

**EFFECT OF FINANCIAL RISK ON PERFORMANCE OF LISTED
ENERGY AND PETROLEUM FIRMS AT THE NAIROBI SECURITIES
EXCHANGE**

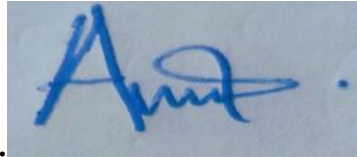
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**A RESEARCH PROJECT REPORT PRESENTED IN PARTIAL
FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF
MASTERS OF BUSINESS ADMINISTRATION, FACULTY OF
BUSINESS AND MANAGEMENT SCIENCES, UNIVERSITY OF
NAIROBI**

2023

DECLARATION

I declare that the research project report is my personal work and it has not been submitted to any institution of higher learning or University for awarding.



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The research project report has been submitted for examination with my approval as the University Supervisor.



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DEDICATION

I dedicate this project to members of the family for supporting me tirelessly all through the study period. It is through their patience which made this research project a realisation. I have absolutely nothing to pay you but ask the almighty God to bless you abundantly.

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ABBREVIATIONS

CBK	Central Bank of Kenya
CMA	Capital Markets Authority
EBIT	Earnings before Interest and Tax
EPRA	Energy and Petroleum Regulatory Authority
GDC	Geothermal Development Company
ICR	Interest Coverage Ratio
KenGen	Kenya Electricity Generating Company
KETRACO	Kenya Electricity Transmission Company
KNEB	Kenya Nuclear Electricity Board
KPC	Kenya Pipeline Company
KPLC	Kenya Power and Lighting Company Plc
MoEP	Ministry of Energy and Petroleum
MPT	Modern Portfolio Theory
NSE	Nairobi Securities Exchange
ROA	Return on Assets
ROE	Return on Equity
SPSS	Statistical Package for Social Sciences

ABSTRACT

The objective of this study was to examine the effect of financial risk on performance of listed energy and petroleum firms at the Nairobi Securities Exchange. Target population comprised four companies at the NSE. Descriptive research design was adopted and census survey was conducted using data from the year 2013 to 2022 since the size of the target population was small. Published annual reports of the subject firms provided data. Analysis facilitated using statistical package for social scientists. Regression analysis found $R = 0.556$ inferring positive relationship of financial risk and performance. Adjusted R-squared of 0.230 implied 23% variation in performance was instigated by variations in credit risk, market risk, liquidity risk and size of a firm. Regression coefficients revealed liquidity risk has a significant effect on performance of energy and petroleum companies ($p = 0.000 < 0.05$). Similarly, credit risk was found to have a significant effect on performance of listed energy and petroleum companies ($p = 0.037 < 0.05$). Also results showed size of a firm has substantial positive effect on performance of energy and petroleum companies ($p = 0.023 < 0.05$). However, market risk have an insignificant effect on performance of energy and petroleum companies ($p=0.121>0.05$).It was recommended that energy and petroleum companies should increase exposure to credit risk and liquidity risk while increasing firm size. However they should reduce their exposure to market risk. This would result in improving financial performance. Financial risk managers should attempt to identify optimal exposures to these types of financial risk in order to optimize financial performance. Investors in this sector at the NSE ought to consider the firms' liquidity risk, credit risk and market risk exposure in selecting investment stock among the energy and petroleum companies. Further researchers may extend this research to different sector.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

James and Kepha (2020) described financial risk as the inability of the firm to meet expected as well as projected demand of monies by the generated cashflows. Meaning therefore this risk arises as a result of firms lacking enough resources to use to cover for their obligations when they fall due. Among the several challenges faced by many firms, financial risk is one of them and more especially those listed since they depend on the market circumstances for their value. Some of the risks that are common to many firms include market, operational, credit and liquidity risks (Kassi, Rathnayake, Louembe, and Ding, 2019). According to Ogilo (2012) credit risk relates to the examination of debtors on how financially sound they are; interest rate risk arises due to variations of interest rates; liquidity risk arises due to a company's failure to proficiently cater for short term liabilities due to inability to convert liquid assets; foreign exchange risk on the other hand arises if a company engages in transnational operations where cash flows are being affected by foreign exchange. Financial performance studies the companies' financial soundness as a result of effectiveness in resource utilization thus maximizing profits and sustaining shareholders' wealth generation (Naz and Naqvi, 2016). Therefore financial risk and performance has an association between them.

Two fundamental theories were adopted to explain variables. They included: Modern portfolio theory and Liquidity preference theory. Firstly, Modern Portfolio Theory, pioneered by Harry Markowitz, explores into the fundamental principles of risk and return within the domain of finance and investment. This theory emphasizes the significance of diversification in a portfolio to optimize risk-adjusted returns. When

applied to the context of this study, researchers can analyze how firms manage their financial risks across different assets and investments, striving to strike an ideal balance between risk and return. Secondly, we have Liquidity preference theory pioneered by Keynes in 1936 and posit, as soon as companies offer securities that have long-term maturities', stockholders will claim high rates of interest. Essentially, this action time and again has a tendency to be risky since with other factors held constant, investors will prefer liquid assets or cash (Lavoie and Reissl, 2019). According to liquidity preference theory, short-term securities have low interest rates since investors buy long or medium-term securities in so doing foregoing less liquid assets.

According to Chebii, Kipchumba & Wasike (2021), firms that have shares trading at the securities exchange market are much interested on how they financially perform as there is need to follow laid down guidelines and specific corporate governance code of conduct since they are listed. Nairobi Securities Exchange is the corporate body which is allowed by law in Kenya to develop, operationalise and regulate market efficiency and has seen many firms experiencing deterioration in the way they perform financially leading to several of the firms being put under receivership or delisted. When the performance of companies decline, then the shares of those companies might trade at par or below par values since their prices will experience a sharp decrease (NSE, 2022).

1.1.1 Financial Risk

Occurs when there exists fluctuation and variation on returns that is unpredictable and there are several forms of financial risks (Kioko et al., 2019).The administration of risk is a crucial procedure that involves recognizing, evaluating and mitigating various types of financial risks that a company may encounter. These risks have the

possibility to negatively impact stability of the firm financially, profitability and the overall performance of the firm. Major risks in finance are; operational, credit, liquidity and market risks (Onyango, 2022).

Credit risk arises from failure of customers or counterparties in fulfilling their commercial commitments. When a firm extends credit to its customers or engages in credit arrangements, there is always the possibility that some of them may default on their payments, leading to potential losses for the company (Sainis, Kriemadis and Kapnisi,2022). Liquidity risk occurs when there is insufficient cash or current assets to off-set current commercial commitments as they fall due (Chen & Wang, 2023). This risk arises when there is a discrepancy between cash inflows and outflows of a company. Market risk encompasses potential losses a firm may face due to fluctuations in the market prices of financial resources like shares, commodities, and currencies and debt instruments such as bonds. Market risk includes risks such as foreign exchange, commodity price and interest rate risks, (Majani, 2022). The research focused on credit, liquidity and market risks.

1.1.2 Performance

It is quantitative assessment of business's commercial results as well as efficiency in achieving its financial goals. It involves analyzing various indicators to evaluate the firm's profitability, liquidity, solvency, and market performance. This comprehensive analysis helps in highlighting the financial soundness of a company and its capability to make returns for investors and shareholders.

Financial performance can be measured using ratios like return on assets or return on equity. Both ROA and ROE measure how effectively the firm utilizes its assets and shareholder equity to generate profit and create value. ROA is derived by sharing net

income with the total assets (Oyerogba & Gbolagade, 2023).ROE on the other hand was calculated by sharing net income with total shareholders' equity. Overall, analysing these performance indicators are essential for stakeholders to make informed decisions, formulate strategic plans, and manage risks effectively. It enables them to gauge the firm's financial strength, efficiency, and prospective for future development, crucial for its long-term success and sustainability in the competitive business landscape. Return on Assets was adapted to measure performance.

1.1.3 Financial Risk and Performance

Le, Shan, & Taylor (2020) suggested ROA, ROE, size of the firm, leverage and liquidity as main proxies to performance among others. Financial performance in Energy and Petroleum sector is significantly influenced by decisions made by a firm on its current assets and liabilities since this is founded on liabilities and assets that are current in nature.

