

Financial Risk Hedging And Value Of Listed Energy And Petroleum Firms In Kenya

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Abstract:

Background: As economic forces interact in the market environment, the interactions bring forth economic dynamics. Some of these dynamics present themselves are risks to business organizations. Such risks include financial risks. Financial risks have the potential of affecting internal business operations and adversely affect the overall wellbeing of a business. Businesses therefore have to come up with ways to manage financial risks. Risk hedging is one of the popularly adopted strategies in management of financial risks.

Materials and Methods: The survey aimed to examine how financial risk hedging practices affect value of listed energy and petroleum organizations in Kenya. The survey adopted descriptive design and relied on secondary data. The study used 5 listed energy and petroleum firms in Nairobi Securities Exchange as target population. All the 5 listed firms were included in the study, making this a census study. Secondary data financial risk hedging and firm value was obtained from audited books of accounts for each listed energy and petroleum firm. The data was analyzed both descriptively using mean and inferentially using correlation and regression analyses through assistance of SPSS. Correlation analysis was used to test if there is a financial risk hedging predicts value of listed energy and petroleum firms in Kenya while regression analysis was employed to establish the any direct prediction value of organization by financial risk hedging practices on firm value..

Results: From research, it was clear that hedging of credit risk, hedging of liquidity risks and hedging of capital risks positively and significantly affect firm value, both individually and collectively.

Conclusion: it was concluded that liquidity risk hedging, credit risk hedging and capital risk hedging individually and collectively have significant and positive association with firm value. The study recommends that firms operating in volatile financial environment consider adoption of financial risk hedging practices. Further study is recommending non-financial risk management practices, especially for firms operating internationally.

Key Word: Financial Risk Hedging, Firm Value, Energy and Petroleum Firms

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I. Introduction

Firms are subjected face financial risks resulting from the dynamics presented in the environment in which they operate as business factors interact. These factors could be from global, local or even internal financial environment to the business. Studies already conducted on financial risks have argued that financial risk negatively affects value of the firm in global perspective (Osoro, 2015). Firm therefore adopt strategies to manage financial risks. Scholars and practitioners argue that financial risks can be diversified to eliminate or reduce diverse effects of such risks (Eiteman et al., 2014) for unsystematic risks and hedging for markets risks (Ennouri 2013).

Managing of financial risk is very crucial maintaining business sustainability (Olayinka, 2013; Mamari, Ghassani, & Ahmed, 2022). Study by Kiio and Jagongo (2017) revealed that financial risk hedging is popularly used as financial risks management tools to cushion against foreign exchange risks at 83%, interest rate risk 76% and price risks at 56%. Most of empirical evidence indicate that risk hedging positively affects business performance (Dare and Sola, 2010; Jin & Jorion, 2016), while a few studies indicate insignificant relationships between business risk with firm value (Wahome, Memba & Muturi, 2015). Jin and Jorion (2016) argue that the role of risk hedging on value of a firm highly depend on the market factors and the business characteristics.

Mixed research findings from empirical literature present a research gap that needs to be filled through a study. In addition, very limited study has been done in Kenya on risk hedging. Empirical findings from already conducted studies show that such studies biased towards financial performance rather than focusing on the entire firm value. It is therefore evident that research gap exists as to the exact association of hedging of

financial risks and value of firms. This study aimed to fill the existing research gap by studying the effect of financial risk hedging practices on the value of listed energy and petroleum firms in Kenya.

Research Objectives

1. To study the effect of liquidity risk hedging on firm value of listed energy and petroleum companies in Nairobi Securities Exchange
2. To establish the effect of capital risk hedging on firm value of listed energy and petroleum companies in Nairobi Securities Exchange
3. To examine the effect of credit risk hedging on firm value of listed energy and petroleum companies in Nairobi Securities Exchange.
4. To determine the combined effect of financial risk hedging practices on firm value of listed energy and petroleum companies in Nairobi Securities Exchange.
- 5.

II. Literature Review

Theoretical Review

The current study however identified Wrecker's Theory of Financial Distress. In addition, this section discusses liquidity preference model, a model that conceptualizes financial risks and provides possible relationship with firm value.

Liquidity Preference Theory

The theory was first proposed by Baumol and Tobin in 1958 stemming from the Keynesian model that preferred investing on risky investment options as compared to less risky options (Tonye & Priye, 2014). Agarwal (2019) identified three motives to holding money; transactions motive; for daily business transactions, precautionary motive for security against uncertainty and speculative motive to take advantages related to fluctuations in the interest rate. According to the theory, optimum investment return rate is determined in terms of market demand and supply for money. Liquidity preference theory is based on assumptions that interest is earned on money and that wealth can only be stored in terms of money and bonds. According to liquidity preference theory, liquidity alone does not guarantee success. The financial distress factors make it relevant to understand decisions surrounding financial risks in this study. In this study, the theory helps in underpinning liquidity risks and how such risks influence investment decisions (Tonye & Priye, 2014).

