performance of Firms in Kenya: Evidence From Firms Listed at The Nairobi Securities Exchange. *International Journal of Economics, Commerce and Management*, *3*(4), 1-

[17]   Javed, A. & Gharaibeh, A. M. O. (2015). The Effect of Capital Structure on the Financial Performance of Listed Companies in Bahrain Bourse. *Journal of Finance and Accounting.* 3(3), 50-60.

[18]   Jensen, M. (1986). Agency cost and free cash flow,corporate finance and takeovers. . *American Economic Review , 76*, 323-339.

[19]   Jensen, M. C., & Meckling, W. H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure. *Journal of Financial Economics*, *3*(4), 305-360.

[20]   Kaumbuthu, A. J. (2019). Relationship Between Capital Structure and Return on Equity for Industrial and Allied Sectors at the Nairobi Securities Exchange, *Unpublished -Dissertation*, Nairobi: University of Nairobi. Retrieved from http://erepository.uonbi.ac.ke.

[21]   Kerosi, O. D. (2018). The Relationship Between Capital Structure And Profitability Of Firms Listed At The Nairobi Securities Exchange. *MBA Thesis*, Egerton University, Kenya.

[22]   Khrawish, H. A. (2017). Determinants of Commercial Banks Performance: Evidence from Jordan, *International Research Journal of Finance and Economics. Zarqa University, 5*(5), 19-45.

[23]   Kifle, A. (2020). Capital Structure and Financial Performance: Evidence from Ethiopian Cements Companies (Unpublished Master's Thesis). *Department of Accounting and Finance/Addis Ababa University. Ethiopia.*

[24]   Kyereboah-Coleman, A. (2017).The Impact of Capital Structure on the Performance of Microfinance Institutions. *The Journal of Risk Finance*, *8*(1), 56-71.

[25]   Le, T. P. V., & Phan, T. B. N. (2017). Capital Structure and Firm Performance: Empirical Evidence from a Small Transition Country. *Research in International Business and Finance*, *42*, 710-726

[26]   Liku, Y. (2020). *The Effect of Capital Structure on Financial Performance of Microfinance Institutions in Ethiopia.*

[27]   Madah, D. A., Sultan, K., & Farooq, K. (2016). Effect of Capital Structure on Profitability: An Empirical Study of Non-financial Firms Listed in Karachi Stock Exchange (Kse), Pakistan. Retrieved September 28, 2022, From Http://Aocrj.Org/WpContent/Uploads/2015/12/2.-Iraq.Pdf.

[28]   Maina, L., & Ishmail, M. (2017). Capital Structure and Financial Performance in Kenya: Evidence from Firms Listed at The Nairobi Securities Exchange. *International Journal of Social Sciences and Entrepreneurship*, *1*(11), 209-223.

[29]   Melese, A. (2018). The Effect of Capital Structure on Financial Performance: Ethiopia's Metal and Engineering Industry *Department of Accounting and Finance/Addis Ababa University.*

[30]   Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and The Theory of Investment. *The American Economic Review*, *48*(3), 261-297.

[31]   Modigliani, F., & Miller, M. H. (1963). Corporate Income Taxes and The Cost of Capital: A Correction. *The American Economic Review*, *53*(3), 433-443.

[32]   Motanya, D. O. (2019). Effect of Financial Structure on Profitability of Petroleum Firms in Kenya. *Unpublished PhD Thesis*, Jomo Kenyatta University, Kenya.

[33]   Mrefu, I. C. & Gichure, J. (2022). Effect of Cash Management Practices on Performance of Listed Manufacturing Firms at the NSE, Kenya. *International Journal of Research & Review, 9(9)*, 288 - 304. **DOI:** https://doi.org/10.52403/ijrr.20220931

[34]   Muraguri, C. W & Shiundu, V. M. (2022). Capital Structure and Financial Performance of Commercial and Services Firms Listed at Nairobi Securities Exchange, Kenya. *MBA Finance Research Project, Kenyatta University*, Kenya.

[35]   Muritala, T. A. (2016). An Empirical Analysis of Capital Structure on Firms' Performance in Nigeria. *International Journal of Advances In Management and Economics*, 1(5), 116-124.

[36]   Musila, P. (2015) The relationship between equity financing and financial performance of the energy and petroleum companies listed at Nairobi Securities Exchange. *Unpublished journal University of Nairobi.*

[37]   Mwangi, L.W, Makau, S.M & Kosimbei, G. (2014). Relationship between Capital Structure and Performance of Non-financial Companies Listed in the Nairobi Securities Exchange, Kenya. *Global Journal of Contemporary Research in Accounting, Auditing and Business Ethics*. 1(2), 72 - 90.

[38] Myers, S. C., & Majluf, N. S. (1984). Corporate Financing and Investment Decisions when Firms have Information those Investors do Not Have. *Journal of Financial Economics*, *13*(2), 187-221

[39] Negasa, T. (2016). The Effect of Capital Structure on Firms' Profitability (Evidenced from Ethiopia).

[40] Nirajini, A., & Priya, K. B. (2013). Impact of Capital Structure on Financial Performance of the Listed Trading Companies in Sri Lanka. *International Journal of Scientific and Research Publications*, *3*(5), 1-9.

[41] Osoro, H., K. (2018). *To assess the effects of financial distress on the financial performance of manufacturing firms listed in Nairobi security exchange.* Kisii. Kenya: Unpublished Masters Project; Kisii University.

[42] Oyugi, M., O., Ngacho, C & Wafula, C (2021). Effects of Capital Structure Composition on Financial Performance of Manufacturing Firms Listed at the Nairobi Securities Exchange in Kenya. *International Journals of Academics & Research:* 3(3), 8-28. ISSN: 2617-4138. DOI: 10.32898/ibmj.01/3.3article02

[43] Pandey, I. M. (2015). Financial Management (12th Ed.), India: Vikas Publishing House Pvt. Ltd, New Delhi.

[44] Pindalo, J., Rodrigues, C. & De La Torre (2016). "How Does the Financial Distress Affect Small Firms' Financial Structure?"*Small Business Economics*, 26, 377-391.

[45] Rao, N. V., Al-Yahyaee, K. H. M., & Syed, L. A. (2017). Capital Structure and Financial Performance: Evidence from Oman. *Indian Journal of Economics and Business*, *6*(1), 1.

[46] Saeedi, A., & Mahmoodi, I. (2017). *Corporate Capital Structure Decisions : Evidence from an Emerging Market*, *7*(8), 875–885.

[47] Simiyu, F. R., Namusonge, G. & Sakwa, M. (2017). Influence of Strategic Capital Structure Practices on Financial performance of sugar manufacturing companies in Kenya. *International Journal of Business and Management Invention ISSN (Online): 2319 – 8028, ISSN (Print): 2319 – 801X*, 27-36.

[48] Tufa, F. B. (2021). Corporate Capital Structure and its Impact on Profitability: Evidence from Manufacturing Firms in Ethiopia *(Doctoral Dissertation, Addis Ababa University).*

[49] Znaye, M. (2018). Effect of Capital Structure on the Financial Performance of Ethiopian Food and Beverage Manufacturing Firms Industry. *Unpublished Msc. Accounting and Finance Thesis*, Addis Ababa University College of Business and Economics, Ethiopia.