EFFECT OF CAPITAL STRUCTURE ON FINANCIAL PERFORMANCE OF FIRMS IN ENERGY SECTOR IN KENYA

BY

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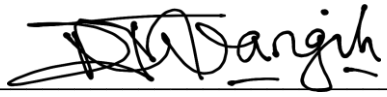
DECLARATION

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

Signed _____  _____ Date: 20.11.2023

Name: **Peninah Kinya Guantai**, **D61/19048/2019**

This project has been submitted for examination with my approval as the university supervisor

Signed _____  Date: 09.11.2023

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DEDICATION

To the almighty God, who has been my strength and divine inspiration in everything I do.

To my family members for their inspiration, support and unconditional love.

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LIST OF ABBREVIATIONS AND ACRONYMS

CR	Current Ratio
CSR	Corporate Social Responsibility
DER	Debt Equity Ratio
DTF	Debt to Total Funds
EPRA	Energy and Petroleum Regulatory Authority
EPS	Earnings Per Share
GAX	Ghana Stock Exchange
GDP	Gross Domestic Product
KenGen	Kenya Electricity Generating Company
KETRACO	Kenya Electricity Transmission Company
KNBS	Kenya National Bureau of Statistics
KPLC	Kenya Power and Lighting Company
MM	Modigliani-Miller
NSE	Nairobi Securities Exchange
OLS	Ordinary Least Squares
PLS	Partial Least Square
PSX	Pakistan Stock Exchange
R&D	Research and Development
ROA	Returns on Assets
ROE	Returns on Equity
SMEs	Small and Medium Enterprises

ABSTRACT

This study explored the effect of capital structure on financial performance of energy sector firms in Kenya. Capital structure has been recognised to be crucial in assessing the liquidity risks as well as the costs of each financing options, that would affect financial performance. However, the metrics around energy sector firms in Kenya, involves the need for increased financing as energy projects in the country are massive and which needs increased capital. The study therefore focused on how capital structure, liquidity, asset utilization, and firm size influenced financial performance. The study's objective was therefore to shed light on effect of capital structure on financial performance of energy sector firms in Kenya, offering insights for businesses, investors, and policymakers seeking to enhance financial sustainability and profitability. Descriptive research design was employed by the study, where the study targeted all the energy sector firms in Kenya, to collect secondary data that was required for undertaking the analysis for the period spanning the years spanning 2018-2022. Inferential statistics that comprised of a combination of regression and correlation analysis was utilized to assess the relationships between capital structure, liquidity, asset utilization, and size and their impact on financial performance. The study found a negative and significant effect of capital structure on financial performance of energy sector firms in Kenya. These findings also suggested that optimizing capital structure, maintaining an appropriate current ratio, and efficiently utilizing assets could significantly enhance the financial performance of energy sector firms in Kenya. The study emphasized the need for careful debt management, prudent liquidity practices, and a focus on enhancing asset productivity. Moreover, the study found that size alone was not a reliable predictor of financial success. Operational complexities associated with larger firms could lead to diseconomies of scale. Therefore, a holistic approach considering multiple factors was recommended when assessing financial performance. The results provided valuable insights for decision-makers within the energy sector, aiding in the formulation of strategies that bolster financial sustainability and profitability.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Within the prevailing competitive business landscape, financial performance has become the major concern among business firms due to its direct impact on long term sustainability, competitiveness and ability to meet stakeholders' expectations. The major challenge preventing businesses from achieving improved financial performance is the determination of favourable choice of capital structure for optimal production. Businesses are grappling with financial performance issues that can be influenced by their decisions on capital structure. The capital structure decisions directly affect profitability, risk profile and general financial health. The overuse of monetary obligations in structuring capital is one of the problems it faces. While debt financing may have tax benefits and cheaper upfront costs, it also carries a higher chance of financial loss and higher interest charges (Acharya et al., 2017). Additionally, businesses struggle with the compromise between equity and loans financial backing. While debt has tax benefits, it also has a fixed payment obligation that firms are obligated to fulfil regardless of their financial success. Although, equity financing enables businesses to obtain funds without being bound by debt-related commitments, it might result in increased costs of equity capital and ownership dilution (Berger, Pukthuanthong & Yang, 2011).

The study's main theoretical framework is the trade-off theory, which was first put forth by Myers (1984) and later developed by Harris and Raviv (1991). It implies that there is a perfect framework of capital that serves to obtain a balance as it relates to tax advantages of debt financing and the finance costs of economic distresses. Businesses must find the ideal ratio of debt to equity if they are to maximise value. The pecking order hypothesis put forth by Myers and Majluf (1984) is the second hypothesis underpinning this investigation. It suggests that businesses should prioritise internal capital (retained earnings) over third-party financing (debt

or stock) when funding investments. This theory contends that because of information asymmetry and signalling impacts, business enterprises prefer to use internal resources before turning to external financing. The research is also based on the Modigliani-Miller (MM) theorem, which was created by Franco Modigliani in conjunction with Merton Miller. According to the MM theorem, a firm's capital framework should have no effect on its price on the market or earnings under certain conditions. It claims that regardless of how a firm is financed, the worth of an enterprise is exclusively defined by underlying business operations and investment potential in a world without taxes, bankruptcy costs, or information asymmetry.

Kenya's energy industry has seen considerable growth in terms of sales and investments, especially in the power sub-sector. The KNBS (2020) reports that the power sub-sector's income climbed from KES 145.5 billion in 2018 to KES 161.2 billion in 2019, indicating an improvement in overall financial performance. Further, investments in the electrical sub-sector increased from KES 55.9 billion in 2018 to KES 78.6 billion in 2019, indicating a rise in interest in the industry. A considerable amount of foreign money has also been invested in renewable energy projects including geothermal, wind, and solar power plants, which has improved the sector's financial performance and aided the nation's effort to diversify its energy sources (KNBS, 2020). However, the Kenyan energy industry faces a number of difficulties that might have a bearing on its economic output. High operational expenses, transmission and distribution losses and restricted access to capital are problems that limit investment prospects put profitability at risk and have great implications on the sector-wide economic output of all enterprises involved. Optimizing the capital structure becomes vital to addressing these issues. To lessen reliance on pricey equity financing, businesses might assess their debt-to-equity ratio and think about borrowing money through debt financing (KNBS, 2020).

1.1.1 Capital Structure

The framework of capital comprises of long-term funding sources of a firm which can either be debt, equity and other financial instruments. According to Pandey (2021) capital structure indicate the proportionate combination of these many capital sources that an enterprise can utilise to support its investments. This factor affects the risk and returns profile of the company and reflects the relative weights of committal monetary obligations and equity in the total funding mix of the business (Brealey, Myers & Allen, 2020). The capital structure of a company, or how it chooses for funding its capital expenditures and business processes, is the specific mix of loan obligations, equity, and other investment instruments that it uses. It determines the company's level of financial risk and leverage and could have an impact on its cost of capital and overall financial performance (Ross, Westerfield & Jordan, 2019).

The best capital structure for a firm has been discussed from a variety of academic angles. Others point out the tax advantages and lower cost of debt as opposed to equity financing, while some claim that having a lot of borrowing raises the risk of insolvency and financial ruin. According to a 1999 study by Shyam-Sunder and Myers, the pertinency of various structure of capital can have an impact on the firm’s inherent value and the incurred costs of capital. They claim that using an ideal capital structure can lower a company's cost of capital, which will boost its financial performance. Decisions regarding a firm’s structure of capital can significantly affect its value, claim Graham and Harvey (2001). This suggests that practitioners should be aware of the prerogative capital structure plays in a company's financial performance. According to Rajan and Zingales (1995), debt financing gives managers incentives to work effectively and make decisions that add value. Excessive debt, according to Myers (2001) can worsen agency tensions and raise the danger of financial crisis, which could harm financial performance. Due to these divergent perspectives on the choice of capital framework, pertinent parity between debt and equity financing is required.

To operationalize capital structure in a firm which involve assessing financial composition and leverage of a firm, various metrics and ratios can be used. In their study, Rajan and Zingales (1995) employed the debt-to-equity ratio to investigate how capital structure affects firm value. The ratio of debt, which compares the entirety of debt to total assets and sheds light on a company's overall debt load by determining what proportion of assets is financed by debt, is another metric. Graham and Harvey (2001) who looked into how capital structure decisions affected firm value, used debt ratio to operationalize capital structure in their study. Other measures that can be used include equity ratio and long-term debt to capitalization ratio. The current study will use debt to equity ratio to operationalize capital structure of firms in the energy sector in Kenya.

1.1.2 Financial Performance

The fiscal output is the assessment of a organization’s capacity to make a profit and meet its financial objective using the available scarce resources according to Brigham and Ehrhardt (2019). Economic performance is the assessment of a firm's financial health and its capacity to produce profitable returns for shareholders according to Ross, Westerfield, and Jordan (2020). It entails examining a variety of financial parameters, including revenue growth, net income margin, and earnings per share (EPS). Evaluation of a company's financial position and capacity to generate value for its stakeholders at a particular period of time is referred to as financial performance. To evaluate the organization's effectiveness, profitability and sustainability, key financial ratios and indicators must be analysed (Palepu, Healy, & Peek, 2019).

A company must achieve financial performance since it has a direct impact on its viability, expansion, and overall success. A corporation can attract investors, obtain resources, and reinvest profits into growing operations and chasing new prospects by achieving great financial

performance (Cohen & Kaimenakis, 2019). By encouraging trust among clients, suppliers, and other stakeholders, it improves the company's reputation and credibility in the marketplace. As a result, there may be an improvement in market share, client retention, and competitive advantage. Implementing effective financial management practices is therefore critical for business grappling to achieve sustainable financial performance. Managing financial resources and maintaining up to date financial records in necessary to optimize profitability. Businesses are required to establish clear goals to provide a roadmap for the organization and as well as enable its employees to work toward achieving financial success. Through continuous performance monitoring and analysis business can identify areas of improvement and take timely corrective actions. Businesses need a clearly defined strategic strategy that is in line with their financial goals. This entails analysing market trends, spotting business possibilities, and selecting investments wisely (Cohen & Kaimenakis, 2019)

In order to operationalize financial performance, particular measurements or indicators must be found and chosen that may accurately capture and quantify the financial success of a company. The financial ratio known as ROA measures an organization's capacity for as it relates to its total assets. This is a demonstration of how to surely and accurately put touse its resources to generate good turn-over. ROA was one of the metrics utilised by Gutiérrez-Nieto, Serrano-Cinca, and Mar-Molinero (2017) to evaluate the SME's financial performance. The financial viability of a business when compared to its shareholders' equity is measured by ROE, which stands for return on equity. Chen et al.'s (2019) investigation into the causal relationship between CSR and economic viability used ROE as one of the economic performance metrics. The gross profit margin, which is a ratio of profitability, is the part of the profits that is left over after deducting the cost of goods sold. It demonstrates a business' capacity to make money from its core activities. ROA will be used in this study to evaluate the economic viability of businesses in energy-related industries.

1.1.3 Capital Structure and Financial Performance

The structure of capital a company selects has an impact on its cost of investment, risk profile, and ability to generate returns for shareholders. In a company the structure of capital affects its capital costs, or the required rate of exchange for investors. Debt financing usually includes interest payments, whereas financing with equity involves sharing ownership and profits with the stockholders. Higher levels of debt (leverage), according to Chen et al. (2019), are linked to lower cost of capital. A higher rate of profitability and better financial performance may result from this lower cost of capital.