Wrecker's Theory of Financial Distress

The Wrecker's theory of financial distress studies financial distress and how financially distressed firms perform in relation to their counterparts (Songhor, 2018). As presented in the theory, a financially distressed firm is a firm that cannot service debts as they fall due or cannot raise adequate finances to operate normally. The theory identifies failure by business to settle debts and reduction of dividend pay out ratio as key indicators of financial distress and suggests that stocks of distressed firms perform in an inferior way compared to financially healthy firms (Baimwera & Muriuki, 2014).

Companies may experience financial distresses resulting from poor internal organizational decisions and adverse effects attributed to financial risks. Financial blunders and unresponsive economic situations are potential causes of financial distress (Baimwera & Muriuki, 2014). The firms must therefore find ways of avoiding financial distress and generally develop strategies of managing liquidity and credit risks (Amaya, Gauthie, & Léautier, 2015). The theory proposes that firms must balance efforts in management of credit and liquidity risk if they have to avoid financial distress. They must sustainably manage through derivatives and hedging tools (Baimwera & Muriuki, 2014). The theory is applicable in the current survey as it helps in understanding the outcome of financial risks credit and the need to adopt financial risk hedging in guaranteeing sustaining firm value.

Interest Rate Parity Theory

Interest rate parity theory was put forward by Keynes (1923) in effort to attempt to analyse the relationship between spot and forward rates between currencies. It presents that the difference rates between currencies as reflected in positive return or loss between the currencies and that the gain or loss on foreign currency give a value equivalent to the difference in returns between the countries.

According to this theory, there is no equilibrium condition for investment. Investors can therefore play around to earn profits at controlled levels of financial risks. Where operations of a firm are across different currencies, the investor needs to appreciate return on local against foreign currency (Wangui & Jagongo, 2019).

In this study, the theory is very relevant in understanding how changes in interest rate in the international markets affects prices in the energy and petroleum industry and how such changes present

economic risks in the industry. The theory also helps in undemanding the importance interest risk hedging in the energy and petroleum industry as appreciated in this study.

Conceptual Framework

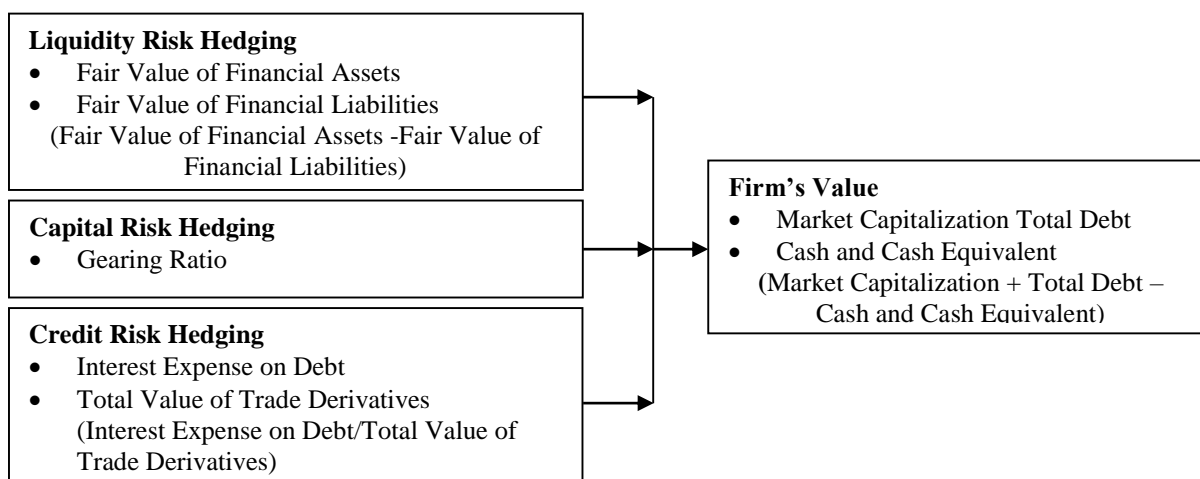


Figure 1. Conceptual Framework

Empirical Review

Literature on the research variables as well as the empirical findings on the link between the financial risk hedging and value of firms is presented in this sub section. Financial risk hedging indicators, firm value as well as the association of financial risk hedging practices with firm value.