Several works have been done to explain how financial risk relates to performance. In 2018 Matayo and Muturi explored how performance of Supermarkets in Nairobi city was affected by interest and operational risks. Also Muriithi (2016) explored how financial performance of commercial banks in Kenya was affected by financial risk. Onsongo, Muathe & Mwangi (2020) explored how performance of commercial and services firms listed at NSE was affected by financial risks. Odhiambo (2019) studied on how financial risk affected performance of commercial banks in Kenya. In 2018, Mwanja, Evusa, and Ndirangu studied how performance of firms at NSE was affected by risks. These are some of the researches that explain how the two variables relate. It was established that financial risk and ROA have a relationship. Hypothetically, increase in credit risk, liquidity risk and market risk lead to reduction on performance.

1.1.4 Listed Energy and Petroleum Firms

Energy and Petroleum ministry is mandated by law to manage the energy sector in Kenya through generation of guidelines that are deliberate to create a facilitative and conducive environment for sector players to operate without any bottlenecks thus effective operation and leading to development of the sector. The ministry comes up with the strategic direction through policies which facilitate development of the sector and provide a long term vision the sector players (EPRA, 2023).

In Kenya NSE is the licensed securities exchange. Firms that are listed can make use of the market to solicit funds from the general public to enable them to grow their operations and be able to operate on a large scale. NSE has facilitated the denationalisation of companies which has attracted foreign direct investments through foreign investors (Gakeri, 2012). Nairobi Securities Exchange bourse consists of firms that are placed in different sector categories. These sectors include: Banking, Construction, Agricultural, Manufacturing, Automobiles, Exchange Traded Funds, Insurance, Investment Services, Real Estate Investment Trust, Telecommunications and Energy and Petroleum (NSE, 2023).

Listed firms at NSE under the energy sector are four which include Kenya Power, Total, Umeme and KenGen (NSE, 2023). In Kenya the primary source of energy used for commercial purposes is petroleum fuel and the country is a net importer of the same. To achieve growth in profitability, companies in the energy and petroleum sector needs to identify variables that can influence their profits margin among them being decisions made on working capital management. When firms cannot meet their obligations when they mature then they will be faced with disruptions on their distribution and marketing processes arising from actions by supplier blacklisting and

labour strikes. Another critical challenge facing the petroleum and energy industry is the operations costs which are high occasioned by regulation, poor infrastructure, burden of government policies especially on taxation and volatility in exchange rates (Waithaka, Humphrey and Mbaka, 2021).

1.2 Research Problem

Prominent energy and petroleum firms, namely Total, Umeme, Kenya Power, and KenGen, wield significant influence in shaping Kenya's socio-economic landscape by propelling essential sectors and fuelling economic growth. The sector is a critical component of the global economy, and firms operating within this sector are exposed to significant market volatility. This volatility, driven by factors such as geopolitical events, regulatory changes, and shifts in global supply and demand, can lead to substantial fluctuations in commodity prices (Kiilu, 2018). These fluctuations pose significant financial risks to Energy and Petroleum firms, impacting their revenue streams, profit margins, and overall financial stability. Though it's practically impossible to be able to fully eliminate financial risks, it is ordinarily possible to lessen the magnitude of a loss by varying the variables that lead to loss. Most importantly Energy and Petroleum firms must be able to successfully manage the many diverse financial risks they face. This is because Energy and Petroleum firms occupy a pivotal position within the socio-economic fabric of the society, providing indispensable resource power that fuels domestic, commercial and public services (Too and Kwasira, 2018).

Studies conducted globally have empirically exposed that financial risk is fundamental for the Energy and Petroleum firms in addition to financial performance (Eneyew, 2020). Arif and Showket (2019) posit that lack of enough of liquid assets affect operations of firms and therefore affecting the profitability of the firms.

Locally, Njeri (2020) opined that financial risks are important aspects that drive firms to work harder thus driving firms towards greater performance. In 2019 Kioko et al., explored effects of risks on performance of commercial banks in Kenya where operational risk had an inverse relationship with financial performance. Maniagi (2018) posted varied outcomes when credit risk was found to be adversely associated to financial performance. Randomly, market and interest risks are negatively correlated to performance. Notwithstanding there being several researches conducted in Kenya, the outcomes have not been constant due to the use of different proxies of financial risks and varied financial performance measures/indicators (Matayo & Muturi, 2018; Wanjohi & Ndambiri, 2017; Muinde, 2018 and Gacheru, 2021).

Contextual gaps have been observed from the reviewed studies. Like the studies done by Arif and Showket (2019) and Eneyew (2020) they were done in India and Ethiopia respectively and not in the Kenyan context. Those that were done in Kenya focused on other sectors like banking sector, non-financial sector and insurance sector making it difficult to make generalization and therefore the need to conduct a research that focusses on energy and petroleum firms listed at NSE. Further, most studies showed rather contradictory conclusions, some suggesting that financial risks have positive relationship with financial performance whereas others suggest there is a negative relationship. Therefore these conflicting findings make it necessary for more studies to be conducted to give more clarity on this area of study. In addition, some of these researches were done in countries that are developed thereby the outcomes can't be applied to contextualize and generalize their validity on local scenario which is a developing country. Founded on above study gaps, this study sought respond to the question; what is the effect of financial risk on performance of energy and petroleum firms at NSE?

1.3 Study Objective

The general objective of this study was to examine effect of financial risk on performance of energy and petroleum companies in Kenya. Specific objectives were:

- (i) To establish the effect of credit risk on performance of energy and petroleum firms listed at Nairobi Securities Exchange.
- (ii) To establish the effect of market risk on performance of energy and petroleum firms listed at Nairobi Securities Exchange.
- (iii) To establish the effect of liquidity risk on performance of energy and petroleum firms listed at Nairobi Securities Exchange.

1.4 Importance of the Study

It helps policy makers formulate policies that are appropriate in the governance of the operations in the Energy and Petroleum sector. It will assist managers in the Energy sector in formulating best strategies of risk management thus able to improve on the firms' performance. Shareholders will understand how financial risks affect performance of energy and petroleum companies.

Findings will act as an eye opener as it will provide more knowledge to the stakeholders how financial risks affect performance of energy and petroleum companies and thus helping all the stakeholders in the industry in understanding the significance of risk management strategies and how they affect performance. Therefore, findings provide knowledge to government and stakeholders in the industry when making decisions on how to formulate best practices on risk management to enhance performance of energy companies.

Finally, the study findings add to already existing literature on how performance of energy firms were affected by financial risk and act as a reference document for future

professionals to do research in the same area. It will offer knowledge to future researchers thus help them identify research gaps.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This section discussed key concepts explaining study variables, empirical studies, summary of literature review, research gaps and conceptual framework that is important to the subject of research.

2.2 Theoretical Review

Theories anchoring this research include Modern Portfolio Theory (MPT) and Liquidity Preference Theory as discussed below:

2.2.1 The Modern Portfolio Theory

In 1950s, Modern portfolio theory emerged as ground-breaking concept in investment management, championed by notable figures like Markowitz, Sharpe, and Merton Miller (Qu, 2019). MPT aimed to address the shortcomings of traditional investment practices by introducing a systematic method for creating diversified portfolios. During that time the prevailing approach to investment centred on selecting individual securities based on their perceived merits, often disregarding the broader implications of portfolio diversification (Jacob, Ringim and Shuaibu, 2022). MPT emerged in response to this gap, stressing the importance of considering the interactions between different assets within a portfolio and their potential impact on overall risk and return.

At its core, MPT revolves around several key principles that form its foundation. One central tenet is the relationship of risk and return. MPT recognizes investors as generally risk-averse and thereby they seek to either capitalize on their returns on given risk levels or reduce their risk for given levels of return (Johncally & Toyin, 2023). This concept brought about the "efficient frontier," a collection of best portfolios that guarantee highest expected returns for designated risk levels or

conversely, lowest risk for given anticipated returns. A cornerstone of MPT is the idea of diversification. MPT advocates for constructing portfolios that encompass a diversity of assets with differing risk and return profiles. By doing so, it reduces the overall risk of the portfolio without necessarily sacrificing potential returns (Ngila, 2022). The effectiveness of diversification is rooted in understanding the correlations between assets. Positive correlations indicate assets that tend to move together, while negative correlations signify assets that move in opposite directions. By combining assets with low correlations, investors can create portfolios that are less susceptible to extreme market fluctuations. An important facet of MPT is the consideration of market risk, often referred to as systematic risk. This concept is extended through CAPM (Capital Asset Pricing Model), which posits that the expected return of an asset is influenced by its sensitivity to overall market movements (Rezaei et al., 2021). Drawing from MPT, these firms can manage liquidity risk by diversifying their asset holdings, incorporating both liquid and less liquid assets. By assessing correlations between asset liquidity, these companies can make informed choices about maintaining adequate cash reserves and short-term investments.