The risk profile and financial stability of a corporation are both impacted by its capital structure. As the business must satisfy its responsibilities for interest and principal repayment, higher debt levels raise the danger to its finances. High financial leverage, which denotes high debt levels, is correlated with higher profitability according to Ghosh and Mondal (2017). It's crucial to remember, though, that using too much borrowing might make you more financially vulnerable when the economy is struggling.

The flexibility and capacity for expansion of a company can be impacted by its capital structure. Combining debt with equity helps strike a balance between capitalizing on debt's advantages (such as tax advantages and cheaper cost of capital) and preserving financial flexibility. It is crucial to remember that the ideal capital structure might change based on the sector, the state of the economy, and the particulars of the company (Gutiérrez-Nieto, Serrano-Cinca and MarMolinero, 2017). It is crucial to do a thorough study and take the firm's objectives and risk tolerance into account when choosing the best capital structure.

1.1.4 Firms in Energy Sector in Kenya

Several important institutions in Kenya control the energy industry. The main regulatory organization in charge of monitoring and controlling the energy industry is the Energy and Petroleum Regulatory Authority (EPRA). The EPRA oversees license compliance, establishes rates, and keeps track of how well energy companies are doing (EPRA, 2021). It encourages consumer safety and competition within the industry. For the growth of Kenya's energy sector, shareholder develop policies and offers strategic guidance. Kenya's energy industry is made up of a variety of public and commercial organizations working on renewable energy projects, transmission, and distribution of electricity. The primary electricity producer in the nation is the Kenya Electricity Generating Company (KenGen), which runs multiple power plants nationwide. Distribution of electricity is handled by the Kenya Power and Lighting Company (KPLC), and the infrastructure for transmission is handled by the Kenya Electricity Transmission Company (KETRACO) (EPRA, 2021).

The energy sector in Kenya has expanded its electricity generation capacity to meet the rising demand for power through the implementation of numerous initiatives, including the establishment of renewable energy endeavours like wind, solar, and geothermal power plants, with the electrification rate reaching roughly 75% in 2020 (World Bank, 2020). Kenya is renowned for making substantial investments in green energy. The nation offers significant potential for renewable energy and as such seeks to diversify the energy mix, the development of renewable energy projects has also lessened reliance on fossil fuel-based power. Particularly, geothermal energy has been essential; among Africa's top providers of geothermal energy is Kenya (World Bank, 2020).

The GDP of Kenya has benefited greatly from the energy sector. The electricity and water supply sector made up roughly 1.7% of Kenya's GDP in 2020 Kenya National Bureau of

Statistics (2021). As the government emphasizes the construction of new energy infrastructure and encourages private sector involvement, the industry's overall stake in the Kenyan GDP is anticipated to keep increasing. Kenya's energy industry has generated enormous employment opportunities, both directly and indirectly. Construction and upkeep of energy infrastructure improvements, such as nuclear reactors and transmission networks, require a skilled labour force. Additionally, the growth of the sector has boosted economic activity in allied sectors like services, construction, and the manufacture of equipment (KNBS, 2021).

Energy-related firms in Kenya encounter a number of obstacles that could harm their overall viability and profitability. One of the main challenges is the high capital costs associated with energy infrastructure projects like constructing nuclear reactors and cables for transmission. One of the main challenges is the high capital costs associated with energy infrastructure projects like constructing nuclear reactors and cables for transmission. These projects demand sizeable up-front investments, and finding long-term financing with advantageous terms can be difficult. Regulatory ambiguities and policy alterations affect the energy sector, which can increase financial risks and erode investor trust. Additionally, changes in foreign exchange rates and oil prices on a worldwide scale might provide difficulties for businesses that operate in the gas and oil industry of the energy industry (Kimuyu, Maalu & Ayodo, 2018). Finding the ideal capital structure is one way to solve these issues and improve financial performance in the energy sector. Businesses can deal with the high capital needs while lowering their cost of capital by carefully balancing debt and equity. Infrastructure development can be financed by debt financing, while equity financing allows for risk sharing and luring long-term investors (Gutiérrez-Nieto, Serrano-Cinca & Mar-Molinero, 2017).

1.2 Research Problem

In today's dynamic and ever-changing business climate, business enterprises must overcome a number of obstacles to achieve and maintain financial performance. Increasing competition,

technological upheavals, shifting consumer preferences, regulatory changes, and uncertain economic conditions are a few of the major difficulties. These difficulties may have an effect on profitability, general financial stability, cost control, and revenue growth (Atzori, Carboni & Sitzia, 2018). According to PwC (2020) analysis, regulatory changes and economic swings are the two biggest obstacles to firms' financial performance. Optimizing a company's capital structure can assist in addressing these issues and enhancing financial performance. Financial flexibility, risk reduction, and resilience can all be improved with a well-balanced capital structure. Firms can better handle regulatory changes by maintaining an ideal capital structure, assuring compliance while controlling the financial burden. Additionally, in times of economic turbulence, a well-structured capital mix can aid companies in managing cash flows, lowering costs of capital, and preserving their financial stability (Rajan and Zingales, 1995).

The Kenya National Bureau of Statistics (2021) estimates that the sector in charge of providing Kenya's electricity and water contributed roughly 1.7% of the nation's GDP in 2020. Over 12,652.74 gigawatt-hours (GWh) of electricity are produced annually in the nation, the majority of which is produced by geothermal and hydroelectric sources. The renewable energy mix also includes wind and solar energy Kenya has a lot of room to grow in terms of renewable energy development. Geothermal resources have an estimated 10,000 MW of potential but are still largely untapped. 3,000 MW of wind energy is potentially available and solar energy receives abundant irradiation all year round (EPRA, 2022). Firms in the energy sector in Kenya have not been able to fully tap all the potential in the energy sector due to several challenges including high capital costs for energy infrastructure projects, such building power plants and transmission lines. Regulatory ambiguities and policy alterations affect the energy sector, which can increase financial risks and erode investor trust as well as changes in foreign exchange rates and oil prices on a worldwide scale might provide difficulties for businesses that operate in the oil and gas sector of the energy industry (Kimuyu, Maalu & Ayodo, 2018).

A number of academics have investigated the correlation between capital structure and fiscal achievement in various contexts. An international investigation was conducted by Tailab (2014) to look at how American energy companies' capital structures affect their profitability. 90 textile manufacturers that were listed on the Pakistan Stock Exchange (PSX) between 2008 and 2017 were the subject of Ullah et al.'s (2020) analysis into the implications of the structure of capital on the economic output of companies. Mohammed and Yusheng (2019) investigated the link between the framework of a capital and economic health of businesses listed on the Ghana Alternative Market (GAX). Ghana's Alternative Market (GAX) provides evidence of the impact of capital structure on a company's financial condition. Kubai (2016) examined how the capital structure of Kenyan manufacturing enterprises affected their financial performance in the local setting. Kamau, Mogwambo, and Muya (2018) investigated how the capital framework of Kenyan energy companies affected their fiscal health, using firm growth rate as a moderator. The connection between the capital framework and economic performance in the environment of firms in Kenya's energy sector has not been investigated, as shown by these research findings, which point to a contextual gap. The current study therefore closes this gap by addressing the research question on: What is the effect of capital structure on financial performance of firms in energy sector in Kenya?

1.3 Research Objective

The objective of the study is to establish the effect of capital structure on financial performance of firms in energy sector in Kenya

1.4 Value of the Study

The study will serve to afford utility to theories and researchers. By offering actual proof and insights unique to the Kenyan energy sector, it will serve to compound the body of the prevailing information and knowledge. The study’s conclusions might either support or refute

pre-existing theories and models on capital framework and economic performance. Given the distinctive qualities and difficulties of Kenya's energy industry, researchers might use this study as a starting point to further explore the correlation between the structure of capital choices and economic success.

Policymakers and regulatory organizations will find the report to be quite useful. The research's conclusions can be used to establish laws and policies that support the best possible capital structure for businesses in the energy sector. Policymakers may build frameworks that promote sustainable financing practices, strike a balance between debt and equity concerns, and foster the development and stability of energy companies by understanding how capital structure decisions affect financial performance. These regulations may aid in the overall growth and effectiveness of Kenya energy sector.

For those who work for the firms, the study will have real-world applications. The knowledge gathered from this research will be useful for energy industry companies, investors, managers, and shareholders. So as to optimize their performance financially and reduce risks, they can use the findings to drive their capital structure decisions. If stakeholders consider the unique potential and difficulties within Kenya's energy industry, they can use this information to establish a balance between loan and equity funding. Informed decisions may be made by stakeholders thanks to this study, which can also help businesses become more profitable and stable financially, adding value for everyone involved.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The second chapter goes about giving a comprehensive overview of the existing theories and knowledge related to the pic under investigation to establish a foundation for the study. The

chapter also reviews empirical studies related to this study to identify knowledge gaps that need to be closed by the current study. As a result, the chapter includes a theoretical review, economic performance determinants, empirical review, conceptual review, and a summary of the chapter.

2.2 Theoretical Review

This section discusses the theoretical framework that helps situate the study within an established theoretical perspective. It discusses several theories that support the study which include trade-off theory, pecking order theory and Modigliani and Miller theorem. This section will discuss the proposition of the theories, their criticisms and their relevance to the study.

2.2.1 Trade-Off Theory

According to the trade-off theory, which was first put forth by Myers (1984), enterprises must make trade-offs when choosing their capital structure. This theory contends that borrowing money has advantages and disadvantages. Debt has tax benefits since interest payments are deductible, which lowers the company's tax liability. However, there are expenses related to financial difficulties, such as agency cost and bankruptcy costs (Myers, 1984). The theory considers how borrowing costs affect a firm's total capital structure decisions. The hypothesis states that as debt levels rise, debt costs likewise rise since the firm is exposed to more financial risk. The credit rating of the company, perceived default risk, and anticipated interest rates are just a few examples of the variables that affect this cost of debt. As it pertains to the Trade-Off Theory, businesses must balance the merits of financing debt such as tax reductions, with the rising cost of debt as leverage rises so as to achieve the optimum structure of capital and increase the firm value (Myers, 1984). In accordance to the trade-off theory, companies should

choose a financing arrangement that balances the tax advantages of debt with the opportunity cost of economic hardship in order to maximise value.

Numerous critiques have been levelled against the Trade-Off Theory. First of all, it presumes that enterprises have complete knowledge of the advantages and disadvantages of various capital structures, which is frequently not the case in practice (Hovakimian et al., 2001). The Trade-Off Theory is predicated on the idea that the costs of financial crisis are directly correlated with debt levels. However, empirical data reveals that the costs of financial distress can be quite variable and dependent on elements like industry-specific traits and the macroeconomic climate (Bradley et al., 1984). The theory moreover presupposes that enterprises have a target capital structure, although figuring out an ideal capital structure is still difficult due to variables including shifting market conditions and managerial discretion (Titman and Wessels, 1988).

The study draws significant relevance from the trade-off theory. According to this theory, businesses must choose between the advantages and disadvantages of debt financing. The idea states that enterprises decide on their capital structure based on how debt's tax benefits and the costs of financial crisis balance out. The tax benefit results from interest payments being deductible, which lowers the firm's tax burden. Higher debt levels do, however, result in higher expenditures associated with financial difficulty, such as bankruptcy or agency fees. The tradeoff theory sheds light on how organizations handle this trade-off to maximize their capital structure in the setting of the study. It explains why some businesses may choose to take on more debt to be able to benefit from tax breaks, while others may choose to take on less debt in order to minimise the costs related to economic distress. Understanding the tenets of this theory can help explain how different capital structures affect financial performance and provide a framework for examining trade-offs that organizations must make when choosing their financing options.