Liquidity Risk Hedging and Firm Value

Liquidity risk arises when a company is unable to generate or obtain sufficient financial resources to meet its day-to-day financial instrument obligations (Gongera, 2013). Liquidity risk arises when a company cannot secure sufficient financial support due to insufficient new premium income. Hedging liquidity risk involves analyzing balance sheets to estimate expected returns and strategies to finance organizational budget needs. Liquidity risk coverage can be examined both operationally and structurally. Structural analysis includes balance sheet analysis, while cash flow analysis is known as operational analysis (Wanjohi & Omui, 2013).

Research by Akenga's (2017) examined the impact of liquidity management factors on firm value, focusing on NSE-listed firms. The study involved all companies listed on the NSE from 2008 to 2013; while a simple ordinary least squares (OLS) model allowed inferential analysis of the data. The study identified significant differences in market performance between liquid and illiquid companies. The liquidity management function studied is the quick ratio. Additionally, the study identified a direct association of liquidity management and market returns. The impact of liquidity risk on illiquid companies was reported to be negligible. Moreover, liquid companies earn statistically significant excess market returns over illiquid companies. However, this study did not examine the impact of liquidity on non-financial listed companies, and this study fills this research gap.

Similarly, Salim and Bilal (2016) studied how liquidity position on the firm can predict value using a sample of four Omani commercial banks between 2010 and 2014. The researcher adopted the ordinary least squares for inferential data analysis. The research established a less significant link of liquidity position on financial performance. However, the study focused primarily on how liquidity risk hedging can predict firms' financial performance, not the overall firm value, which is a concern for the present study.

In a study on hedging practices, cash flow and firm value conducted by Altuntas et al. (2019) modeled liquidity risk hedging and firm value. The study revealed that liquidity risk hedging both directly and indirectly influences firm value. The findings were consistent with theoretical predictions that liquidity risk hedging reduces exposure to financial risks which have potentially adverse effects on firm value. It was evident from the study findings that liquidity risk hedging reduces cash flow volatility which is usually associated with negative outcomes on firm value. In a similar study by Yuman and Krause (2016) on financial risk hedging and firm value that focused on theoretical and empirical review on how liquidity risk hedging relates with firm value. It was evident that liquidity risk hedging is associated with increased firm value returns. The study recommended that there is need for broader research to focus on other areas of financial risks within the business to enhance generalizability of empirical findings on the financial risk hedging and firm value.

Altuntas et al. (2017) examined how firm value is influenced liquidity risk hedging on findings from nonfinancial firms listed in London Stock Exchange in the United Kingdom. The study relied on 288 nonfinancial firms' financial data between 2005 and 2012. Analysis of research data revealed significant association between liquidity risk hedging and firm performance. These findings reported to be consistent with empirical evidence from studies in other environments. Similarly, Mungai and Wafula (2021) in their study on practices involved in hedging financial risks and value of firm value assessing non-financial firms listed at NSE that relied on secondary data between the years 2015 and 2019 revealed a significant association between liquidity risk hedging and firm value. The study reported the liquidity risk hedging is one of the popularly used financial risk management strategy.

According to a stud by Shin and Pyo (2013), liquidity risks can be hedged through features and forward contracts. This allows fairly priced hedge to move cash to higher value liquidity areas. According to Nairobi Securities Exchange (2020), liquidity risk hedging can be done by providing for a liquidity reserve to ensure liquidity surplus. Liquidity surplus is obtained as the difference between financial assets and financial liabilities. As proposed by Chen and Skoglund (2014), hedging liquidity risk ensures an optimal liquidity mix. When looking at the financial statements of a company to determine its viability, the liquidity ratio is important because the higher the liquidity ratio of a company, the richer it is (Githire & Muturi, 2015).

Osoro and Muturi's (2015) study of liquidity risk management practices and financial performance identified liquidity risk coverage as a key determinant of firm value. the study was conducted in petroleum firms. However, the research showed that asset quality and capital leverage have insignificant effects on firm value. Ngira, Oluoch and Kalui (2015) analyzed the impact of liquidity management on financial performance. The research used data from supermarkets in Kenya. The study established that management of risks related to liquidity can positively influence firms' value and market returns. Salim & Bilal (2016) on the other hand, in their study that used data collected from Omani Commercial Banks established no relationship between liquidity risks and financial performance.

In an empirical review by Brandon and Wang (2013) that sought to relate liquidity risk hedging and firm's performance in Virginia, it was evident that liquidity risk hedging enhances sustainability of long term and short term fund portfolios. The study presented that liquidity risk hedging is instrumental in firms that operate in volatile international markets. Similarly, Keause and Tse (2015) in a cross examination of 65 published paper reported that liquidity risk hedging is associated with positive change in firm value. Liquidity risk hedging reduces variability in firm value leading to reduced financial distress. Liquidity risk hedging can also reduce cost of capital and costs associated with taxation and in turn enhance firm value.