In summary, Modern Portfolio Theory (MPT) revolutionized investment management by introducing a systematic approach to portfolio diversification. Its fundamental principles of risk and return, diversification, and systematic risk have paved the way for more informed decision-making in risk management. By integrating MPT concepts into their strategies, listed energy and petroleum firms can navigate market uncertainties and optimize their financial performance.

2.2.2 The Liquidity Preference Theory

Liquidity preference theory was pioneered by Keynes in 1936 and posits that, when companies offer securities that have long-term maturities', stockholders will claim high rates of interest. Essentially, this action time and again has a tendency to be risky since with other factors held constant, investors will prefer liquid assets or cash (Lavoie and Reissl, 2019). According to liquidity preference theory, short-term securities have low interest rates since investors buy long or medium-term securities in so doing foregoing less liquid assets.

This theory is relevant because it attempts elucidate motivation of holding assets by investors. Investors prefer highly liquid assets and dodge investment firms with high liquidity risk. They do so by stashing up cash in highly liquid investment firms thus exposing highly liquidity risky firms to financial risks thus poor financial performance. This theory also give companies chance lessen risk and overcome discrepancies of interest income after accounting for interest expense for short term period and overall value of companies.

2.3 Determinants of Financial Performance

Credit, liquidity as well as market risks remain crucial dynamics influencing a company's financial performance. Credit risk involves potential losses from borrower defaults, impacting profitability and reputation. Liquidity risk arises from insufficient funds to meet short-term obligations, affecting operations, borrowing costs, and investments. Market risk stems from market fluctuations, affecting asset valuation, investment returns, and hedging costs. Managing these risks is vital for stable financial outcomes, enabling companies to navigate challenges, sustain profitability,

and create lasting value for stakeholders. This study will focus on liquidity, credit and market risks.

2.3.1 Credit Risk

It significantly influences financial performance of companies across diverse industries, including listed energy and petroleum firms, where its effects are notably pronounced in areas such as revenue dynamics, operational stability, and capital allocation strategies. When a firm extends credit to its customers or engages in credit arrangements, there is always the possibility that some of them may default on their payments, leading to potential losses for the company. To manage credit risk, companies employ various strategies, such as assessing the creditworthiness of customers before extending credit, diversifying credit exposure across multiple parties, and requiring collateral or guarantees for high-risk transactions (Sainis et al;2022).

2.3.2 Liquidity Risk

This risk profoundly affects financial performance of companies across a spectrum of industries, including listed energy and petroleum firms. This risk factor assumes significant ramifications in terms of cash flow volatility, operational continuity, and overall financial stability. Within a broader context, liquidity risk plays a multifaceted role in shaping financial performance. It becomes notably evident in the realm of cash flow dynamics, where fluctuations in liquidity can lead to instability on the firm's ability to offset current obligations (Ndum, 2021). Fluctuations can arise due to various factors, such as changes in market conditions, unexpected financial shocks, or mismatches between cash inflows and outflows (Keben & Maina, 2018).

The ability to maintain a consistent and adequate level of liquidity becomes imperative to ensure smooth operations and uphold financial commitments. The influence of liquidity risk goes beyond mere numerical metrics, extending into the sphere of operational continuity. For companies, including those in the energy and petroleum sector, which often operate within intricate supply chains and rely on extensive partnerships, liquidity risk can trigger disruptions (Yahaya, Mahat, Yahya and Matemilola, 2022). Inadequate liquidity can hinder a firm's capacity to promptly settle obligations to suppliers, service providers, and other stakeholders, potentially causing delays in production or other operational inefficiencies. This risk arises from a mismatch between a company's cash inflows and outflows. To mitigate liquidity risk, companies focus on effective cash flow management, contingency planning, and maintaining adequate reserves of liquid assets (Yuniarti & Soewarno, 2022). They also secure access to credit lines or standby facilities to provide a buffer during periods of liquidity stress.

2.3.3 Market Risk

This risk considerably impacts financial performance of companies spanning various sectors, including listed energy and petroleum firms. This risk factor bears notable consequences in terms of revenue fluctuations, investment choices, and strategic robustness (Halbous, 2021).

Furthermore, market risk holds a position of critical importance in managing risk. Particularly evident in energy and petroleum firms, which are subject to the volatility of global commodity markets (Purnama, Made and Wahyu, 2021). The assessment of market risk becomes indispensable in devising effective risk management strategies, which often involve the use of hedging instruments and derivative products aimed at mitigating potential adverse consequences stemming from market fluctuations.

Shifting focus to the context of listed energy and petroleum firms, market risk assumes distinct characteristics. Revenue volatility becomes a particularly noteworthy concern due to the intrinsic vulnerability of these industries to global energy prices. Such firms are intricately tied to the dynamics of supply and demand, which are often influenced by geopolitical events and broader global economic conditions (Korompis, Pure and Untu, 2020). Market risk gains heightened prominence as these firms navigate the undulations of commodity prices, impacting not only revenue generation but also operational costs and, ultimately, profitability.

In conclusion, market risk wields considerable influence over financial performance across diverse sectors, and this impact is especially discernible within the context of listed energy and petroleum firms. Its effects are observable in the realm of revenue dynamics, investment decision-making, and strategic adaptability. The successful navigation of market risk holds paramount significance, enabling firms to address uncertainties, capitalize on opportunities, and chart a course of steady growth within the complex and dynamic market landscape. To manage market risk, companies adopt strategies like diversifying their investment portfolios, using financial derivatives to hedge against adverse market movements, conducting scenario analysis and stress testing, and staying informed about macroeconomic trends.

2.3.4 Firm Size

It is a key aspect of determining firm success due to a conception acknowledged as economies of scale that is established in a modern company. It is construed firms can create goods at a considerable lower cost by big firms (Eyigege, 2018). A firm with many employees is said to be large in size and will tend to have a large market capitalization. Firm size can be measured by total sales, total assets or total capital employed. Firms that have huge total assets are said to have good forecasts in a

reasonably constant period hence able to create profits compared to those that have lesser total assets. Large firms have a greater competitiveness compared to small firms; this is so because large firms have a huge market so they have a great prospect to achieve huge profits.

2.4 Empirical Studies

Odubuasi, Uduak and Ifurueze (2020) conducted research about effect of market risks on financial performance of twelve (12) Oil and Gas firms on Nigerian Stock Exchange. It employed causal research design and used secondary data. Data was collected from financial statements and Central Bank of Nigeria Statistical Bulletin for the period 2014 and 2018. It was then analysed using correlation analysis, multiple regression analysis and descriptive statistics. Results revealed exchange rate has significant effect on ROE and ROA of Oil and Gas firms. However interest rate had insignificant effect on ROA and significant effect on ROE. Furthermore, findings showed commodity price change had no significant effect on both ROA and ROE. Equity price change has no significant effect on ROA and ROE of Oil and Gas firms in Nigeria. It was suggested firms should implement hedging when managing exchange rate changes and for government to maintain a low interest rate hence help companies improve performance.

In Indonesia, Martynova, Fedorona, Antamoshkin and Lobkov (2021) undertook a study on management of credit risks in the operations of an energy company which delved into the specific effect of credit risks on operational undertakings of energy companies. Secondary data was used where published materials, with a particular focus on credit risk management strategies employed by the company. The company strategically utilized guarantees from established banks and incorporated letters of credit as part of its risk management approach. It also delved into assessment of credit

risk associated with forwards and swaps, offering a comprehensive view of credit risk management within the energy company. In conclusion, empirical investigation originating in Indonesia provided valuable insights into the specific strategies an energy company employed to effectively manage credit risks. The study underscored the importance of partnering with creditworthy counterparties and utilizing financial instruments such as guarantees and letters of credit to mitigate credit-related vulnerabilities.