2.2.2 Pecking Order Theory

Myers and Majluf (1984) developed the Pecking Order Theory, which offers an alternative viewpoint on capital structure choices. According to this hypothesis, corporations favor internal funding like retained earnings over external finance. According to the notion, businesses should utilise internal resources first because they are less expensive and do not provide information asymmetry problems. As a last option, external financing such as the issuance of equity or debt is considered. The Pecking Order Theory contends that information gaps between executives and shareholders can lead to problems with adverse selection, whereby companies with better investment prospects are less likely to seek outside financing because of the risk of undervaluation (Myers & Majluf, 1984). As a result, businesses frequently adopt a hierarchy where they prioritize using internal resources first and turning to external financing only when absolutely necessary.

A number of people have criticized the Pecking Order Theory as well. First, it assumes that external funding, such as debt issuance, is more expensive than internal financing, which may not always be the case depending on the state of the market and the particulars of the company (Frank and Goyal, 2009). Second, the Pecking Order Theory contends that enterprises' asymmetric information creates problems for adverse selection when they look for outside funding. The existence and size of unfavourable selection effects however, is the subject of conflicting empirical research (Baker and Wurgler, 2002). Finally, because it does not identify the order in which external financing sources are chosen, the theory does not give a clear explanation for the decisions made by enterprises when internal financing is insufficient (Harris and Raviv, 1990).

The pecking order theory is relevant for this study as it explains why businesses favour internal finance over external borrowing. In order to finance their investments, it is suggested that

companies should first prioritize using internal resources like retained earnings and only then turn to external financing like debt or stock issues as a last choice. The pecking order theory is based on the asymmetric information hypothesis, which holds that internal company operations and prospects for the future are better known to supervisors than to outside financiers. Internal funding is therefore thought to be less expensive and less likely to cause the market to react negatively. The pecking order theory sheds light on the financing practices of businesses and how they affect their financial success in the context of the study. It helps to fully comprehend why businesses with limited internal resources may rely more on debt financing, raising the debt-to-equity ratio. A lens for examining the effects of financing preferences on financial performance and investigating how organizations manage their capital structure in practice can be provided by comprehending the tenets of this theory.

2.2.3 Modigliani and Miller Theorem

The Modigliani-Miller (MM) Theorem states that the capital layout of a business has no impact on either its market value or its profitability. It was developed in 1958 by Modigliani and Miller. According to the theorem, a firm's worth is exclusively based on its fundamental business operations and investment potential in a world without taxes, bankruptcy costs, or information asymmetries, independent of how it is financed (Modigliani & Miller, 1958. The MM theorem emphasises the significance of elements in real-world contexts, such as taxes, the overall expenses associated with economic distress, and data imbalance, and it provides a framework for comprehending capital structure irrelevance. According to the thesis, investors can change their own borrowing and lending to imitate any desired leverage ratio on their own under the suppositions of no taxes and no transaction expenses. The capital structure decisions of a firm become irrelevant in an efficient market, where investors have equal access to borrowing and lending at the same rates as corporations, because investors can achieve their

desired leverage ratios independently. Homemade leverage is a concept that emphasizes the idea that investors can effectively build their own leverage, negating the need for businesses to actively manage their capital structure to accommodate various investor preferences (Modigliani & Miller, 1958).

The Modigliani and Miller (MM) Theorem, which ignores elements like taxes, bankruptcy costs, and agency concerns that are common in the actual world, presupposes perfect capital markets (Miller, 1988). The implications of the framework on an enterprises value is significant when these market flaws are considered. Due to tax regulations and the accessibility of financial instruments, the MM Theorem's assumption that individuals and firms have the same cost of capital may not be accurate (Graham and Harvey, 2001). The theorem also makes no assumptions regarding transaction costs related to changing capital structures, which could not be consistent with the real-world challenges that businesses encounter.

Understanding the Modigliani-Miller (MM) Theorem is necessary to comprehend the connection between the structure of capital and financial outcomes. The theorem states that, under certain circumstances, a company's capital structure shouldn't have an effect on its market value or financial performance. It contends that, regardless of how a firm is financed, the worth of a company is defined solely by its fundamental business operations and investment potential in a world devoid of taxes, bankruptcy costs, or information asymmetries. This idea questions the conventional wisdom that various capital arrangements might influence market valuations or financial results. By examining departures from the MM theorem's assumptions, it is possible to fully comprehend how taxes, the costs of economic distress, and information asymmetry in the real-world affect choices regarding capital structures and financial performance. The applicability of various market frictions and outside variables that may affect the correlation that pre-exists between capital structure decisions and economic performance is aided by understanding the MM theorem's claims.

2.3 Determinants of Financial Performance

Financial performance of an organization depends on various factors, mainly the capital structure, liquid, Asset utilization and the size of the firm. Therefore, in order to ensure sound financial performance energy sector institutions should focus on the factors likely to affect profitability and the degree of their influence.

2.3.1 Capital Structure

The framework of capital of an organization has an important bearing on its economic performance. The cost of financing, risk profile, and overall strength of the company's finances are all impacted by the debt-to-equity ratio in a company's capital structure. According to Harris and Raviv's (1991) a capital structure that is optimal can boost financial performance. A company can benefit from the tax advantages of debt financing while controlling the expenses and risks of financial trouble when it achieves the correct balance between debt and equity financing. By allowing interest payments to be written off as business costs, debt financing can offer tax advantages that cut tax liabilities and boost cash flow. Excessive debt, however, might raise the likelihood of financial distress, costing more to file for bankruptcy and possibly harming financial performance (Barton, Gordon & Pittman, 1989). Contrarily, equity financing can increase a company's flexibility and lower the risk of financial hardship even while it does not offer tax benefits. Companies can improve their financial performance by raising capital through equity instead of borrowing money and paying interest (Titman and Wessels, 1988).

The capital cost for a corporation may change depending on the capital structure decision. As per Modigliani and Miller (1958), in the absence of market frictions, the capital framework has no effect on the worth of the company. The cost of capital can change depending on the capital structure decision in real-world scenarios involving taxes and bankruptcy expenses. Due to the tax advantages linked to interest payments, debt financing typically has lower costs than equity

financing. Due to lower overall capital expenditures, businesses that efficiently use debt financing may be able to invest in possibilities for expansion and provide superior financial results. It is crucial to remember that the connection between structure of capital and economiic performance is complicated and susceptible to a range of outside influences, including market circumstances and industry characteristics (Graham and Harvey, 2001). As a result, in order to maximize their financial performance, businesses must carefully examine their unique situation and weigh the trade-offs related to various capital structure decisions.

2.3.2 Liquidity

In the energy industry the economic viability is significantly influenced by liquidity. The operations, investment prospects and overall financial health of a firm are directly impacted by its capacity to satisfy its short-term obligations and maintain acceptable amounts of liquidity. Financial distress, missed payments, and restricted access to cash can result from a lack of liquidity, whereas an abundance of liquidity may be a sign of underutilized assets and missed investment possibilities (Daskalakis, Psillaki & Tzavara, 2018). It emphasizes that businesses with larger liquidity levels are better able to deal with uncertainty, grasp market opportunities, and control operational risks. The ability of organizations to endure rapid changes in market circumstances, such as variations in commodity prices or regulatory changes, contributes to their long-term viability and profitability. Therefore, in order to function financially in this fastpaced market, energy companies must be able to manage liquidity properly (Daskalakis, Psillaki & Tzavara, 2018).

2.3.3 Asset Utilization

In assessing the financial success of businesses in the energy sector, asset utilization is a critical factor. Utilizing assets effectively raises productivity, boosts operational effectiveness, and improves revenue production, all of which ultimately help to produce superior financial results.

For instance, effective use of drilling rigs, production platforms, and refineries in the oil and gas sector can lead to higher oil and gas production levels and lower production costs. This may then result in elevated sales and profitability. Chen, Ge and Li (2019) Companies in the energy sector can increase their production capacity, reduce operating costs and increase return on investment by making efficient use of their assets.

Optimal utilization of assets helps businesses improve supply chain management, better fulfil consumer demand, and reduce downtime or idle times. Asset utilization is essential for maximizing the generation capacity in the renewable energy sector. Businesses can raise their revenue from power sales and enhance their financial performance by optimizing the production from renewable energy assets. In their investigation on how asset usage affects financial performance in the renewable energy industry, Di Serio, Micocci and Poli (2019) discovered a favourable correlation between asset turnover and return on assets. This emphasizes how crucial it is to use and manage energy assets well in order to obtain the best financial results. Utilizing resources effectively enables businesses to boost output, cut expenses, satisfy customer demand, and maximize income production. By increasing the output as well as effectiveness of their renewable energy assets, businesses can boost their cash flow and gain an edge over their competitors.

2.3.4 Size of the Firm

Larger organisations can have a number of advantages that boost their financial performance. First, it is possible to establish economies of scale, which allows bigger organisations, spread their fixed expenses over a greater output and lower average production costs. Profitability and competitiveness may increase as a result (Kumbhakar, 2020). Larger enterprises may have more bargaining power than smaller enterprises when negotiating contracts, achieving advantageous terms with suppliers or consumers and maybe cutting expenses (Dosi, 2018).

Larger businesses frequently have better access to capital markets, which makes it simpler for them to raise money for investments in R&D, infrastructure development, and growth (Gugler et al., 2018). This cash access can encourage innovation and technological development, both of which are essential in the quickly developing energy sector.

The scale of a company in the energy sector can also have a favourable effect on how well it can handle regulatory difficulties and market volatility. Larger companies frequently diversify their activities over several energy market locations and market categories, enabling them to reduce the risks related to certain markets or commodities (Kumbhakar, 2020). They might be better equipped to invest in renewable energy technology and follow changing environmental standards due to their greater financial resources (Dosi, 2018). Larger companies may have established connections with important parties, such as governments, vendors and clients who can give them market access and stability (Gugler et al., 2018). These elements work together to improve financial performance for larger firms in the energy sector in Kenya.

2.4 Empirical Review

The objective of Tailab (2014) was to ascertain the correlation across the framework of capital and financial outcomes. The study used two main sets of variables: the time frame in its entirety, debt-to-equity, and size of the company as indicators of capital structure as proxies for revenue.

The sample included 30 Energy American companies, and secondary data were gathered from financial records retrieved from Mergent online spanning a nine-year period from 2005 to 2013. Version 3 of Smart PLS (Partial Least Square) was used to analyse the data. According to the results of the multiple regression analysis, the independent variables were responsible for 10% of the variation in ROE and 34% in ROA. The findings revealed the entire amount debt had a substantial adverse effect on both ROE and ROA while the magnitude of the company was gauged by sales had a significantly negative impact on both. However, ROE was benefited by

short-term debt. There was either no relationship or a hazy one between revenue and long-term liabilities, the proportion of debt to equity, and the size of the overall asset-based firm. Since this study was conducted in a different environment, it is necessary to conduct comparable research in additional environments because the conclusions of this investigation cannot be generalised to other contexts.

In their study of businesses in the food sector that were provided on the Indonesian stock market from 2016 to 2018, Nurlaela et al. (2019) looked at the impact of the capital organisation, liquidity, asset structuring, and turnover of assets on financial performance. By utilizing a variety of independent variables, a bigger sample size, and a specific study period, the study hoped to add to the body of literature. The research employed a quantitative methodology, and the multiple linear regression method served as the analytical approach. The results, which were based on the t-test hypothesis, showed that the proportion of debt to equity (DER), a gauge of capital structure, the current ratio (CR), a gauge of liquidity, and total asset turnover, a sign of resource turnover, all had considerable implications when it came to the economic outcomes of the organisations. Since this analysis was conducted in a different environment, it is necessary to conduct comparable research in additional environments because the conclusions of this study cannot be generalised to other contexts.