Lookman (2014) studied the relationship between liquidity risk hedging and firm value for oil and gas producing firms. The study considered both primary and secondary risks reported that liquidity risk hedging enhances firm value. The study recommended that firms consider having suitable risk hedging policies in place for sustainable risk management. Liquidity risk hedging addresses the problem of volatility and vulnerability of businesses to market risks.

However, while investigating the relationship between liquidity risk and options' hedging role in China, Wong and Xu (2016) noted that almost all derivative-based hedging strategies can cause liquidity needs before the hedge horizon. The study showed that liquidity mismatch can necessitate roll-over derivatives based on shorter maturity periods. It was further noted that even tailor-made forward contracts are more likely to cause early liquidity needs. Similarly, Lin, Wesseh, and Appiah (2014) established that derivatives purchases are challenging to compare against predominant prices since derivatives markets are essentially less transparent than other markets. For instance, consider a firm using cross-currency swap to convert shillings-dominated debt to dollar dominated to minimize interest rate risk. Several factors influence the market price in this type of transaction, including frequency of payment, regulatory requirement, existing credit exposure between the transacting parties, and the firm's credit quality.

Capital Risk Hedging and Firm Value

Razali and Anwar (2021) studied capital risk hedging and firm value. The study was based on 200 microfinance companies and covered the period 2012-2017 listed in Malaysian securities exchange. The study measured company value through return on assets and return on equity. The study reported a positive relationship between capital risk coverage and firm value. The study showed that hedging capital risk improves organizational responsiveness to financial disruptions and seasonality. In a similar study on financial risk hedging strategies that was based in Kenya Power, Mburugu (2014) investigated the impact of capital risk hedging on financial risk hedging in the Kenyan oil industry. The study indicated that capital risk hedging can mitigate financial risk shocks.

Inconsistent findings on the relationship between hedging and firm value was reported in a study by (Magee, 2013) that presented that hedging policies in perfect capital markets do not affect firm value because shareholders can cancel any hedging activity and coverage undertaken by the company. The study adopted

structural default model. However, recent theoretical and empirical research suggests that hedging in imperfect capital markets increases firm value by affecting expected taxes, investment decisions, and projected costs of financial distress. Most current research examines the effect of hedging using derivatives on fixed values. In a study using a large sample of firms, Prieto et al., (2017) in a study that was conducted in listed firms determined that firms that hedged currency risk were worth 4.87% more than firms that did not hedge currency risk. In addition, the study determined that hedging increased company value by approximately 5% to 10 %.

In a survey, Kiilo and Ambrose (2017) examined the relationship between capital risk hedging and the performance of NSE listed companies. The study acknowledged that firms are exposed to financial risks and that lack of adoption of appropriate financial risk hedging may render an organization vulnerable to adverse effects of financial risks. Through descriptive and inferential analysis of secondary research data collected from NSE, the study established a positive association between capital risk hedging and organizational performance.

Shin et al. (2018) focused on financial risk hedging and performance, focused on credit risk hedging as well as other financial risk hedging practices. The study focused on hedge fund and applied an asset-based style, four-factor models and standard asset class models. Using rolling regression analysis, the study identified capital risk coverage as an important determinant of firm value. In a similar study by Zaminor et al. (2021) that focused on capital risk coverage and firm value, studying 200 firms between 2012 and 2017, the study found a positive relationship between capital risk coverage and firm value. The study indicated that an objective approach to financial risk management is key to today's dynamic financial markets.

In a separate study, Aretz et al (2017) examined the rationale for capital risk hedging. The study examined that capital risk hedging translates into enhanced firm value. The study established that capital risk hedging helps of managing agency cost as well as help in management of costs associated with internal and external financing and bankruptcy. In addition, capital risk hedging is helpful in management of endogeneity problem. The study suggested that future research should also focus on the application of derivatives in financial risk management, especially research on business risk hedging and fixed value. the study also reported that financial risk hedging is induced by financial risk exposure.

Study by Altuntas et al. (2017) examined the relationship between financial risk hedging, cash flows and firm value. The study focused on the indirect link between financial risk hedging, cash flows and firm value. The study showed that capital risk hedging enhances cash flow volatility which in turn leads to enhanced firm value. The study concluded that capital risk hedging mitigates the adverse outcomes of cash flow volatility. Similarly, Seok et al. (2020) reported that capital risk hedging is associated with reduced operational volatility and accounting based risks. The study however acknowledged mixed findings in empirical literature.