In Russia, Mironova and Ibragimov (2020) conducted an empirical study on liquidity risk management in oil firms amid globalization and the COVID-19 economic impact. The study adopted a retrospective methodology to investigate liquidity risk and solvency within the context of Russian companies operating in the oil sector. The analysis explored the interplay between liquidity risk and solvency, highlighting their complex relationship within the context of oil firms. In conclusion, the study's empirical exploration in Russia provided treasured discernments on financial risk management strategies of oil companies, with a specific focus on liquidity risk and its implications for solvency. The study underscored the pressing need for effective liquidity risk management, especially in the face of global economic dynamics and unforeseen crises such as the COVID-19 pandemic. These findings contribute to a deeper consideration of practices of risk management within the oil sector that offer potential implications for enhancing the resilience and financial stability of oil firms operating in a rapidly changing landscape.

In an empirical literature review on exploring the impact of credit risk on the financial performance of hydro-power projects, Amolo, Rambo & Wafula (2021) embarked on an insightful journey into the realm of credit risk within the Kenyan context of hydro-power projects. The sample encompassed 84 respondents along with 10 Key

Informants, carefully selected from prominent industry players, including the KenGen and the Kenya Power. Employing qualitative data collection methods, such as interviews or surveys, the study diligently gathered perspectives on how credit risk management strategies impact performance trajectory of hydro-power projects. Findings of the study casted a revealing spotlight on the central role of credit risk in shaping the outcomes of hydro-power projects in Kenya. A pivotal revelation was the significant influence of engagement with counterparties possessing robust credit ratings as a fundamental strategy for mitigating credit risk.

In an empirical study conducted by Mwanja (2021) the author explored the intricate relationship of operational, market risks exposures and firm performance of deposit taking Saccos in Kenya. Primary focus in investigation revolved around two significant market risks: the fluctuations in exchange rates and variations in interest rates. Research methodology involved a comprehensive analysis of financial reports from 176 DT-Saccos spanning a decade, covering the years 2010 to 2019. Analysis demonstrated significant association between exposure to currency exchange rate volatility and firm performance of these organizations. Moreover, negative coefficient associated with foreign currency exchange rate fluctuations indicated that heightened exposure to these fluctuations is related with a decline in performance. The insight illuminated challenges and opportunities that arise from fluctuations in foreign currency exchange rates, presenting a crucial aspect for DT-Saccos to consider in their risk management strategies. Conversely, the analysis did not reveal a substantial relationship of variations of interest rates and financial performance of these organizations. Statistical metrics coefficients suggested that fluctuations in interest rates insignificantly influence performance of Deposit Taking Saccos within that context.

An empirical research by Kinyua and Fredrick (2022) delved into intricate association liquidity risk and performance of manufacturing firms. It involved a thorough analysis of data mined from annual audited financials. Through quantitative analysis, findings offered valuable insights into the multifaceted determining factor of firm performance for manufacturing firms operating within NSE. Liquidity risk had a significant effect on performance of manufacturing companies.

2.5 Summary of Literature and Research Gaps

Contextual gaps are denoted by researches that were done in different nations and researches which focussed other companies than firms in Kenya under energy and petroleum sector. Odubuasi, Uduak and Ifurueze (2020) focused on oil and gas firms in Nigeria. Mironova & Ibragimov (2020) focused on oil firms in Russia. From the above reviewed studies the contexts of the studies are that they were done outside Kenya whereas the current study the context was listed energy and petroleum firms in Kenya.

Amolo, Rambo and Wafula (2021) examined how credit risk impact Kenya's hydro-power projects, emphasizing engagement with credible counterparts, "internal deposits" use, and strategic bank guarantees for risk management. Mwanja (2021) investigates market risk and financial performance of Kenyan DT-Saccos. Foreign currency exchange rate fluctuations significantly affected financial performance, while interest rate variations showed a weaker correlation. Kinyua & Fredrick (2022) explored how financial performance of manufacturing firms listed at NSE was affected by liquidity risk. Inflation rate, capital adequacy, asset tangibility and financial leverage are key factors influencing financial outcomes for these firms. These studies focused on different sectors whereas the current study focused the

energy sector. The study by Odubuasi,Uduak and Ifurueze (2020) employed a causal research whereas this study used descriptive research. Therefore, efforts were made to address some of the contextual and methodological gaps.

2.6 Conceptual Framework

It offers an explanation about the connection between variables under study and it is articulated below.

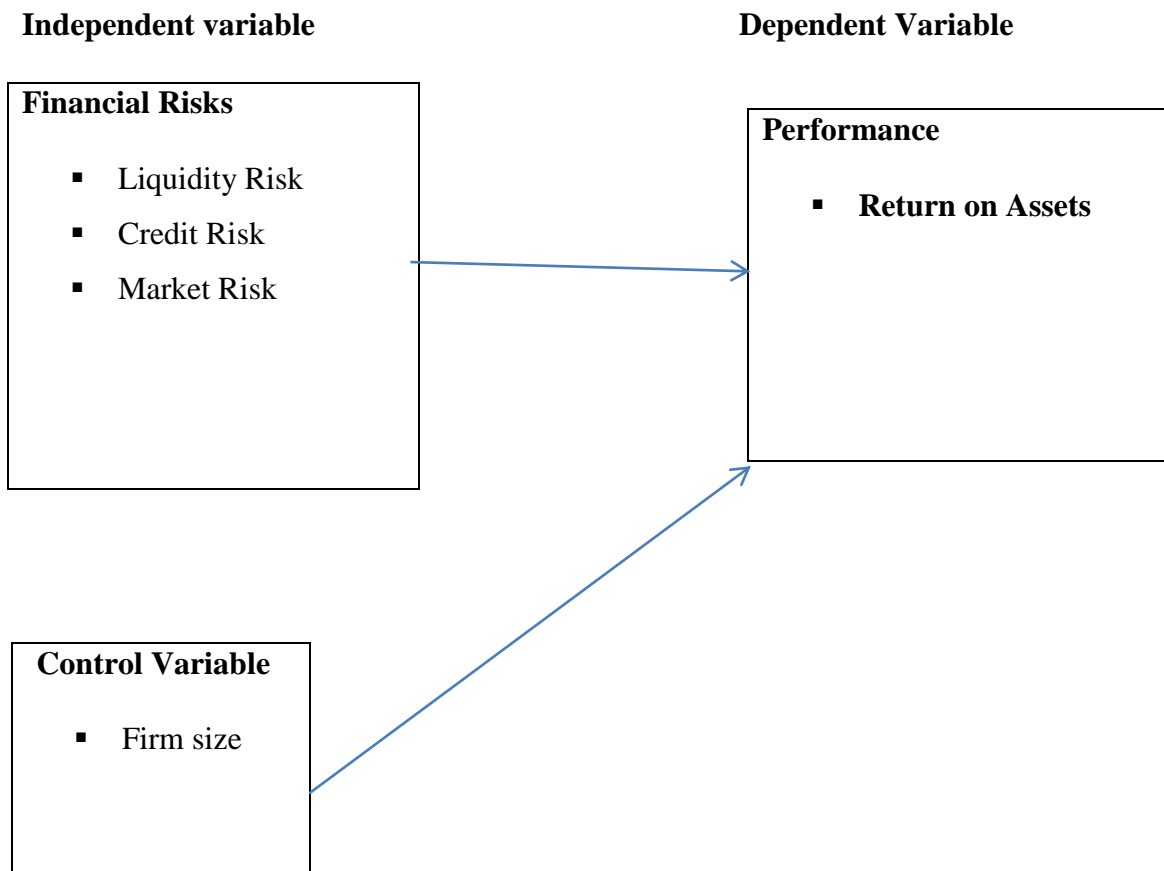


Figure 2.1: Conceptual Framework

Source: Author (2023)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The segment elucidated methodology employed in the study. This section systematically presented chosen strategy which outlines the framework guiding the research process and the approach taken to fulfil the research objectives. Furthermore, the chapter detailed the selection criteria and characteristics of the target population, providing a rationale for its relevance to the research.