The connection between the financing framework, characteristics specific to the company, variables, and the financial results in the cloth industry of Pakistan was examined by Ullah et al. (2020). Ninety textile businesses that have been identified on the Pakistan Stock Exchange (PSX) between 2008 and 2017 were the subject of the study. The results showed that while the ratio of asset turnover had a marginally significant adverse association with the company's financial results, the debt-to-equity ratio did not have a significant negative correlation with it. Although the size of the business had an important adverse effect on its financial health, export expansion and sales growth were strongly correlated. According to agency theory, there was

little connection between financial success and the total amount of taxes owed as well as the ratio of borrowing to resources. The need for similar studies that concentrate on particular industries, such as those that deal with energy companies, is highlighted by this study, which looked at textile manufacturers which were outlined on the Pakistan Stock Exchange (PSX).

Anozie et al. (2023) investigated the implications of the structure of capital on the economic outcomes of Nigerian crude oil business entities. The study chose immediate debt compared to total asset in question, long-term obligations to overall asset value, overall debt to overall equity, and return-on-investment resources parameters as substitutes for capital framework and economic viability using an ex-post facto inquiry method. Secondary data from five Nigerian oil and gas companies' financial statements for the year encompassing the years 2011 through 2020 were collected using a straightforward sampling strategy. The results showed that while shorter-term borrowing to overall assets and overall debt to total equity both had minor but advantageous effects, long-term commitments to total resources had no impact on return on assets. Since the results of a similar study carried out in Kenya could have been the same, it was necessary to carry out another analysis of a similar nature because the study's focus was on Nigerian oil and gas companies.

The correlation between the framework of the capital and the economic output of businesses in the textile sector was looked at in the study by Muzaffar, Khizar, and Ammar (2019). The researchers used a correlation matrix and a linear regression analysis with ordinary least squares (OLS) to look at how the capital setup impacts financial success. Data on businesses in the textile industry was gathered between 2011 and 2015 using annual filings and the State Bank of Pakistan database. The conclusions of the study showed that ROCE was positively impacted by both DE and DTF, demonstrating that the capital structure had an advantageous implication on the economic outcome of the textile companies. The study focused of textile sector in Pakistan, thus more similar studies need to be carried out on different contexts.

Kamau, Mogwambo, and Muya (2018) looked into the correlation between the structure of capital composition and earnings in the backdrop of Kenyan petroleum enterprises. The moderating role of company growth rate in this association was also examined in the study. The researchers used a descriptive comparative study design and concentrated on listed petroleum enterprises in the Nairobi Securities Exchange's energy and petroleum sector. Specifically, using secondary data gleaned from released financial reports over an eleven-year period (2007–2017), a comparative analysis was carried out. To evaluate the effects of moderation, the study used descriptive and inferential statistics, such as hierarchical regression analysis and the SPSS process macro, model one. As evidenced by return on assets and return on equity, overall debt significantly harmed the firm output according to the research results. The study also discovered that the business growth rate significantly moderated the causal connection between the amount of debt and earnings. The study concentrated on petroleum businesses and neglected to consider the entire energy sector, which is covered in the current study.

Mutwiri (2015) sought to ascertain how the choices regarding capital structures influenced the monetary health of enterprises listed on the Nairobi Securities Exchange, known as the NSE, in the energy-based substances industries. The study used a survey methodology that was descriptive and used supplementary information on decisions regarding capital structures and economic performance from 2004 to 2014. Regression analysis was used to analyse the collected information, and the results showed that the debt ratio, company size, and liquidity all significantly impacted the cash flows associated with energy and petroleum enterprises. The investigation discovered a beneficial relationship between debt ratio and firm size, as opposed to liquidity, which had a negative relationship with financial performance. These variables accounted for up to 81% of the difference in financial performance. The study concentrated on organisations in the energy and crude oil sectors that were listed on Nairobi's securities

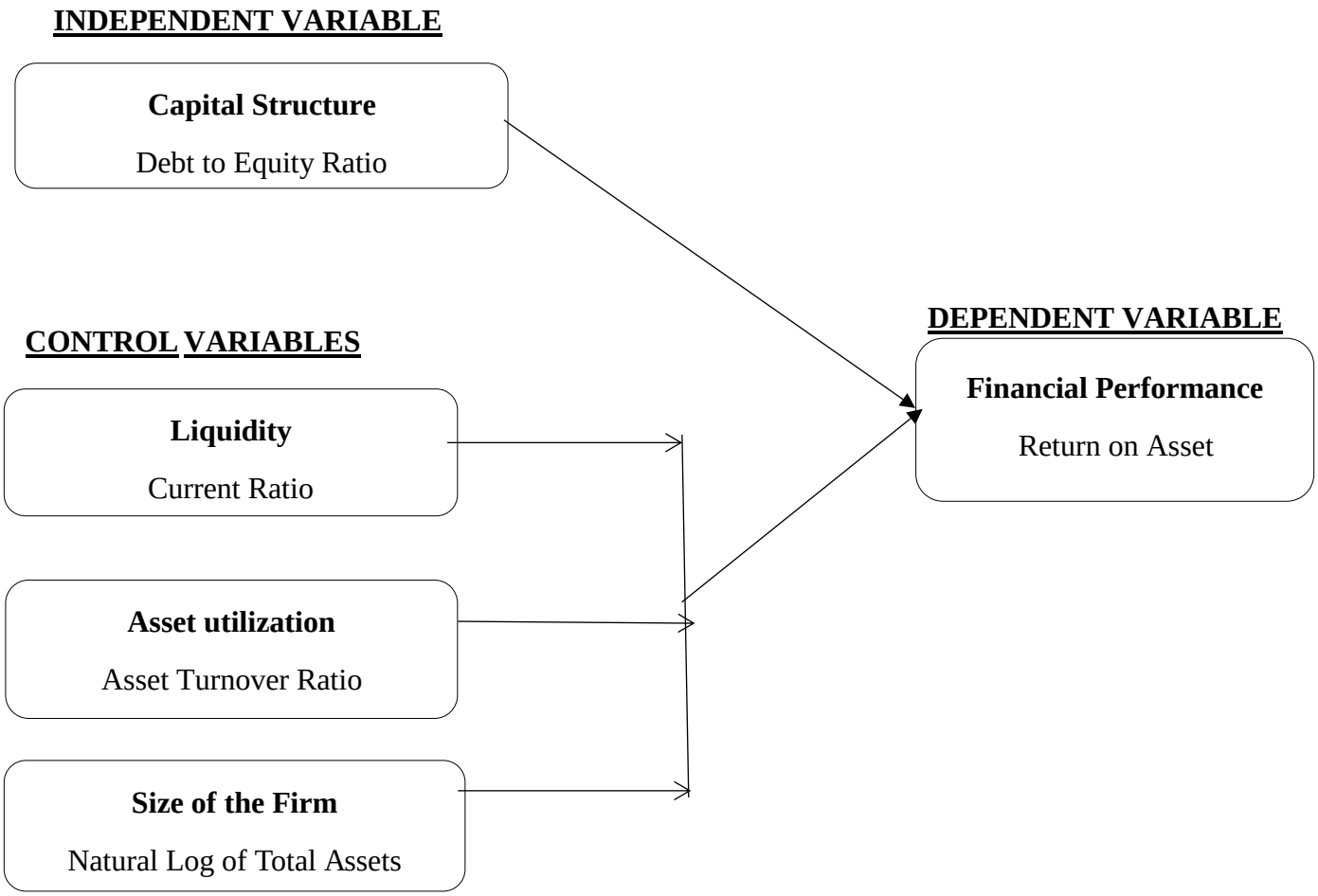
exchange and ignored other companies that were not listed, highlighting the importance for a study that includes all firms in Kenya's energy sector.

Kubai (2016) investigated how capital structure influenced the financial outcomes of Kenyan manufacturers. The dependent variable in the investigation consisted of return on equity, while the independent variable was variables were capital structure, liquidity, size, and growth. Between 2009 and 2015, secondary data were gathered for the study, and statistical software was used to analyse it. Ten manufacturing and related enterprises that were listed on the NSE made up the population. The findings revealed a negative relationship between debt in its entirety, size, and profitability, indicating that higher debt or asset levels were associated with poorer financial performance. However, the study discovered that higher levels of liquidity and sales growth were associated with improved financial performance. The study focused on manufacturing enterprises and failed to consider other sectors such as energy sector which is addressed by the current study.

2.5 Conceptual Framework

The conceptual connection of the study variables is expressed in pictorial format, indicating the relationship that exists between the study variables. It is therefore undertaken to ensure that the likely correlation between the variables under study is expressed and clear. In this study the conceptual framework indicates how capital structure links to the dependent variable (Financial performance). It also shows the study's control parameters (liquidity, asset utilisation, and firm size) and how they relate to economic output.

Figure 2. 1: Conceptual Framework



2.6 Summary of the Literature Review

There are three main theories that are the subject of this chapter's theoretical reviews. The Trade-Off Theory states that so as to optimise enterprise value and achieve the best capital structure, businesses must weigh the merits and demerits of debt funding. The Pecking Order Theory states that companies prefer their own resources over external funding and only use external financing in the direst circumstances. The Modigliani and Miller Theorem states that a firm's framework as it pertains to capital has no impact on its market value or financial performance. The chapter also examines factors that affect financial performance in Kenya's energy industry, such as capital structure, liquidity, asset usage, and firm size. Theoretical connections between these elements and financial performance are discussed.

The chapter discussed the empirical studies that looked into how capital structure and financial performance varied among industries and nations. There are, however, a number of gaps that must be filled by the current study. The research was carried out in various contexts, which restricted the applicability of their findings to other situations. To validate the findings, comparable research needs to be carried out in various contexts. The research concentrated on particular industries, such textiles and petroleum, which limits our understanding of how capital structure affects various businesses. The current study aims to overcome this constraint by taking a broad view of the energy industry and providing a detailed analysis of the connection between the structure of capital and economic performance in the energy sector in particular. Moreover, a methodological gap is also identifying where some studies used quantitative approach, OLS, panel regression estimate, correlation matrix among others while the current study uses the descriptive research design to carry out the study and compare results.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

In this chapter the discussion regarding the methodology adopted by the study to address the study objective. Thus, it encompasses the design employed for the purposes of research, the amount of people or objects under study, the analysis of data, diagnostic tests. Analytical frameworks and significance tests.

3.2 Research Design

A design as it pertains to research describes the overall structure or plan adopted by a research study which includes the selection and arrangement of research methods, information collection and analytical procedures. A descriptive research design will be used in this study to describe and summarise the connections between capital structure and the financial results of

firms in Kenya's energy sector. The descriptive research design will help the study collect detailed information about the capital structure, liquidity, asset utilisation, and firm size, as well as define the effect of these variables on the economic health of the energy sector. It enables the researcher to investigate patterns, trends, and associations within the data in order to provide an accurate description of a specific phenomenon (Gravetter & Forzano, 2018).

3.3 Population

Population in research refers to a set of individuals or objects that share a certain characteristic that the research wishes to study. All of Kenya's energy sector businesses are included in the study's population. According to EPRA Report 2022, there were 71 companies involved in the importation, exportation, and wholesale of petroleum products, with the exception of LPG (Liquefied Petroleum Gas), according to an EPRA (2022) report. There are also more than 50 government-controlled businesses in Kenya that produce renewable energy using hydropower, geothermal, wind, and solar energy facilities. The other companies in the energy sector are represented by IPP (Independent Power Plants) (Dun & Bradstreet, 2023). The energy sector therefore contains firms in the importation, exportation, and wholesale of petroleum products, renewable energy firms controlled by government as well as IPPs. They make up to utmost 200 firms in the energy sector under the regulation of EPRA.