In a survey of financial risk hedging and firm value by Lookman (2014), different findings were reported on the relationship between capital risk hedging with other financial risk hedging strategies and firm value. The study shows that hedging capital risk has both direct and indirect effects on firm value. The research report highlighted that the impact of capital risk hedging on firm value materializes through the management of cash flow fluctuations. Notably, the study reported that capital risk hedging can mitigate the impact of cash flow volatility.

Credit Risk Hedging and Firm Value

In a survey conducted a survey in Commercial Banks in Jordan, Alshatti (2015) reported that credit risk refers to the risk that a specific party to a security cannot fulfill its previous commitments, resulting in financial losses for the other party to the financial asset. Credit risk hedging involves companies developing and adopting benchmarking procedures to avoid or contain the adverse effects of credit risk (Barboza et al., 2016).

To be successful, a business must have a strong credit risk management framework. Such frameworks can also improve business profitability and sustainability in a competitive environment. According to (Kovalová et al., 2015), companies must apply the key principles of the credit risk management process. These principles include: clear structures are established, responsibilities are assigned, processes should be prioritized and disciplined, responsibilities should be clearly communicated and accountability assigned (Bartram et al., 2010).

According to Spuchl'áková et al. (2015) credit risk can be measured using two approaches. The first set of methods is based on absolute positions of credit risk and default rates. These methods include the Credit Risk+ and Credit Portfolio View methods. The second method is based on the expected default rate of credit claims. The methodology assesses the value of assets exposed to credit risk and the potential losses associated with this risk. The method analyzes the expected value of losses and the probability that these losses will occur. When hedging credit risk, customers are rated based on turnover and financial condition. The total limit determines the creditworthiness of the customer.

Osoro and Muturi (2015) established that credit risks have significant effect on ROA in SACCOs in Kenya. They study further revealed that credit risk hedging is attributed to tax savings resulting from increase in a firm's debt tax shield, reduction in bankruptcy cost, and mitigation of underinvestment. According to Anbil et al. (2016), credit risk can be measured through discrete models such as market to market approach and credit

portfolio view. In the financial sector, credit risk hedging practices revolve around risk diversification; risk sharing and risk transfer (Spuchl'áková et al., 2015). The methods are based on expected rate of default. In the financial report published by Nairobi Securities Exchange in 2018, credit risk is assessed by analysing the value of fully performing trade receivables against value of impaired trade (Songhor, 2018).

Karimi's (2014) study on risk management and financial performance identified credit risk as one of the key factors that positively affects firm value. Using data collected from pension funds in Kenya, the study also revealed a positive and significant relationship between currency derivatives and firm value. In a related study, Jin and Jorion (2016) in a study in oil and gas firms found that credit risk hedging is positively related to firm value. Similarly, in a systematic review of the literature by Barboza et al. (2016), it was clear that good credit risk hedging is necessary to protect organizations from financial market uncertainty. This could be achieved through modeling and risk analysis.

Githiri and Muturi (2015) found similar results in a separate study on credit risk management and financial performance. The study was conducted in Kenya. In the same study, hedging capital and liquidity risk had little effect on financial performance. Furthermore, the study highlighted the close relationship between income and financial performance. Barboza et al. (2016) confirmed in a study on the relationship between credit risk hedging and financial performance that most SACCOs use credit risk hedging practices to hedge risks based on objective risk assessments credit.

III Material and Methods

Study Design: This study adopted descriptive design

Study Location: The current study is conducted in energy and petroleum firms in Kenya.

Study Duration: While study was conducted between 2022 and 2023, the study collected data for a 10-year period beginning 2013 to 2022

Study Population: The study was conducted five listed energy and petroleum firms in Kenya. They include Total Kenya Ltd, KenGen Ltd, Kenya Power & Lighting Co Ltd, Umeme Ltd, Kenol Kobil

Census Study: this study was a census study that was conducted by all the five listed energy and petroleum firms in Kenya.

Procedure Methodology

This study surveyed secondary financial data retrieved from published audited books of accounts of the targeted firms. Data was gathered through data collection forms. Secondary data came from the financial reports of five oil and energy companies listed on the Nairobi Stock Exchange for the study period 2013-2022. Data collection forms collect were used to gather data on financial risk hedging practices as well as fixed values over the 10-year study period. The researcher received letter of introduction from the doctoral school for purposes of receiving approval letter from national commission of science and technology. The researcher gathered secondary data from published financial reports posted on the NSE website. The data collection form was used to collect secondary data on financial risk hedging and firm value elements from annual reports of energy and petroleum companies listed on the Nairobi Securities Exchange from 2013 to 2022. The study adopted empirically available formulae to operationalize the research variables. The study therefore did not conduct a pilot study.