3.2 Research Design

It acts as a guideline in conducting research. Descriptive research design was employed to provide a detailed understanding of existing conditions and relationships without altering variables. It involves collecting both qualitative and quantitative data to thoroughly explore and present the phenomena being studied. This study design is well-suited as it allows for a detailed exploration on the relationships between risk factors and performance indicators within the context thus contributing to deeper understanding the research problem.

3.3 Target Population

Target population refer as largest populace from where the sample was selected (Pyrzszak and Tcherni-Buzzeo, 2018). The study's target population consist of all the four (4) listed energy and petroleum firms which include; Total, KenGen, Kenya Power, and Umeme. Given that there is relatively small number of companies involved, it was feasible to use census approach where all the four firms were studied.

3.4 Data Collection

A collection sheet was used to record data. Secondary data was used since it is readily obtainable from firms' financial statement reports and NSE. The time frame the study covered was ten (10) years between 2013 and 2022.

3.5 Data Analysis

Two key methodologies were involved: descriptive statistics and multiple regression analysis. These techniques provide valuable insights into the connection between risk and performance. Descriptive statistics involved summarizing data characteristics. Regression analysis is another crucial tool that was used. It helped uncover relationships between study variables. Linear regression model was structured below:

$$P = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where: -

P = Performance

a=Constant

X_1 = Credit risk

X_2 = Market risk

X_3 = Liquidity risk

X_4 = Firm size

β_1 , β_2 , β_3 & β_4 are coefficients related to Credit, Market, Liquidity Risks and Firm Size respectively.

3.6 Diagnostic Tests

This section presented the various ways of measuring the accuracy of diagnostic tests, which included linearity tests, normality tests, heteroscedasticity tests, multicollinearity tests and finally the autocorrelation tests.

3.6.1 Linearity Tests

To establish the relationship among the variables and whether they were linearly related then linearity test was performed. In linear regression and correlation analysis this is a requirement. For the relationship between independent variables to be considered linearly dependent then deviation of the value of significance from linearity should be above 0.05 while a value less than 0.05 shows there is no direct association among the variables (Arai, 2016).

3.6.2 Normality Tests

With the help of Kolmogorov-Smirnov and Shapiro-Wilk tests, researcher tested normalcy of data to ascertain if it follows normal distribution. If P-value is below 0.05 or equal to 0.05 data, then it was considered normal. The indication of this distribution is that it is normal and can only be rejected at a level of significance which is 5 per cent. Conversely, when P-value is more than 0.05 then it will be a sufficiently distributed variable which does not lead to underestimation of standard errors and any inflation of statistics thus considered fit for statistical analysis (Knapp, 2017).

3.6.3 Heteroscedasticity

Heteroscedasticity was tested using a scatter plot of standardized regression residuals against standardized predicted values. If the variance of residuals appeared to constantly distribute from the horizontal line, it indicates that variance of residuals is constant and the errors were homoscedastic.

3.6.4 Multicollinearity

Multicollinearity, or high correlation between independent variables, was evaluated using Variance Inflation Factors to determine if there is collinearity among the predictor variables having descriptive influence over others. If VIF is more than 10 then it signifies there is multicollinearity (Daoud, 2017). This assessment was carried out at 95% confidence level.

3.6.5 Autocorrelation

Autocorrelation was examined through use of the Durbin-Watson test. When considered Durbin-Watson statistic is significantly different from 2, it indicates existence of first-order autocorrelation. Values close to 2 suggest no significant autocorrelation. The decision was made at a 5% level of significance.

3.7 Operationalization and Measurement of Study Variables

Variables that are independent comprise of the overall risk, comprising liquidity risk, credit risk and market risk. Performance is the dependent variable and was assessed using ROA. Table 3.1 below demonstrates how the study variables were measured and scale of measurement that was used.

Table 3.1: Measurement of Study Variables

Study Variables	Measurement	Scale of Measurements	Sources
Performance	ROA= Net Income / Total Assets	Ratio scale	Fatihudin, Jusni and Mochklas (2018)
Liquidity Risk	Current ratio=Total current assets/Total current liabilities	Ratio scale	Rehman et al. (2015)
Credit Risk	Debt-to-Equity ratio =Total debt/Total shareholders' equity	Ratio scale	Fatma (2020)
Market Risk	Interest Coverage Ratio=EBIT/Interest Expense	Ratio scale	Gacheru (2021)
Firm Size	Total Firm Assets	Ratio scale	Khan, Nouman and Khan (2015)

Source: Researcher (2023)

3.8 Test of significance

A consideration of 5% level of significance was applied to test relevance of regression model by use of t-test, p-values and F-test. R^2 was calculated too.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

The section presented result data analysed. It's organized as follows; diagnostic test to determine whether regression assumptions were violated as presented first, this was followed by descriptive analysis, correlation analysis and finally discussion of findings. Data analysis was accomplished using SPSS version 27.

4.2 Diagnostic Tests

Linear regression methodology was a key technique used in achieving study objective. To validly interpret regression result it is essential that certain assumptions are met. This section presented the result of testing assumptions of regression analysis. The assumptions tested were linearity of functional relationship, normality of residuals, serial correlation, multicollinearity and heteroscedasticity.

4.2.1 Linearity Test

Linearity of dependent and the independent variables is assumed for the model to hold. The linearity assumption was tested by evaluating whether there was significant deviation from linearity using the deviation from linearity measure. If the significance indicator for deviation from linearity > 0.05 , it was determined there was no significant deviation from linearity and the relation was assumed to be linear.

Table 4.1: Linearity Test

			Sum of Squares	df	Mean Square	F	Sig.
Liquidity risk * Financial performance	Between Groups	(Combined)	9.741	34	.287	.636	.806
		Linearity	3.223	1	3.223	7.149	.044
		Deviation from Linearity	6.518	33	.198	.438	.931
	Within Groups		2.254	5	.451		
	Total		11.995	39			
Credit risk * Financial performance	Between Groups	(Combined)	1.066	34	.031	.454	.611
		Linearity	.015	1	.015	6.493	.027
		Deviation from Linearity	1.051	33	.032	1.204	.798
	Within Groups		.050	5	.010		
	Total		1.116	39			
Market risk * Financial performance	Between Groups	(Combined)	9.310	34	.274	.716	.327
		Linearity	2.966	1	2.966	9.530	.001
		Deviation from Linearity	6.344	33	.192	.570	.818
	Within Groups		1.554	5	.311		
	Total		10.863	39			
Firm size * Financial performance	Between Groups	(Combined)	8.371	34	.246	2.358	.171
		Linearity	2.007	1	2.007	7.404	.029
		Deviation from Linearity	5.365	33	.163	.387	.368
	Within Groups		.023	5	.005		
	Total			39			

Source: Research Findings (2023)

It was determined that there was no significant deviation from linearity for association of liquidity risk and performance since p-value $0.931 > 0.05$. Similarly credit risk and financial performance didn't show significant deviation from linearity indicated by p-value $0.798 > 0.05$. Also no substantial deviation from linearity between market risk and performance with p-value $0.818 > 0.05$. Firm size and financial performance indicated no significant deviation from linearity because the p-value for deviation from linearity 0.368 is more than 0.05 . The result of this test indicated that it was

reasonable to assume all independent variables are linearly related to dependent variable.

4.2.2 Autocorrelation Test

To test whether error terms had serial correlation Durbin-Watson test was performed.

It was assumed that the error terms were not serially correlated.