3.4 Sampling

The study will use purposive sampling to identify the companies that will participate in the study. Purposive sampling technique is a non-probability sampling technique used in research to select a specific subset of individuals or elements from a larger population. Unlike random sampling methods, purposive sampling involves a deliberate and purposeful selection of participants based on the researcher's knowledge and judgment.

The number of respondents that will be targeted by the study will be considered using Green Formula (Green, 1991). The formula for sample size determination was proposed to be of the form n>= 50+8m,

Where n is the sample size and m, is the number of independent (predictor) variables. This study has 4 independent variables and therefore n >= 50 + 8 *(4) which gives a total of 82.

The study will therefore use purposive sampling to identify 82 or more firms that would provide latest data for undertaking study analysis.

3.5 Data Collection

This study will collect secondary data from the websites of the specific energy firms, EPRA websites as well as from Kenya National Bureau of Statistics (KNBS) to provide required data as indicated in the attached data collection form in Appendix 1. The latest data available will be chosen from at least 82 firms. Then, a correlation analysis will be used to examine the strength, direction, and directionality of the relationship between the independent and dependent variables. In order to determine how changes in independent variables affect changes in the dependent variable, the study will ultimately use regression analysis to model and explore a connection between the dependent variable and the independent variables. The study will perform a number of diagnostic tests to validate the regression model used before conducting regression analysis.

3.6 Data Analysis

The data collected will be cleaned and checked for completeness to ensure efficient and reliable results using Microsoft Excel, the data will then be exported to SPSS version 26 for analysis. The data will be summarised in terms of mean, median, mode, and standard deviation using

descriptive analysis, which entails summarising and describing the key traits, patterns, and trends present in a data set.

3.7 Diagnostic Tests

This section will address the several diagnostic tests to ensure that the regression model used in the study is robust. These tests include normality test, linearity test, autocorrelation test, heteroscedasticity test and multicollinearity test.

3.7.1 Normality Test

To determine if the distribution of a variable adheres to a normal distribution, a normality test is performed. The Shapiro-Wilk test, the Anderson-Darling test, or the Kolmogorov-Smirnov tests are examples of frequently used tests. With the use of these tests, you can use statistics to see if the data significantly deviates from a normal distribution. The validity of some statistical analyses may be affected by deviations from normalcy, in which case proper transformations or nonparametric procedures may be needed (Gujarati & Porter, 2009).

3.7.2 Linearity Test

The linearity test determines if the independent variables and the dependent variable in a regression analysis have a linear relationship. Scatterplots are a visual assessment tool that can be used to gauge linearity. To evaluate linearity assumptions and find potential nonlinear correlations, statistical techniques like the Durbin-Watson test or the RESET (Regression Specification Error Test) can be used, according to Hair et al. (2019).

3.7.3 Autocorrelation Test

The association between a variable and its lagged values over time is referred to as autocorrelation. Checking for autocorrelation in the residuals is crucial to ensuring the

independence of observations in regression analysis. To determine whether there is an autocorrelation pattern that is significant in the residuals, tests like the Ljung-Box test, BreuschGodfrey test, and Durbin-Watson test can be performed (Kennedy, 2008).

3.7.4 Heteroscedasticity Test

When the variance of the residuals fluctuates between various levels of the independent variables, heteroscedasticity is present. The constant variance premise of regression analysis is broken by this. The connection between the residuals and the expected values is examined by diagnostic tests for heteroscedasticity, such as the Breusch-Pagan test, White test, or Park test, to determine whether there is a consistent pattern of heteroscedasticity (Kutner et al., 2004).

3.7.5 Multicollinearity Test

Multicollinearity results when independent variables in a regression model have a high correlation with one another. It may affect the regression estimates' stability and dependability. To evaluate the level of correlation among independent variables and to pinpoint variables that contribute to multicollinearity, diagnostic tests for multicollinearity, such as variance inflation factors (VIF), tolerance, or condition indices, are utilized (Wooldridge, 2015).

3.7.6 Stationarity Test

Stationarity refers to the statistical properties of a time series remaining constant over time. Spurious regressions occur when variables appear to be correlated purely by chance, often caused by non-stationarity. Undertaking stationarity tests involves the use of Augmented Dickey-Fuller (ADF) test. This test checks whether a time series is stationary by analyzing the autoregressive nature of the data. The ADF test's null hypothesis, which assumes nonstationarity, is rejected if the p-value is less than a chosen significance level (for example, 0.05), proving that the series is stationary. If the series is non-stationary, differencing the data

(subtracting each observation from the previous one) can often help achieve stationarity. After differencing, reapply the ADF test to the differenced series to confirm stationarity.

3.7.7 Test for Model Specification

Model specification test is undertaken to avoid spurious regressions and ensure that the chosen model is appropriate for the data and research question at hand. A mis-specified model can lead to biased or unreliable results, making it essential to verify that the selected model adequately represents the underlying relationships in the data. Ramsey's RESET test is used to detect any functional form misspecification. The RESET test assesses whether adding higher-order terms of the predictors can improve the model's fit. If the test indicates a significant lack of fit, it suggests the need for additional model terms or transformations.

3.8 Analytical Model

The study models the study variable into the following form:

$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e$ Where;

Y = Financial Performance (Return on Asset)

X_1 = Capital Structure (Debt to Equity Ratio)

X_2 = Liquidity (Current Ratio)

X_3 = Asset Utilization (Asset Turnover Ratio)

X_4 = Size of the Firm (Natural Logarithm of Total Assets)

B_0 is constant term while B_1, B_2, B_3 and B_4 are the various regression coefficients e

is the error term

3.9 Significance Test

The ANOVA test will be used in the study to determine the model's significance at a 95% confidence level. If the model is significant and the p-value is less than or equal to 0.05, the study will reject the null hypothesis; if the model is not significant and the p-value is greater than or equal to 0.05, the study will not be able to do so.

CHAPTER FOUR: DATA ANALYSIS AND INTERPRETATION OF FINDINGS

4.1 Introduction

The data collected by the study was analysed to determine the effect of capital structure on financial performance of energy sectors. The chapter therefore delved in cleaning up the data and undertaking descriptive analysis. Both correlation and regression analysis were undertaken to answer the research question. The findings were then summarized and interpretation of these findings well considered in the chapter. It was also compared to the findings of previous studies and therefore established whether the findings were consistent or inconsistent to the findings of these previous researchers.

4.2 Descriptive Statistics

The study undertook descriptive statistics where the mean standard deviation from the mean, the maximum and minimum values, kurtosis and skewness of each variable of the study was considered. The dependent variable of the study was financial performance (ROA), the independent variable was capital structure, while current ratio, asset utilization and size of the firm were control variables.

Table 4. 1: Descriptive Statistics

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
YROA	60	.01	.10	.0468	.02596	.658	.309	-.549	.608
X1Capstr	60	.56	6.13	1.2990	.84849	3.821	.309	18.390	.608
X2Currat	60	1.65	4.33	2.3434	.66904	1.309	.309	.874	.608
X3Assut	60	.09	2.20	.6670	.84606	1.177	.309	-.597	.608
X4Size	60	6.91	13.35	9.9857	1.62054	.732	.309	.212	.608
Valid N (listwise)	60								

Source: Researcher, (2023)

Financial performance of the energy sector firms in Kenya was determined by ROA. It is calculated as the ratio of net income to total assets. The firm that recorded the least financial performance in the study period had ROA value of 0.01, while the maximum was 0.10, and the mean distribution was 0.0468 indicating an ROA mean of 4.68%. The standard deviation (Std. Deviation) of 0.02596 indicates the extent of variation in the return on assets among the 12 firms studied. The skewness of 0.658 suggested a slight positive skew in the data, while the kurtosis of -0.549 indicated a relatively flat distribution as indicated in Table 4.1.

The main independent variable of the study was capital structure that was determined by the ratio of Debt-to-Equity ratio which is essentially the mix of debt and equity financing. The

minimum debt-to-equity ratio in the dataset was 0.56, the maximum was 6.13, and the mean was 1.2990. A higher standard deviation of 0.84849 implied greater variability in capital structures among these firms. IT showed that firms in the energy sector had great variability in their choices of financing of choice. The positive skewness of 3.821 indicated that the data was positively skewed, meaning there might be some firms with very high debt-to-equity ratios.

The kurtosis of 18.390 suggested that the distribution had heavy tails, which could signify extreme values.

The other study was liquidity ratio that was determined by the ratio of current assets to current liabilities, it is a financial metric reflecting a firm's liquidity and ability to meet short-term obligations. The range of current ratios in this dataset spans from 1.65 to 4.33, with a mean value of 2.3434. The standard deviation of 0.66904 shows some variation in current ratios across the 12 firms. A slightly positively skewed distribution (skewness of 1.309) suggested that more firms had higher current ratios, and the kurtosis of 0.874 implied a relatively normal distribution with no extreme values.

The other variable was asset utilization ratio, which determined and measured how efficiently a firm generated sales from its assets. The dataset revealed a minimum value of 0.09, a maximum of 2.20, and a mean of 0.6670. The standard deviation of 0.84606 indicated some variability in asset utilization among these firms. The slightly positively skewed distribution (skewness of 1.177) suggested that more firms may be efficient in generating sales from their assets, and the kurtosis of -0.597 implied a relatively flat distribution without significant outliers.

The other variable represented the size of the energy sector firms, determined by the natural logarithm of their total assets. In this dataset, firm size ranged from a minimum of 6.91 to a maximum of 13.35, with a mean size of 9.9857. The standard deviation of 1.62054 indicated

variability in the sizes of these firms. The slightly positively skewed distribution (skewness of 0.732) suggested that the majority of firms were larger, and the kurtosis of 0.212 indicated a relatively normal distribution with no extreme values.

4.3 Diagnostic Tests

While undertaking data analysis by use of inferential statistics is crucial and provides useful insight about the research, it is important to ensure that before carrying out the analysis, the data conforms to the assumptions made by the analytical tool that is expected to be used in the study. The diagnostic tests undertaken in the study were intended to ensure that data collected complies with the various assumptions considered by regression model. These diagnostic tests included normality tests, linearity test, test for autocorrelation, heteroscedasticity test, multicollinearity test and test for model specifications. The results of the findings are as indicated.

4.3.1 Normality Test

Normality test was conducted using the Shapiro-Wilk Test, which is a critical step to assess whether the residuals (the differences between the observed values and the model's predictions) follow a normal distribution. The test evaluated the null hypothesis that the residuals were normally distributed, which is a fundamental assumption in many regression models. The test calculated a statistic based on the sample data and compared it to a critical value, with the pvalue indicating the likelihood that the residuals deviate from a normal distribution. If the pvalue was sufficiently small (typically less than 0.05), it suggested a departure from normality, which then informed the need for model adjustments or transformations to ensure the validity of regression results.