Statistical Analysis

Upon gathering of secondary data from financial statements, data collected was checked for completeness and consistency before analysis. The financial data was keyed in excel spreadsheets then exported to statistical package for social sciences for analysis. The researcher obtained the mean valued for the research variables. From the means, the researcher computed the natural log of the financial data obtained for purposes of inferential analysis. Inferential analysis; correlation analysis and multiple regression analysis was used to establish the relationship between financial risks hedging and firm value. The research variables were measured as summarized in table 1.

Table 1: Measurement of Research Variables

Variable	Indicators/Model	Source
Liquidity Risk Hedging (LRH)	$LRH = \text{Fair Value of Financial Assets} - \text{Fair Value of Financial Liabilities}$	(Price Water Coopers, 2020)
Capital Risk Hedging (CRH)	$CRH = \text{Gearing Ratio as percentage}$	(Hang et al., 2020)
Credit Risk Hedging (CrRH)	$CrRH = \text{Provision for Credit Losses (Monetary Value)}$	(Kovalová et al., 2015)
Firm's Value (FV)	$FV = \text{Market Capitalization} + \text{Total Debt} - \text{Cash and Cash Equivalent}$	Bergman (2014)

III. Result

Liquidity Risk Hedging

The study was collected and analyzed data on hedging of liquidity risks. Practices involved in hedging of liquidity risks were measured as the excess of fair value of financial assets over fair value of financial liabilities. Findings from the analysis were as summarized in table 2 below.

Table 2. Liquidity Risk Hedging

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Kenya Power	- 1147158	1671041	20463293	-905086	9971873	51637615	34064635	74848822	66479167	- 55744147
Total Energies	6516519	7286358	8053165	9945438	11198472	11857121	18278983	13675525	14375298	16587543
KenGen Ltd	7455181	2434414	- 1111000	3726361	9546172	10532589	6881016	25629221	8282441	7287109
Umeme Ltd	24722	2332341	5788000	102707000	77993000	112459000	56082000	121761000	433103000	- 531414000
Kenol Kobil	- 1357085	-810903	2044142	3612920	5554651	65443432				

Findings in table 2 show evidence that all energy and petroleum companies listed in NSE provide for liquidity risk hedging. The level of liquidity risk hedging remains significantly high for the firms especially in 2019, probably due in response to effects of Covid-19. Liquidity risk hedging is useful in guaranteeing acceptable financial liquidity in the firm. Financial liquidity enables the firm to operate normally and need immediate financial obligations.

Capital Risk Hedging

In the current study, Capital Risk Hedging was examined in terms of capital gearing ratio. Capital gearing ratio is examined as percentage ratio of fixed interest capital and ordinary share capital as is provided as percentage in the financial statements. The outcomes of the study were as presented in table 3. The findings are presented in in percentage.

Table 3: Capital Risk Hedging (Gearing ratio in %)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Kenya Power	113	117	136	169	176	188	208.	209	183	161
Total Energies	31	41.7	8	10	11	9	30	94	145	26
KenGen Ltd	51	61	47	43	55	52	29	40	94	98
Umeme Ltd	53	62	65	64	63	41.4	38	41.5	29.9	20.4
Kenol Kobil	71	62	31	26	47	-	-	-	-	-

The outcomes of the research presented in table 3 indicate that all the energy and petroleum firms' hedge for capital risks as evidenced by the gearing ratio. The energy and petroleum firms listed in NSE provide for varied level of capital risk hedging. The findings indicate that Kenya Power is the most exposed company as far as financial risks are concerned with 208% and 209% gearing ratio between 2019 and 2020. For Total Energies, 2020 and 2021 were the most risky years, possibly due to effects of Covid-19. Umeme ltd and Kenol ltd are within the acceptable capital risk hedging levels of between 25% and 70%. Total ltd has the most exposed company to capital risk as evidenced by high hedging level ranging from the lowest of 113% in 2013 and highest of and 209% in 2020. Generally, the gearing ratio for most of the firms is below 70% implying the firms generally operate within acceptable capital risk levels. However, there are isolated cases especially for Kenya Power and Total Ltd where capital risks went very high as shown by gearing ratio beyond 100%.

Credit Risk Hedging

The study collected data on credit risk hedging. Credit risk hedging in the energy and petroleum firms is measured in terms of provision for credit losses. The provision for credit loss is done in terms of money in the financial statements. The findings (in thousands) were as presented in table 4.