Table 4.2: Autocorrelation Test

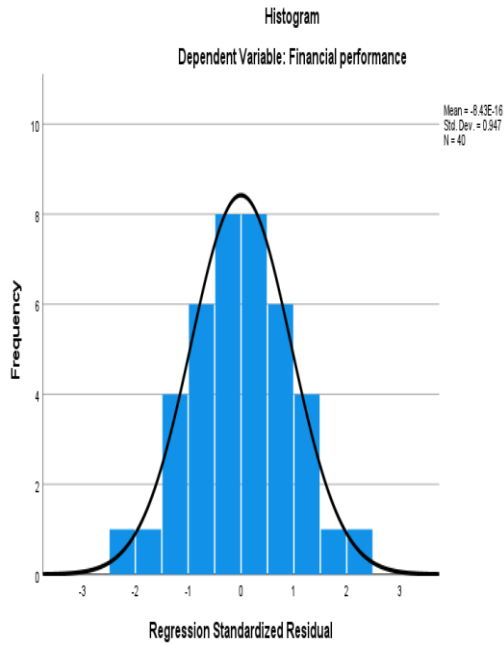
Model	Durbin-Watson
1	1.909 ^a

Source: Research Findings (2023)

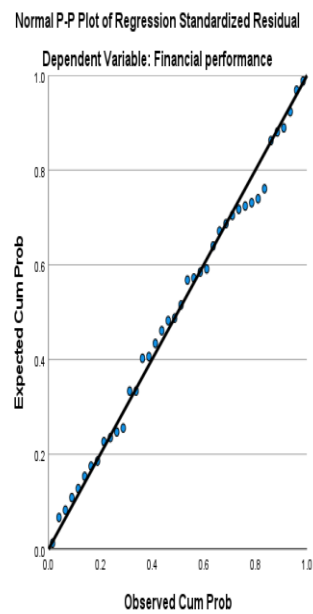
In table 4.2 it was reported that Durbin-Watson statistic was 1.909. Value approximately 2 indicates that error do not have serial correlation. Because the test result is approximately 2.0, it was determined that errors were free of serial correlation.

4.2.3 Normality Test

The histogram of residuals was obtained to test whether residuals were normally distributed. Also normal P-P plot of residuals was established. Kolmogorov-Smirnov and Shapiro-Wilk test of normality was performed.



Graph A



Graph B

Figure 4.1: Normality plots
Source: Research Findings (2023)

Figure 4.1 showed distributional properties of residuals. Graph A of is the histogram of residuals. Examining the histogram it is seen that it approximates into a normal curve. Graph B is a normal P-P plot of residuals. Seeing that residuals follow closely the diagonal line, the residuals were normal dispersed.

Table 4.3: Normality Tests

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Unstandardized Residual	.077	40	.200*	.993	40	.997
Standardized Residual	.077	40	.200*	.993	40	.997

Source: Research Findings (2023)

Confirmatory tests of normality of residuals conducted were as reported above. The assumption that residuals have a normal distribution would be rejected if p-values for this test is lower than 0.05. Since both tests had p-values > 0.05, the assumption of normally distributed residuals could not be rejected. The result indicated that residuals had a normal distribution.

4.2.4 Test for Heteroscedasticity

Heteroscedasticity was tested using a scatter plot. If variance of residuals appeared to constantly distribute from the horizontal line, it indicates that variance of residuals is constant and the errors were homoscedastic.

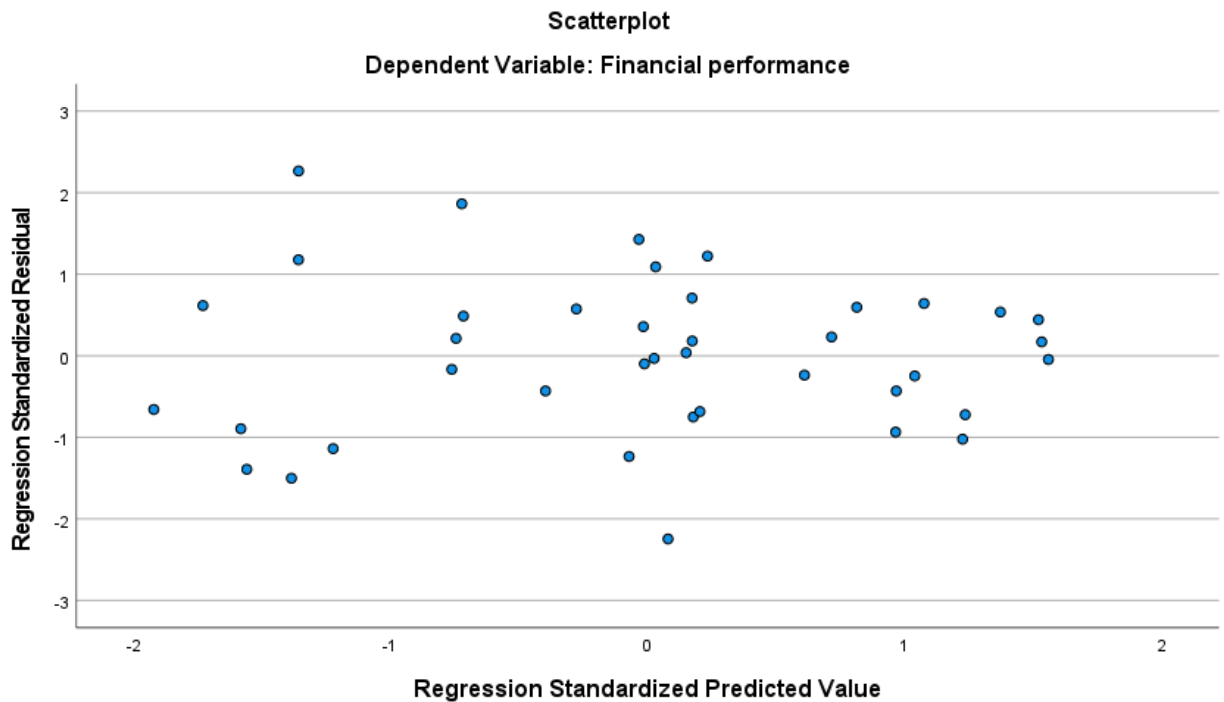


Figure 4.2 Scatter plots of Residuals

Source: Research Findings (2023)

To test whether residuals were heteroscedastic standardized residuals were plotted against standardized predicted values with result as shown in figure 4.2 above. It was observed that the scatter plot was fairly evenly distributed with all-except one observation within ± 2 range. Further they formed nearly a triangular shape. This indicated that residual were homoscedastic.

4.2.5 Multicollinearity Test

Multicollinearity, or high correlation between independent variables, was evaluated by Variance Inflation Factors and tolerance limits to ascertain whether there is collinearity among the predictor variables having descriptive influence over others at 5% significance level.

Table 4.4: Multicollinearity Coefficients

	Tolerance	VIF
Liquidity risk	.759	1.318
Credit risk	.558	1.793
Market risk	.805	1.241
Firm size	.561	1.782

Source: Research Findings (2023)

Table 4.4 indicated the coefficients for testing collinearity between explanatory variables. With VIF coefficients lower than 10 and tolerance coefficients greater than 0.20, the variable did not show collinearity. Diagnostic tests indicated that there was no violation of regression assumptions. The regression result could be validly interpreted.

4.3 Descriptive Statistics

Analysis data was summarized using descriptive statistics. For each variable three measure of location-minimum, maximum and mean values were computed. A measure dispersion-standard deviation was also calculated.

Table 4.5: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Performance	40	-.613	9.412	3.37899	2.492153
Liquidity risk	40	.363	2.153	1.15074	.534511
Credit risk	40	.541	4.925	2.04515	1.338001
Market risk	40	.426	142.365	12.33128	26.611118
Firm size	40	11.895	18.107	14.33648	2.041962
Valid N (listwise)	40				

Source: Research Findings (2023)

In table 4.5 were presented the result of descriptive analysis. The mean value for financial performance was 3.37. Mean liquidity indicator was determined as 1.15. Mean value for credit risk was 2.04. The average for market risk and firm size were 12.33 and 14.33 respectively. The standard deviations were determined as 2.49, 0.53, 1.33, 26.61 and 2.04 for performance, liquidity risk, credit risk, market risk and firm size respectively.

4.4 Correlation Analysis

It measures linear relationship between variables. It can be positive or negative, strong, weak or moderate. Pearson correlation calculated measure nature and strength of association amongst variables. Significant correlations were flagged at 5% significance level.