Table 4. 2: Test of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
YROA	.126	60	.019	.919	60	.001
X1Capstr	.260	60	.000	.594	60	.000
X2Currat	.196	60	.000	.836	60	.000
X3Assut	.434	60	.000	.610	60	.000
X4Size	.230	60	.000	.861	60	.000

a. Lilliefors Significance Correction

Source: Researcher, (2023)

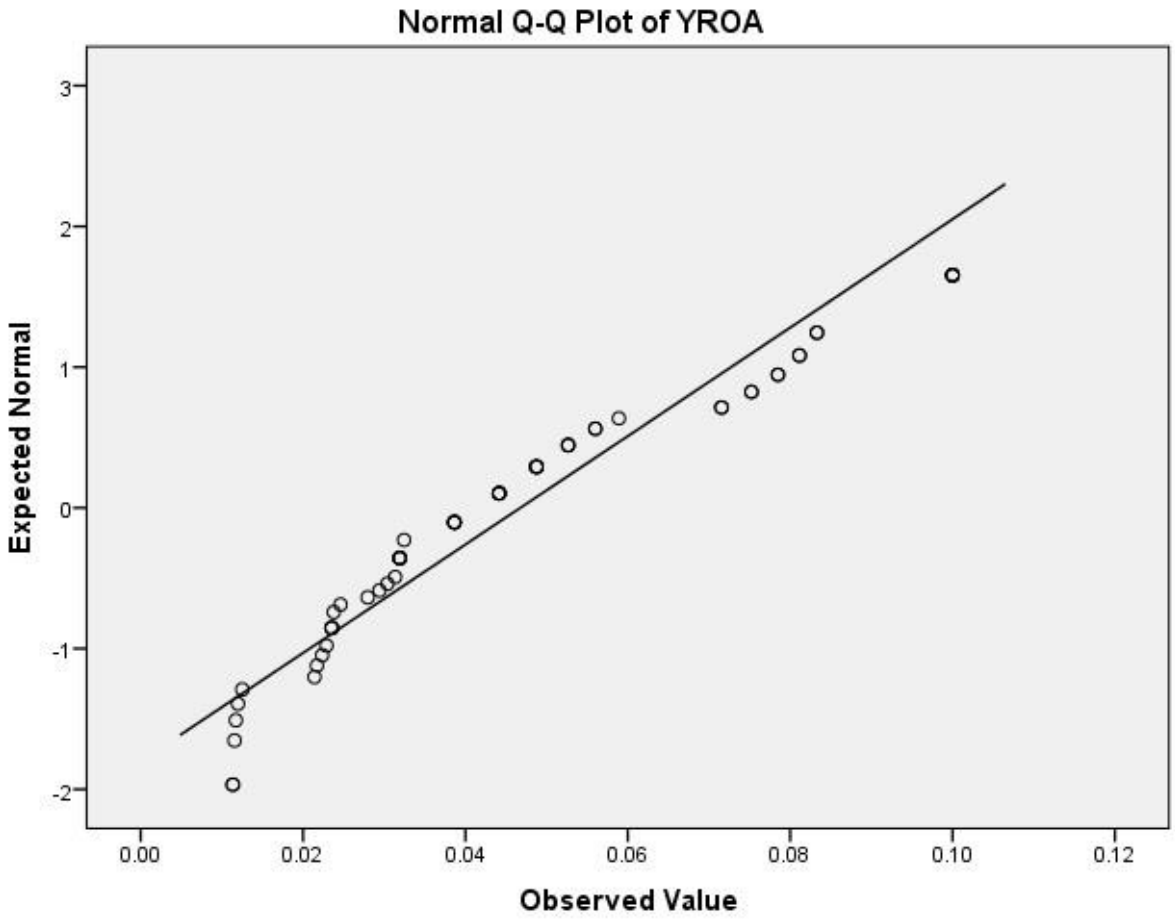
Table 4.2 indicates that the normality test for all the study variables have p value below 0.05 ($P<0.05$). This indicates that each of the variable is not normally distributed. However, in the situation that the number of observations exceeds 30, then data is presumed to be normally distributed (Das, 2016).

4.3.2 Linearity Test

Linearity test is undertaken to determine whether collected data could be plotted in a linear fashion. The aim is to assess the relationship between the independent variables and the dependent variable by visually inspecting scatter plots or residual plots. This test checks the fundamental assumption that the relationship between variables can be adequately represented by a linear model. By plotting the data or residuals against the independent variables, any discernible patterns or non-linearities, such as curves, clusters, or heteroscedasticity, could be identified. Deviations from linearity would therefore indicate the need for more complex modelling approaches, such as polynomial regression or transformations, to accurately capture

the underlying relationships between variables, thereby ensuring the reliability of the regression analysis.

Figure 4. 1: Normal Q-Q Plot



The normal Q-Q plot indicates that the plots follow the diagonal line and therefore indicating that data is linear.

4.3.3 Test for Autocorrelations

The Durbin-Watson Test is a statistical method used to detect and interpret autocorrelations in time series data or regression residuals. Autocorrelation, also known as serial correlation, refers to the correlation between a variable's values at different time points, often leading to

nonindependence of observations. The Durbin-Watson Test primarily checks for the presence of first-order positive or negative autocorrelation (White, 1992). The test statistic, which falls between 0 and 4, measures the extent to which nearby observations are correlated. A value near 2 suggests no autocorrelation (residuals are independent), while values significantly below 2 (approaching 0) indicate positive autocorrelation, implying that nearby residuals are correlated and tend to be in the same direction. Conversely, values significantly above 2 (approaching 4) suggest negative autocorrelation, implying that nearby residuals are inversely related.

The interpretation of the Durbin-Watson Test results depends on the calculated test statistic and the critical values associated with the chosen significance level. If the test statistic falls significantly below 2, it indicates positive autocorrelation, which can distort parameter estimates and lead to inefficient model predictions. On the other hand, a test statistic significantly above 2 suggests negative autocorrelation, which may also undermine the model's validity. In both cases, corrective actions like incorporating lagged variables or differencing the data can be considered to address the autocorrelation issue. A test statistic near 2, on the other hand, implies no significant autocorrelation, supporting the assumption of independence among residuals, and thus strengthening the reliability of the regression analysis.

Table 4. 3: Test of Autocorrelations

Model	Durbin-Watson
1	1.600

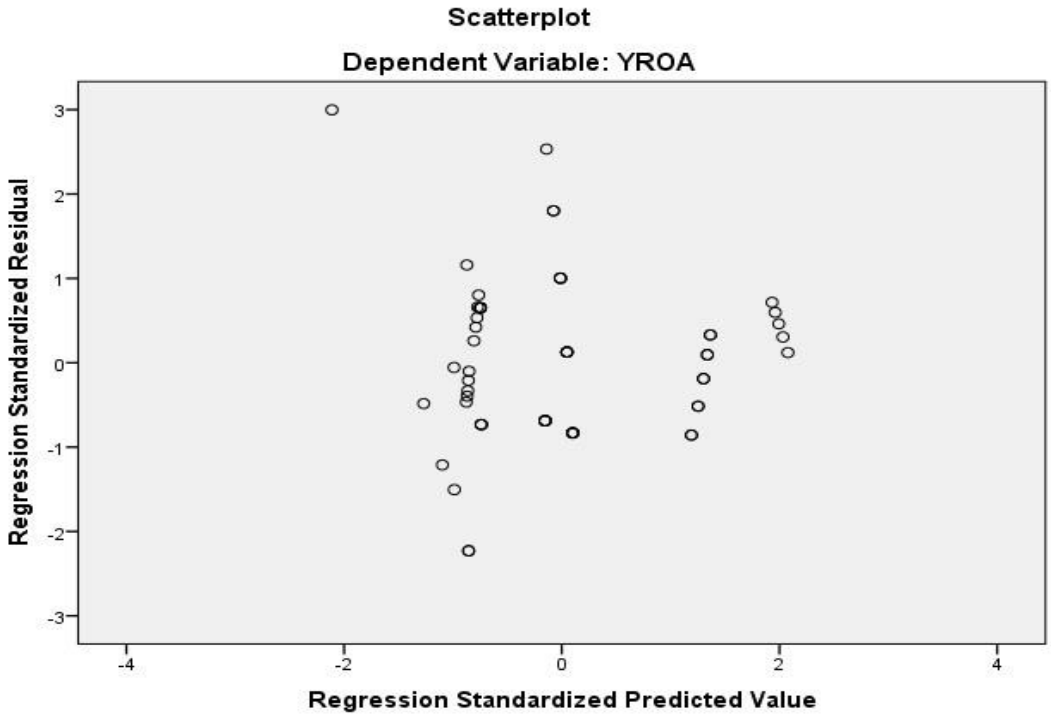
Source: Researcher, (2023)

Table 4.3 indicates the Durbin Watson Test was 1.6 which falls within the required level of between 1.5 - 2 that shows that there are no autocorrelations that would result to spurious regression.

4.3.4 Heteroscedasticity Test

Heteroscedasticity is a phenomenon in regression analysis where the variance of the residuals (the differences between observed and predicted values) varies systematically across the range of independent variable(s), violating the assumption of constant variance. A scatterplot can be a useful tool to visually detect heteroscedasticity. In a scatterplot, if the spread of the residuals' points widens or narrows as you move along the X-axis (independent variable), it indicates the presence of heteroscedasticity (Bruesch & Pagan, 1979).

Figure 4. 2: Scatterplot



The scatterplot indicated in Figure 4.2 does not indicate the data points scattered in a cone-like shape with a wider spread at higher values of the independent variable and a narrower spread at lower values. The data points are distributed both positively and negatively and therefore indicates that the variability of residuals does not increase with the independent variable, suggesting homoscedasticity is present.

4.3.5 Multicollinearity Test

Multicollinearity is a statistical phenomenon that occurs when two or more independent variables in a regression analysis are highly correlated with each other. Multicollinearity can lead to problems in a regression analysis, such as unstable coefficient estimates and reduced interpretability of the model. This happens because it becomes difficult to determine the individual effect of each correlated variable on the dependent variable, as they tend to move together, making it challenging to distinguish their unique contributions. Multicollinearity doesn't necessarily invalidate the model but can make it less reliable in making predictions or drawing meaningful inferences (White, 1992).

Table 4. 4: Multicollinearity Table

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	X1Capstr	.904	1.107
	X2Currat	.594	1.683
	X3Assut	.648	1.544
	X4Size	.704	1.420

Source: Researcher, (2023)

Variation Inflation Factors (VIF) is used in determining multi-collinearity, with high VIF values (usually more than 10) indicating presence of significant correlation between the

independent variables that would bring about spurious regression. Table 4.4 indicates that all the independent variables have VIF of below 10 and therefore there is no multi-collinearity problems.

4.4 Correlation Analysis

Correlation analysis is a statistical method used to examine the strength and direction of the relationship between two or more variables. It quantifies how changes in one variable correspond to changes in another, allowing researchers to understand whether and to what extent these variables are associated (Das, 2016). The correlation co-efficient used in this study was Pearson's correlation coefficient and it ranges from -1, to 0 to 1. Negative values indicate there if an inverse proportion of the variables while positive correlations indicate an increase in one variable leads to an increase in the other variable. Values close to zero indicates weak or no correlation between the variables. Table 4.5 shows the correlation between the dependent variable and each of the independent variables.

Table 4. 5: Correlations Table

Correlations

	YROA	X1Capstr	X2Currat	X3Assut	X4Size
YROA	1				
X1Capstr	-.424**	1			
X2Currat	-.428**	.158	1		
X3Assut	.874**	-.175	-.469**	1	
X4Size	-.322*	-.228	-.365**	-.131	1
N	60	60	60	60	60

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

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

Table 4.5 indicates that financial performance has negative and significant correlation with capital structure, liquidity and size, while it has a positive significant corelation with asset utilization ratio.