Table 4. Credit Risk Hedging (in billions)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Kenya Power	4.087	3.994	4.205	4.246	5.086	1.140	2.013	2.345	2.388	8.319
Total	0.465	0.02	0.06	0.043	0.053	0.035	0.027	0.066	0.778	0.786
KenGen Ltd	0.042	0.198	0.057	0.245	0.428	0.490	0.458	0.585	0.612	0.562
Umeme Ltd	0.006	0.020	0.020	0.012	0.016	0.361	0.118	0.139	0.165	0.112
Kenol Kobil	0.397	0.359	0.364	0.123	0.122	-	-	-	-	-

Findings presented in table 4 shows evidence that Kenya Power has highest level of credit risk hedging of up to shillings 5.08 billion. This implies that Kenya power is highly vulnerable to credit risks. While total had relatively high credit risks between 2020 and 2022. The level of risk exposure increased significantly from 2020 in the industry leading to increase in credit risk hedging for all the firms. Umeme ltd had lowest credit risk expose as evidenced by low credit risk hedging possible an indication of lower exposure to credit risks in Uganda. Credit risks affect firms’ financial sustainability and hence need to be mitigated or at least the firms protected from adverse effects of such risks.

Firm Value

For purposes of analysis, value of the firm was measured using the formula; ‘Firm Value = Market Capitalization + Total Debt – Cash and Cash Equivalent’. Firm value is a very important measure of firms viability as a going concern and whether the firm in able to guarantee shareholder returns. Analysis of data that was collected between 2013 and 2022 for the four energy and petroleum firms listed at the NSE gave the outcomes summarised in figure 2 below.

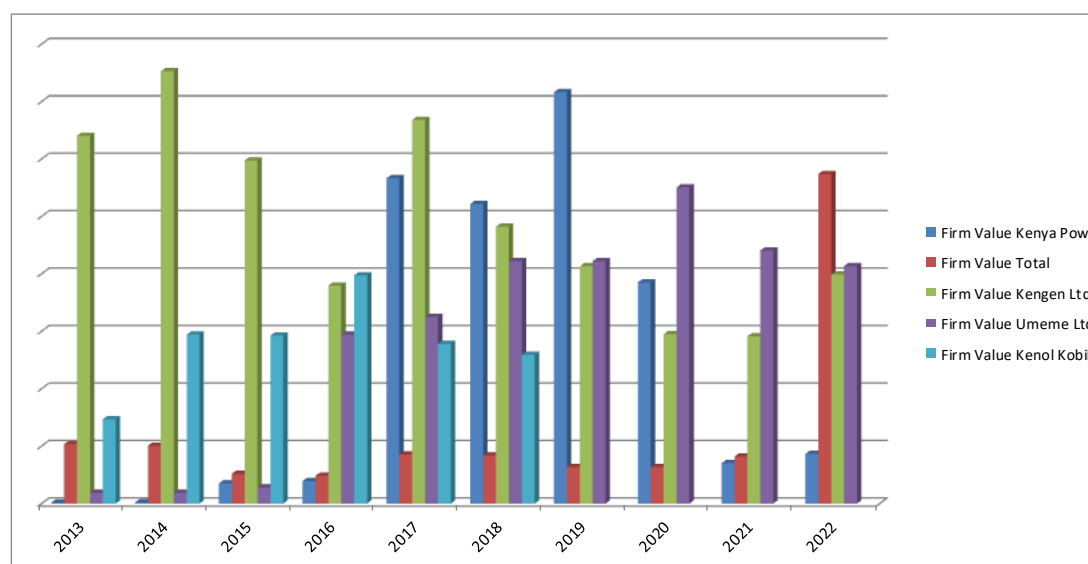


Figure 2. Firm Value

Research outcomes summarized in figure 2 indicate that the firm value for Kengen Ltd remained relatively high during the study period. Kenya Power had higher firm values between 2013 and 2017 while the rest of the periods recorded lower firm values with the lowest point in 2020 and 2021. Umeme Ltd and Total experienced relatively constant but lower firm value throughout the study period except 2022 for Total Energies. These findings reveal that the financial positions of the energy and petroleum firms are different with some enjoying relatively constant firm values while others are relatively constant. Kenya power performed better between 2017 and 2020. Generally, firm value showed a trend of decline over the years, a possible indication of decline in performance. Since the energy and petroleum firms are affected by foreign exchange, the general decline in firm value could also be an outcome of weakening Kenyan currency against US dollar.

Liquidity Risk Hedging and Firm Value

The study examined the prediction power of liquidity risk hedging and obtained results summarized in table 5

Table 5. Liquidity Risk Hedging and Firm Value

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.427 ^a	.182	.080	1.14275		
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	2.325	1	2.325	1.780	.019
	Residual	10.447	8	1.306		
	Total	12.772	9			
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.134	3.060		1.678	.132
	Liquidity Risk Hedging	.650	.487	.427	1.334	.019
a. Dependent Variable: Firm Value						
b. Predictors: (Constant), Liquidity Risk Hedging						

Results from Table 5 above; R-squared = 0.182 implies that liquidity risk hedging explains 18.2% of the variation in firm value. Other variations in the value of the firm can be explained by other variables. A significance value of 0.19 in the table of ANOVA further indicates that resultant effect is significant. Wanjohi and Omui (2013) reported consistent results. They point to liquidity risk coverage as a determinant of firm value and claim that it ensures adequate financial support.