Table 4.6: Correlation matrix

		Performance	Liquidity risk	Credit risk	Market risk	Firm size
Performance	Pearson	1				
	Correlation					
	Sig. (2-tailed)					
	N	40				
Liquidity risk	Pearson	.333*	1			
	Correlation					
	Sig. (2-tailed)	.036				
	N	40	40			
Credit risk	Pearson	.441*	-.791*	1		
	Correlation					
	Sig. (2-tailed)	.004	.000			
	N	40	40	40		
Market risk	Pearson	-.422*	.386*	-.349*	1	
	Correlation					
	Sig. (2-tailed)	.007	.014	.027		
	N	40	40	40	40	
Firm size	Pearson	.529*	.433*	-.470*	.540*	1
	Correlation					
	Sig. (2-tailed)	.000	.005	.002	.000	
	N	40	40	40	40	40

Source: Research Findings (2023)

Table 4.6 summarized results of correlation among pairs of variables. Performance and liquidity risk showed correlation coefficient of 0.333. Financial performance and liquidity were moderately positively correlated. The significance probability for this coefficient was 0.036 which being lower than 0.05 meant that correlation was significant. Coefficient of correlation between performance and credit risk was 0.441 showing moderate positive correlation between the variables. Significance probability was 0.004 which is lower than 0.05 indicating that the correlation was significant at 5% level. Performance and market risk return a correlation coefficient of -0.422. Correlation of performance and market risk is negative and moderate. Significance probability was obtained as 0.007 showing that correlation was significant at 5% level of significance. Firm size and performance indicated a correlation of 0.529 and

significance probability of 0.000. Financial performance and firm size were moderately positively correlation. The correlation was significant at 5% level since $0.000 < 0.005$.

4.5 Regression Analysis

Regression analysis was performed to ascertain effect of liquidity risk, credit risk and market risk on performance. The effect of firm size was controlled for. Regression analysis results are presented below.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.556 ^a	.309	.230	4.93790	1.909

Source: Research Findings (2023)

Table 4.7 contained summary statistics for the regression model. Of interest here is adjusted R squared. It shows the degree to which variation in explanatory variables explains variation in dependent variable whilst controlling for loss in degrees of freedom as number of explanatory variables increases. The adjusted R-square was obtained as 0.230 showing that variation in liquidity risk, credit risk, market risk and firm size accounted for 23% of variation in financial performance of companies studied. Such a result suggested that the explanatory variables included in the regression had low explanatory power.

Table 4.8: Analysis of Variance

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	381.846	4	95.462	3.915	.010 ^b
	Residual	853.399	35	24.383		
	Total	1235.245	39			

Source: Research Findings (2023)

Table 4.8 presented analysis of variance. Analysis of variance aids in testing whether at least one slope coefficients in a regression model is significantly different from

zero. This hypothesis is upheld if the significance probability in the ANOVA table is less than 0.05. The table above shows significance probability is 0.010 which being lower than 0.05 indicates that at least of the slope coefficients differ significantly from zero hence the regression is significant.

Table 4.9: Regression Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	-13.157	8.105		-1.623	.113
	Liquidity risk	6.223	1.567	.613	3.972	.000
	Credit risk	4.962	1.706	.149	2.909	.037
	Market risk	-.089	.056	-.301	-1.588	.121
	Firm size	.580	.271	.207	2.139	.023

Source: Research Findings (2023)

Table 4.9 contained coefficients of regression analysis, corresponding standard errors, t-values and significance probability. Regression constant was calculated as -13.157. This is financial performance result when liquidity risk, credit risk, market risk and firm size were hypothetically zero. The constant had significance probability of 0.113 indicating constant was not statistically significant as 0.113 is greater than 0.05. Liquidity risk had slope coefficient of 6.223 with a probability of significance of 0.000. Liquidity risk positively affected performance of companies studied. All else being same, an increase in liquidity risk would increase performance with 6.223 units. Because $0.000 < 0.05$, liquidity risk effect on performance is statistically significant. Slope coefficient of credit risk was 4.962 having significance probability of 0.037, which means credit risk had positive effect on performance among energy companies. An increase of a unit of credit risk would increase performance by 4.962 units holding other factors constant. This increase would be significant as $p\text{-value } 0.037 < 0.05$. Market risk had coefficient slope of -0.089 with p-value of 0.121. Effect of market risk on performance was negative; indicating increasing exposure to market risk by a

unit reduced performance by 0.089 units' certeris paribus. However, effect was insignificant since p-value $0.121 > 0.05$. Slope coefficient for firm size was determined as 0.580 having significance probability of 0.023. Firm size had significant effect on performance of energy and petroleum companies. All factors held constant, increase in firm size increases performance by 0.580 being significant as p-value $0.023 < 0.05$. Therefore, below regression equation was generated.

$$P = -13.157 + 4.962X_1 - 0.089 X_2 + 6.223X_3 + 0.580X_4$$

Where: -

P = Firm's Performance

a=Constant

X_1 = Credit risk

X_2 = Market risk

X_3 = Liquidity risk

X_4 = Firm size

4.6 Discussion of Findings

Researcher conducted a correlation analysis between pairs of variables. Performance and liquidity risk showed correlation coefficient of 0.333. Performance and liquidity were moderately positively correlated. The significance probability for this coefficient was 0.036 which being lower than 0.05, meaning the correlation was significant. Correlation coefficient between performance and credit risk was 0.441 showing moderate positive correlation between the variables. Significance probability was 0.004 which is lower than 0.05 indicating that the correlation was significant at 5% level. Performance and market risk return a correlation coefficient of -0.422. Correlation of performance and market risk is negative and moderate. Significance probability was obtained as 0.007 showing that correlation was significant at 5% level

of significance. Firm size and performance indicated 0.529 and a significance probability of 0.000. Performance and firm size were moderately positively correlated. The correlation was significant at 5% level since $0.000 < 0.005$.

Also the researcher conducted the coefficients of regression analysis, corresponding standard errors, t-values and significance probability. The regression constant was calculated as -13.157. This is financial performance result when liquidity risk, credit risk, market risk and firm size were hypothetically zero. The constant had significance probability of 0.113 indicating constant was not statistically significant as 0.113 is greater than 0.05. Liquidity risk had slope coefficient of 6.223 with a probability of significance of 0.000. Liquidity risk positively affected financial performance of companies studied. All else being same, increase in liquidity risk by a unit would increase performance by 6.223 units. Because $0.000 < 0.05$, liquidity risk effect on performance was significant at 5% level. The slope coefficient for credit risk was 4.962 having significance probability of 0.037. This implied credit risk had positive effect on performance among energy companies listed at NSE. Increase in credit risk increases financial performance by 4.962 units holding other factors constant. This increase would be significant as p-value $0.037 < 0.05$. Market risk has a coefficient of -0.089 and p-value of 0.121. Effect of market risk on performance was negative; indicating increasing exposure to market risk by one unit reduced financial performance 0.089 units' *ceteris paribus*. However, the effect was insignificant since p-value $0.121 > 0.05$. Slope coefficient for firm size was determined as 0.580 having significance probability of 0.023. Firm size has a positive effect on performance of energy companies. All factors held constant, increase in firm size by a unit increases performance by 0.580 being significant as p-value $0.023 < 0.05$.

It was found out $R=0.556$ indicating a positive association between financial risk and performance. Adjusted R-squared of 0.230 implies 23% of variation of performance is caused by variations in liquidity risk, credit risk, market risk and firm size.

Findings are in tandem those of Odubuasi et al. (2020) when they investigated how market risks affected financial success of Nigerian businesses. It was observed exchange rate had a substantial impact on ROA and ROE of oil and gas companies. Amolo, Rambo and Wafula (2021) examined how credit risk impact Kenya's hydro-power projects, emphasizing engagement with credible counterparts, "internal deposits" use, and strategic bank guarantees for risk management and came up with the same conclusion that credit risk has influence on firms' performance.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Key findings, conclusions and recommendations thereof are offered in this chapter. It also discussed study limitations and areas suggested for further study.

5.2 Summary of Findings

Descriptive statistics, correlation and regression analyses were all adopted. Descriptive statistics showed that the average performance of energy and petroleum firms was 3.37 having 2.49 standard deviations. Liquidity risk averaged 1.15 and 0.53 standard deviations. Credit risk index had mean value of 2.04 with 1.33 standard deviations. Market risk index mean was 12.33 having 26.61 standard deviations. Mean firm size was 14.33 with 2.04 standard deviations.

Pearson correlation showed that performance and liquidity risk were moderately positively correlated. The correlation between performance and liquidity risk was substantial at 5% significance level. Performance and credit risk were moderately positively correlated with the correlation being significant at 5% level. Financial performance showed a moderate weak correlation to market risk with correlation being significant at 5% level. Finally, firm size revealed a moderate positive correlation to performance.