This could be explained that increasing debt over equity had negative impact on financial performance of firms in the energy sector. This could be explained by the increased risk associated with debt that would affect financial performance. These findings were collaborated in the findings of previous researchers (Tala, 2014; & Nurlaela et al. 2020). However, other studies indicated different results with capital structure having insignificant impact on financial performance (Ullah et al., 2020).

4.5 Regression Analysis

It is a critical statistical technique used to investigate the relationship between the independent variables (capital structure, current ratio, asset utilization, and size) and the dependent variable (financial performance, measured by ROA). By employing regression analysis, the study aims to quantify the extent to which changes in capital structure and other financial metrics influence the financial performance of these firms. It provides a quantitative assessment of the direction and strength of these relationships, allowing researchers to identify which factors have a statistically significant impact on ROA and to what extent. This helps policymakers, investors, and firm management make informed decisions regarding the optimal capital structure and financial management strategies that would enhance the financial health and performance of these companies, ultimately contributing to the sector's sustainability and growth.

4.5.1 Regression Model Summary

Table 4. 6: Regression Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.973[a]	.947	.943	.00619

a. Predictors: (Constant), X4Size, X3Assut, X1Capstr, X2Currat

b. Dependent Variable: YROA

The model summary for this research indicates that the regression model adopted in the study had a high goodness-of-fit with an R-squared value of .947, implying that approximately 94.7% of the variation in the dependent variable (YROA) could be explained by the combination of the independent variables (X4Size, X3Assut, X1Capstr, X2Currat). The adjusted R-squared value of .943 accounted for the number of predictors in the model, suggesting that the model's high explanatory power was not solely due to overfitting. The standard error of the estimate (.00619) represents the average error in predicting financial performance, indicating the model's accuracy in approximating the actual financial performance. These statistics collectively demonstrated that the regression model was robust and effective in explaining the relationship between capital structure, financial metrics, and financial performance in the context of energy sector firms in Kenya.

4.5.2 ANOVA

Table 4. 7: ANOVA TABLE

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.038	4	.009	245.586	.000[b]
	Residual	.002	55	.000		
	Total	.040	59			

a. Dependent Variable: YROA

b. Predictors: (Constant), X4Size, X3Assut, X1Capstr, X2Currat

The findings presented in the Table 4.7 indicate that the regression model is statistically significant in explaining the variation in the dependent variable (FP). The sum of squares attributed to the regression (.038) is considerably larger than the sum of squares attributed to the residual variation (.002), resulting in a highly significant F-statistic of 245.586. This suggested that the independent variables, collectively contributed to a significant portion of the variation in financial performance. The extremely low p-value (indicated as .000) further underscored the statistical significance of the model, indicating that it was highly unlikely that the observed relationship between the independent variables and FP was due to chance. These findings implied that capital structure had a substantial impact on the financial performance (YROA) of energy sector firms in Kenya.

4.5.3 Regression Coefficients

Table 4. 8: Coefficients Table

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.129	.009		14.047	.000
	X1Capstr	-.011	.001	-.365	-11.176	.000
	X2Currat	-.008	.002	-.202	-5.009	.000
	X3Assut	.020	.001	.664	17.209	.000

X4Size	-.006	.001	-.391	-10.580	

a. Dependent Variable: YROA

The findings in Table 4.8 revealed the estimated relationships between the independent variables and financial performance. The "Unstandardized Coefficients" (B) represent the change in FP associated with a one-unit change in the respective independent variable while holding all other variables constant. All coefficients exhibited statistically significant relationships with FP, with p-values less than .001. Specifically, capital structure had a negative coefficient of -0.011, indicating that an increase in the debt-to-equity ratio was associated with a decrease in FP. Similarly, Current ratio had a negative coefficient of -0.008, suggesting that a higher current ratio led to lower financial performance. In contrast, asset utilization ratio exhibited positive coefficient, implying that higher asset utilization was associated with higher FP. The positive or negative sign of the coefficients indicated the direction of the relationship, while the magnitude quantifies the strength of that relationship.

These findings showed crucial implications for the study variables. A higher debt-to-equity ratio, negatively affected the financial performance of energy sector firms in Kenya, indicating that firms should be cautious about overleveraging. A similar caution was warranted with respect to a higher current ratio as it negatively impacted FP. On the other hand, greater asset utilization had a positive influence on financial performance, while a larger size of the company was associated with a decrease in financial performance. The findings therefore showed that the regression model transformed to:

$Y= B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + e \ldots 1$

$Y = 0.129 – 0.011\ X_1 – 0.008\ X_2 + 0.02X_3 – 0.006X_4 + 0.009 \ldots 2$

4.6 Interpretation of Result Findings

The study findings suggest that optimizing capital structure, maintaining an appropriate current ratio, and efficiently utilizing assets could contribute to improved financial performance within the energy sector firms in Kenya. These findings provided valuable insights for businesses, investors, and policymakers, helping them make informed decisions to enhance financial sustainability and profitability in the industry.

4.6.1 Capital Structure

The negative coefficient of -0.011 suggested that a higher debt-to-equity ratio had a detrimental impact on the financial performance of energy sector firms in Kenya. This implied that firms in this sector ought to exercise caution when taking on excessive debt, as it would lead to reduced profitability. Maintaining a balanced and sustainable capital structure was crucial for their financial health, it also indicated on the risk of debt where an increased debt ratio would further increase this risk and therefore lead to reduction in financial performance.

Tailab (2014) found that the debt-to-equity ratio had an adverse effect on return on equity (ROE) and return on assets (ROA) for American energy companies, suggesting a negative impact of a high debt-to-equity ratio on financial performance. On the contrary, Ullah et al. (2020) did not find a significant negative correlation between the debt-to-equity ratio and financial performance for textile businesses on the Pakistan Stock Exchange. These would therefore suggest that the relationship between capital structure and financial performance may vary across different industries and contexts.

4.6.2 Liquidity

Liquidity was determined by current ratio (Current Assets to Current Liabilities). There was a negative coefficient of -0.008, that indicated that a higher current ratio, would negatively

influence FP. This would perhaps be explained by the fact that increasing liquidity would mean that the firm was not able to efficiently allocate its current assets to projects with positive NPV and therefore missed out on improved performance. The study therefore considered that energy sector firms ought to be mindful of maintaining an appropriate current asset-to-liability ratio, as excessive liquidity may not be conducive to financial performance.

These findings were supported by Nurlaela et al. (2019), who reported that the current ratio had a significant impact on the financial performance of companies in the food sector on the Indonesian stock market, indicating that maintaining an appropriate current asset-to-liability ratio was essential to financial performance.

4.6.3 Asset Utilization

The findings on asset utilization indicated that there was positive and significant effect on financial performance. This implied that energy sector firms in Kenya should focus on efficiently utilizing their assets to maximize financial performance. Improved productivity and sales relative to total assets could lead to enhanced profitability.

Ullah et al. (2020) discovered a marginally significant adverse association between asset turnover and the financial performance of textile companies. In contrast, export expansion and sales growth were positively correlated with financial health. For Kenyan energy sector firms, efficient asset utilization is essential for maximizing financial performance, as it positively impacts ROA.

4.6.4 Size of the Firm

Size is a critical factor in determining financial performance of firms. Larger firms enjoy economies of scale as they are able to enjoy great quantity discounts that improves their performance. On the contrary, larger firms may also increase complexities in the operations,

that would result to diseconomies of scale. There was a negative coefficient that indicated that increased size would lead to decrease in FP of energy sector firms. This could be explained that the larger energy sector firms had increased complexities that made it cumbersome to operate optimally and therefore suffering from diseconomies of scale.

Muzaffar, Khizar, and Ammar (2019) found that in the textile sector in Pakistan, size (represented by DE and DTF) positively impacted return on capital employed (ROCE), indicating a favorable implication of capital structure on financial outcomes. However, Kamau, Mogwambo, and Muya (2018) reported a significant negative impact of overall debt on return on assets in Kenyan petroleum enterprises, emphasizing that size might not guarantee profitability in the energy sector. This suggests that size alone may not be a reliable predictor of financial performance for energy sector firms in Kenya, and other factors should be considered.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Capital structure and financial performance of energy sector firms in Kenya was assessed in this research. This chapter however, concentrated on undertaking a summary of the entire study where the conclusions that emanated from the research were undertaken. The chapter then considers various recommendations as well as the limitations encountered by the study and concludes with areas required to undertake further research.

5.2 Summary of the Study

The study was undertaken from energy sector firms in Kenya, where a total of 12 firms were considered in the study. Their data was collected for a total of 5 years from 2018-2022 that indicated that there was a total of 60 data points. The independent variables of the study consisted of capital structure that was determined by the ratio of debt to equity, liquidity measured by current ratio, asset utilization as well as size. The overall findings of the study indicated that there was negative significant effect of capital structure on financial performance of energy sector firms in Kenya.

The results shed light on factors affecting financial performance within the industry. They underscored the significance of optimizing capital structure, maintaining an appropriate current ratio, and efficiently utilizing assets to enhance the financial health of energy sector firms in Kenya. The study therefore revealed that a higher debt-to-equity ratio had a detrimental impact on the financial performance of energy sector firms. Specifically, the negative coefficient of 0.011 highlighted the need for these firms to exercise caution when taking on excessive debt, as it could lead to reduced profitability. Maintaining a balanced and sustainable capital structure

is crucial for their financial well-being, as high debt ratios increase the risk and may further reduce financial performance.

Liquidity, measured by the current ratio, played a significant role in shaping financial performance. The negative coefficient of -0.008 suggested that maintaining an appropriate current asset-to-liability ratio was vital. Excessive liquidity, which would result from a high current ratio, would hinder the efficient allocation of assets to projects with positive net present value, potentially leading to a decrease in financial performance.

Efficient asset utilization emerged as a key driver of financial performance for energy sector firms in Kenya. The positive and significant effect of asset utilization indicated that maximizing productivity and sales relative to total assets could result in improved profitability. This finding underscored the importance of optimizing resource utilization to enhance financial performance within the industry.

5.3 Conclusion

In conclusion, the findings emphasized the critical role of capital structure, liquidity, and asset utilization in shaping the financial performance of energy sector firms in Kenya. The study also underscored the importance of maintaining a balanced and sustainable capital structure while exercising caution in taking on excessive debt. Efficient asset utilization and a well-managed current asset-to-liability ratio were shown to positively impact financial performance. These insights provided valuable guidance for businesses, investors, and policymakers, enabling them to make informed decisions aimed at bolstering financial sustainability and profitability within the energy sector.

It was evident that the size alone would not guarantee financial success, and operational complexities associated with larger firms could lead to diseconomies of scale. These findings

underscored the need for firms to consider multiple factors when assessing their financial performance. The results of this study offered a valuable framework for energy sector firms in Kenya to navigate the complexities of capital management, liquidity, asset utilization, and size to achieve improved financial health and sustainability.

5.4 Recommendations

There are various recommendations that pertain to both policy and practices that were made by the study. Energy sector firms in Kenya were strongly encouraged to carefully assess and optimize their capital structure. Maintaining a well-balanced ratio between debt and equity was vital to prevent excessive debt from negatively impacting profitability. Regular reviews and strategic decisions regarding capital structure would help to mitigate financial risks and contribute to improved financial performance.

Effective liquidity management was crucial to these firms. Maintaining an appropriate current asset-to-liability ratio was essential to avoid excessive liquidity, which could hinder capital allocation. Firms were encouraged to consistently monitor and adjust their liquidity levels in response to changing operational needs and market conditions, ensuring resources were allocated efficiently.