Regression results showed exposure to liquidity risk have a positive effect on performance of energy and petroleum firms at 5% significance level. It was established that credit risk exposure affected performance of listed energy firms positively. Effect of credit risk on performance was statistically significant at 5% level of significance. Market risk exposure had a negative influence on performance.

However, effect of market risk exposure on performance was not significant at 5% level. The study used firm size as control variable. Results indicated performance of energy and petroleum firms was positively influenced by company size at a 5% significance level.

On overall goodness of fit of regression, result of F-test indicated that at least one of the slope coefficients in the regression was significant at 5% significance level. Explanatory power of regression model was measured 0.23 using adjusted R-square. This indicated that variation in liquidity risk, credit risk, market risk and firm size collectively explained 23% variation of performance of listed energy and petroleum firms.

5.3 Conclusions of the Study

Findings concluded, increasing risk exposure on energy and petroleum companies to liquidity risk would enhance the company's financial performance. Companies with higher liquidity risk exposure would obtain higher financial performance. In addition the findings led to the conclusion that increasing exposure to credit risk would result in higher performance of energy and petroleum companies. Thus suggesting credit risk exposure among companies in this sector was positively priced. Further it was concluded that market risk exposure was negatively priced on energy and petroleum sector. Increasing market risk expose reduced the financial performance of companies in this sector. Yet another conclusion derived from the findings was the firm findings was a favourable factor in influencing performance of firms in this sector. Increasing the firm size would enhance the company's productivity thus improving its value.

It was further concluded that variability in liquidity risk, credit risk, market risk and firm size collectively accounted for 23% of variability in performance of energy and

petroleum firms. Lastly, the study concluded that independent variables collectively provided significant predictors of performance.

5.4 Recommendations of the Study

Arising from finding liquidity risk and credit risk had positive effect on performance of energy companies while market risk exposure effect was negative, study recommends managers of companies in the energy sector to actively manage their companies' exposure to various risks so as to optimize performance. They should increase exposure to liquidity risk and credit risk while lowering exposure to market risk. But exposure to various risks is not without limit. Therefore care should be taken not to over or under expose the firm to various risks. Corporate risk managers should strive to establish what would be the optimal or best levels of exposure of risks. Study recommended increase in sizes of companies on the energy and petroleum sector by continually and productively increasing the assets of the company as this would be expected to result in enhanced performance.

Findings of the study also have implications in investment selection by return seeking investors. Investors will find it useful to consider companies liquidity risk, credit risk and market risk as well as company size exposures. In selecting investment stocks among energy and petroleum companies listed at NSE, investors should select those with higher exposure to liquidity risk, credit risk and of larger size. However on exposure to market risk, investors should consider investing in those with lower market exposure. Lastly, since stability is critical to any sector and over exposure to risk may be catastrophic, regulators should monitor liquidity risk, credit risk and market risk exposures by companies' in the energy and petroleum sector for sector stability and investor protection.

5.5 Limitations of the Study

The study is limited on its scope in terms of objectives and the number of companies studied. Liquidity risk, credit risk and market risk are not peculiar only to companies in this sector and therefore the objectives were narrowly conceived. The findings may not be generalised. Further, variables were defined and measured in book value terms, whereas measures such as liquidity risk and credit risk represents near market value measures other measures used in the study such as financial measure based on book value of assets represent historical values and are likely to significantly lag behind market values. Lastly while every effort has been made to maintain objectivity throughout the project from identification of objectives, problem definition, selection of research design, variable definition, data analysis and interpretation, conclusion and recommendations, the study is still subject to the researchers' skills and knowledge at every stage of the project.

5.6 Suggestions for Further Research

Other studies may attempt determine optimal levels of exposure to liquidity risk, and market risk and whether companies in the energy and petroleum sectors are under using or over using these forms of exposures. Also researchers may extend this line of research to other sectors of the economy. To address the limitation of variable measurement in the study, this study may be replicated using market based risk measures and evaluated in the contexts of assets pricing theory. The study indicates that variability in liquidity risk, credit risk, market risk and firm size explained only 23% of variation in performance of energy and petroleum companies. Given low explanatory power, future research may focus on identifying other variables that explain performance of companies in the sector.

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APPENDICES

Appendix I: Energy and Petroleum firms Listed at the Nairobi Securities

Exchange

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

Source: NSE (2023)

Appendix II: Summary of Data

Kengen									
Year	Total assets	Current Assets	Current Liabilities	Long term debt	Total debt	Equity	Net income	EBIT	Interest expense
2022	502062	39532	22122	204858	226980	275082	70077	4555	1960
2021	420921	42633	21488	206982	228470	206982	1625	16418	2352
2020	407648	33187	18483	207335	225818	207335	18377	20603	8244
2019	400593	31396	19626	177836	197462	203131	7822	15284	5054
2018	401422	33629	25597	180860	206457	219499	7268	11442	3037
2017	377197	29639	20093	173941	194034	183163	8447	13709	3417
2016	367249	21916	18190	176316	194506	172743	6447	16271	3132
2015	342520	21369	22480	178446	200926	141594	6576	11342	3011
2014	250206	27631	25196	148300	173496	76710	4070	6329	2588
2013	188673	25128	17672	96872	114544	72810	5268	7094	3001
KPLC									
2022	329708	54687	110431	159098	269529	60179	3005	17415	12688
2021	331206	49406	115885	158147	274032	57174	2277	17085	9050
2020	325267	42627	117475	152895	270370	54897	-1335	5312	12477
2019	328005	44221	115191	156583	271774	56231	262	10531	10315
2018	332269	50234	106247	165400	271647	60622	3268	11916	7048
2017	323960	54017	77806	187756	265562	58398	1918	10796	13650
2016	297542	50010	50773	181152	231925	65616	7387	16929	5811
2015	272286	66062	45599	167482	213081	194383	5436	15838	4965
2014	169714	50412	48848	98375	147223	54205	6456	14987	4008
2013	146484	37728	38875	82100	120975	47150	3446	8939	2495
Total energies									
2022	7304313 4	586657 15	4096636 7	184631 8	4281268 5	302304 49	2444327	4,008,7 83	91989 0
2021	4703009 4	326547 96	1617946 6	223980 5	1841927 1	286108 23	2738908	4,115,3	28326 5

								62	
2020	4298717 2	293116 47	1428712 9	183974 6	1612687 5	266602 97	3296532	484216 5	15748 2
2019	3756470 4	238048 56	1105702 8	212550 6	1318253 4	243821 70	2534532	389869 3	18380 8
2018	3925892 1	272612 68	1540416 7	118871 1	1659287 8	226660 43	2312582	347011 9	11555 0
2017	3801211 5	264541 62	1525569 0	133920 6	1659489 6	214172 19	2738216	393572 8	54520
2016	3618537 2	253794 50	1540964 8	142643 4	1683608 2	193492 90	2234292	382023 3	26834
2015	3422503 5	234581 91	1538066 2	124462 7	1662528 9	175997 46	1615003	285139 3	39428
2014	3998416 5	300372 63	2348807 7	111702 8	2460510 5	153790 60	1312277	247981 0	27865 9
2013	3298060 4	233484 59	1793316 3	854765	1878792 8	141926 76	-202142	152288 3	15547 15
Umeme limited									
2022	2571066	450033	981447	579571	1561018	101004 8	148,215	238805	45389
2021	2507296	455549	888652	725490	1614142	893154	139,141	213516	39013
2020	2665040	531236	975716	886118	1861834	803206	43,081	92998	48950
2019	2541774	550076	755906	952348	1708254	833520	139,152	245571	58853
2018	2463643	337604	755580	985863	1741443	722200	132,815	243756	92516
2017	2349433	430880	714960	101680 4	1731764	617669	35,494	112379	97628
2016	2191859	441507	544214	105559 3	1599807	592052	99,747	194665	69301
2015	1774869	416314	410526	860568	1271094	503775	105,857	190641	53063
2014	1211939	485474	469467	428760	898227	313712	70,493	124110	22436
2013	888906	404355	379633	223508	603141	285765	83,667	137851	22579