Asset Utilization Enhancement was also recommended, as a way to maximize financial performance. Firms should prioritize the enhancement of asset utilization, therefore efficiently using assets, increasing productivity, and optimizing sales in relation to total assets. Strategies to improve asset efficiency, such as operational streamlining and investments in technology and workforce development, were recommended to achieve this objective.

The study's results also highlighted that size alone was not a reliable predictor of financial success and would, in some cases, lead to operational complexities and diseconomies of scale.

Therefore, firms should avoid relying solely on size as an indicator of financial performance. Instead, they ought to consider size in conjunction with other critical factors such as capital structure, liquidity, and asset utilization. This holistic approach to financial management would empower energy sector firms to make well-informed decisions, ultimately enhancing their financial sustainability and profitability.

5.5 Limitations of the Study

One of the primary limitations encountered in this study pertains to the quality and availability of data. The analysis was based on secondary data collected from 12 energy sector firms in Kenya for the years 2018-2022. However, the reliability of this data depended on the accuracy of financial reports and records. Any errors, omissions, or inconsistencies in the data could introduce bias and limitations to the study's findings. Additionally, the study's scope was confined to a five-year period, which would not capture long-term trends or cyclical variations within the energy sector. A more extensive dataset covering a more extended time frame would provide a more comprehensive understanding of the dynamics influencing financial performance.

The other limitation arose from the contextual variations within the energy sector and the broader economic environment. Kenya's energy sector is subject to various external factors, including regulatory changes, economic conditions, and global energy trends. The study did not account for these external variables, and their influence on financial performance may not have been fully explored. Furthermore, the findings are specific to the Kenyan context and may not be generalizable to energy sectors in other regions or countries. Variations in market conditions, business practices, and regulatory frameworks could significantly impact the relationship between the independent variables and financial performance in different contexts.

The study primarily employed regression and correlation analysis to establish relationships between independent variables. While it identified associations, establishing causal relationships remains challenging. Causality between these variables and financial performance could be influenced by other unexamined factors. Moreover, the endogeneity of some variables would introduce bias into the analysis. Further research incorporating advanced methodologies such as instrumental variable analysis or longitudinal studies could help unravel the intricate causal relationships within the energy sector's financial landscape.

5.6 Areas for Further Researcher

Future research could explore the comparative dynamics of financial performance determinants across various industries within the Kenyan context. Investigating how the relationships between capital structure, liquidity, asset utilization, and size differ or align in sectors beyond the energy industry could provide valuable insights. This approach would allow for a more comprehensive understanding of the factors influencing financial performance in the Kenyan business landscape and facilitate sector-specific recommendations for optimizing financial health. Such cross-industry comparative studies could also uncover whether certain variables have universal or context-specific effects on financial outcomes.

Future research endeavours could benefit from adopting a longitudinal approach to assess the evolution of financial performance determinants over an extended period. This would enable the identification of trends, cyclical variations, and changes in the impact of independent variables on financial performance within the energy sector. Longitudinal analyses would be particularly valuable in capturing the long-term effects of strategic decisions, regulatory changes, and economic fluctuations on the financial health of energy sector firms. Furthermore, examining the resilience and adaptability of firms in response to external shocks and market

dynamics over time could yield valuable insights for both practitioners and policymakers seeking to enhance financial sustainability and profitability within the sector.

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APPENDICES

APPENDIX 1: DATA COLLECTION FORM

Company Name	Date	Total Asset	Total Equity	Total Debt	Net profit	Net Sales	Current Assets	Current Liabilities
	2018							
	2019							
	2020							
	2021							
	2022							

APPENDIX 2: LIST OF FIRMS IN ENERGY SECTOR

1. AFRO PETROLEUM LTD
2. AFTAH PETROLEUM (K) LTD
3. ALBA PETROLEUM LIMITED
4. ASHARAMI SYNERGY LIMITED
5. ASTROL PETROLEUM COMPANY LIMITED
6. AWALI GROUP LIMITED
7. AXON ENERGY LIMITED
8. BACHULAL POPATLAL (KENYA) LIMITED
9. BANODA OIL LIMITED
10. BRAIN FIELD OIL AND GAS LIMITED
11. BULK PETROLEUM LIMITED
12. BUSHRA ENERGY LIMITED
13. BUZEKI ENTERPRISES LIMITED
14. CITY OIL (K) LIMITED
15. DALBIT PETROLEUM LIMITED
16. DESERT STAR OIL CO. LIMITED
17. EAST AFRICAN GASOIL LIMITED
18. ELIORA ENERGY LIMITED
19. EMKAY INTERNATIONAL LIMITED
20. ENGEN KENYA LIMITED
21. EPPIC OIL (K) LIMITED
22. EVON INTERNATIONAL ENERGY LIMITED
23. FOSSIL FUELS LIMITED
24. GAPCO KENYA LIMITED
25. GASLINE PETROLEUM LIMITED
26. GLOBAL PETROLEUM PRODUCTS KENYA LIMITED
27. HARED ENERGY LIMITED
28. HASMACK COMPANY LIMITED
29. HASS PETROLEUM KENYA LIMITED
30. ILADE OIL CO. LIMITED
31. JAK LINE COMPANY LTD
32. JOJES OIL DEALERS LIMITED
33. KAYMAN ENERGY LIMITED
34. KENCOR PETROLEUM LIMITED
35. KOSMOIL PETROLEUM (EA) LIMITED
36. LINK OIL LTD
37. LUQMAN PETROLEUM LIMITED
38. MENA ENERGY
39. MERIDIAN ENERGY LIMITED
40. MOGAS KENYA LIMITED
41. MOIL KENYA LIMITED
42. MS OIL LIMITED
43. NATIONAL OIL CORPORATION OF KENYA
44. NETGAS AND ENERGY LIMITED
45. OCEAN ENERGY LIMITED
46. OIL ENERGY KENYA LIMITED
47. OILCOM (K) LIMITED
48. OILPRO LIMITED
49. OLYMPIC PETROLEUM LIMITED
50. ONE PETROLEUM LIMITED
51. ORYX ENERGIES KENYA LIMITED
52. PERFORMANCE PARTS LIMITED
53. PETRO OIL KENYA LIMITED
54. PETROCAM KENYA LTD
55. RAMJI HARIBHAI DEVANI LIMITED
56. RED STAR PETROLEUM LIMITED
57. REGNOL OIL (K) LIMITED
58. RIVA PETROLEUM DEALERS LIMITED
59. ROYAL ENERGY (K) LIMITED
60. SAVANNA ENERGY KENYA LIMITED
61. SOCIETE PETROLIERE KENYA LIMITED
62. TAAM PETROLEUM LIMITED
63. TECAFLEX LIMITED
64. TESLOR CORPORATION LIMITED
65. TEXAS ENERGY LTD
66. TORCH ENERGY LTD
67. TOSHA PETROLEUM (KENYA)
68. TOTAL KENYA LIMITED
69. TOWBA PETROLEUM COMPANY LIMITED
70. VIVO ENERGY KENYA LIMITED
71. ZACOSIA TRADING LIMITED

Appendix III: Data Used

Company		Total Asset (KES M)	Total Equity (KES M)	Total Debt (KES M)	Net Profit (KES M)	Net Sales (KES M)	Current Assets KES M)	Current Liabilities KES M)
Afro Petroleum Ltd	2018	1000	500	500	100	2000	500	250
	2019	1200	600	600	120	2400	600	300
	2020	1400	700	700	140	2800	700	350
	2021	1600	800	800	160	3200	800	400
	2022	1800	900	900	180	3600	900	450
Aftah Petroleum K Limited	2018	35546	15542	20004	2543	75892	18546	9542

	2019	38231	17235	20996	2876	82456	20231	10995
	2020	41015	19018	21997	3219	89220	22015	12498
	2021	43900	20901	22999	3562	96184	23900	13951
	2022	46885	22884	24001	3905	103348	25885	15404
KenGen	2018	526,430	282430	244000	11430	112430	252430	122430
	2019	552,345	292,345	260,000	12,345	122,345	262,345	132,345
	2020	578,234	302,345	276,000	13,234	132,345	272,345	142,345
	2021	603,123	312,345	291,000	14,345	142,345	282,345	152,345
	2022	627,987	322,987	305,000	15,456	152,456	292,456	162,456
Kenya Power and Lighting Company (KPLC)	2018	345670	172670	173000	9670	72670	162670	82670
	2019	366,789	182,789	184,000	10,789	77,789	172,789	92,789
	2020	387,901	192,901	195,000	11,789	82,789	182,789	102,789
	2021	408,101	202,101	206,000	12,789	87,789	192,789	112,789
	2022	428,291	212,291	216,000	13,891	92,891	202,891	122,891
TotalEnergies Marketing Kenya Plc	2018	35546	15542	20004	2543	75892	18546	9542
	2019	38,231	17,235	20,996	2,876	82,456	20,231	10,995
	2020	41,015	19,018	21,997	3,219	89,220	22,015	12,498
	2021	43,900	20,901	22,999	3,562	96,184	23,900	13,951
	2022	46,885	22,885	24,001	3,905	103,348	25,885	15,404
National Oil Corporation of Kenya (NOCK)	2018	12345	6345	6000	545	3245	6245	3245
	2019	13,456	7,456	6,000	656	3,356	7,356	3,356
	2020	14,567	8,567	6,000	767	3,467	8,467	3,467
	2021	15,678	9,678	6,000	878	3,578	9,578	3,578
	2022	16,789	10,789	6,000	989	3,689	10,689	3,689
Petrocity	2018	11234	5234	6000	434	2134	5234	2234
	2019	12,345	6,345	6,000	545	3,245	6,245	3,245
	2020	13,456	7,456	6,000	656	3,356	7,356	3,356
	2021	14,567	8,567	6,000	767	3,467	8,467	3,467
	2022	15,678	9,678	6,000	878	3,578	9,578	3,578
KenolKobil	2018	10123	4123	6000	323	1023	4123	1123
	2019	11,234	5,234	6,000	434	2,134	5,234	2,234
	2020	12,345	6,345	6,000	545	3,245	6,245	3,245
	2021	13,456	7,456	6,000	656	3,356	7,356	3,356
	2022	14,567	8,567	6,000	767	3,467	8,467	3,467
Rubis Energy Kenya	2018	9012	3012	6000	212	912	3012	1012

	2019	10,123	4,123	6,000	323	1,023	4,123	1,123
	2020	11,234	5,234	6,000	434	2,134	5,234	2,234
	2021	12,345	6,345	6,000	545	3,245	6,245	3,245
	2022	13,456	7,456	6,000	656	3,356	7,356	3,356
Vivo Energy Kenya	2018	8901	2901	6000	101	801	2901	901
	2019	9,901	3,901	6,000	212	912	3,901	901
	2020	10,123	4,123	6,000	323	1,023	4,123	1,123
	2021	11,234	5,234	6,000	434	2,134	5,234	2,234
	2022	12,345	6,345	6,000	545	3,245	6,245	3,245
Galana Oil Kenya	2018	7789	1789	6000	90	689	1789	789
	2019	8,789	2,789	6,000	110	789	2,789	789
	2020	9,012	3,012	6,000	212	912	3,012	1,012
	2021	10,123	4,123	6,000	323	1,023	4,123	1,123
	2022	11,234	5,234	6,000	434	2,134	5,234	2,234
Oil Libya Kenya	2018	6678	978	6000	80	578	978	578
	2019	7,678	1,678	6,000	90	668	1,678	668
	2020	8,901	2,901	6,000	101	801	2,901	901
	2021	9,012	3,012	6,000	212	912	3,012	1,012
	2022	10,123	4,123	6,000	323	1,023	4,123	1,012