Capital Risk Hedging and Firm Value

Regression analysis was used to measure the effect of credit risk hedging on firm value. The findings were as summarized in table 6.

Table 6. Regression on Capital Risk Hedging and Firm Value

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.810 ^a	.656	.613	.74117		
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.377	1	8.377	15.250	.005
	Residual	4.395	8	.549		
	Total	12.772	9			
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.566	1.966		.797	.449
	Capital Risk Hedging	4.790	1.227	.810	3.905	.005
a. Dependent Variable: Firm Value						
b. Predictors: (Constant), Capital Risk Hedging						

Findings in table 6; R square = 0.656 indicates that capital risk hedging explains 65.6% of the variations in firm value. Significance figure of 0.005 from the table of ANOVA further reveals that the effect is significance. This implies that capital risk hedging is a key predictor of firm value.

Credit Risk Hedging and Firm Value

Regression analysis was conducted to establish the effect of credit risk hedging on firm value. the findings were as summarized in table 7.

Table 7. Regression Analysis on Credit Risk Hedging and Firm Value

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.835 ^a	.697	.660	.69509		
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	8.907	1	8.907	18.434	.003 ^b
	Residual	3.865	8	.483		
	Total	12.772	9			
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.673	1.996		.337	.745
	Credit Risk Hedging	1.750	.408	.835	4.294	.003
a. Dependent Variable: Firm Value						
b. Predictors: (Constant), Credit Risk Hedging						

From table 7, the R square = 0.697 shows that credit risk hedging explains 69.7% of variations in firm value. The other portion could be predicted by other variables. From ANOVA table, F=18.434 and significance value of 0.003 is evidence confirming that the effect is significant. This implies that credit risk hedging is an important predictor of value of the firm.

Financial Risk Hedging Practices and Firm Value

The study assessed the combined effect of liquidity, credit and capital risk hedging practices on firm value. The findings were as summarized in table 8.

Regression Analysis on Financial Risk Hedging Practices and Firm Value

Model Summary						
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.955 ^a	.911	.867	.43515		
ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	11.641	3	3.880	20.492	.001 ^b
	Residual	1.136	6	.189		
	Total	12.777	9			
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-3.496	1.699		-2.058	.085
	Liquidity Risk Hedging	.616	.186	.404	3.319	.016
	Capital Risk Hedging	2.174	1.238	.367	1.756	.030
	Credit Risk Hedging	1.107	.438	.529	2.530	.045

The findings R²=0.911 imply that financial risk hedging explains 91.1% of firm value. The rest of the variation in firm value could be explained by other variables. ANOVA was used to test statistical significance, the significance value; p=0.001 is evidence that financial risk hedging practices significantly influence firm value.

IV. Discussion

Liquidity Risk Hedging and Firm Value

In this study, secondary data on liquidity risk hedging and firm value were analyzed. The results suggested that liquidity risk was relatively high and unpredictable through the study period. The study tested hypotheses regarding the influence of liquidity risk hedging and fixed value. Findings of the study revealed that

liquidity risk hedging enhances firm value. The findings of the current study were compared with empirical evidence which also had shown that hedging liquidity risk significantly impact on company value. This means that liquidity risk coverage is an important determinant of firm value. Liquidity risk hedging protects organizations from systemic economic risks and reduces the negative impact of financial risks on business performance areas such as sales, operational efficiency and profitability. In addition, it enables the firm to execute daily operations with ease, thereby increasing the value of the business.

Capital Risk Hedging and Firm Value

The second objective in this survey examined the effect of capital risk hedging on firm value. The study examined capital risk hedging trends during the study period of 10 years between 2013 and 2022. Capital risk hedging was assessed in terms of gearing ratio given as a percentage in the financial statements. The outcomes indicated that the firms set varied gearing ratio revealing different risk attitude and tolerance. The findings revealed that Kenya Power had generally higher level of capital risk hedging especially between 2019 and 2020 probably as a result of Covid 19. This implies that Kenya Power is generally exposed to capital risks. Umeme Ltd and Kenol Ltd generally operated within acceptable capital risk levels. The study further tested a hypothesis on how capital risk hedging relates with firm value. The findings revealed that capital risk hedging is a significant determinant of firm value. These findings imply that capital risk hedging protects the firms from adverse outcomes exposure to capital risks. It cushions the firms from risks associated with defaulting in financial obligations, especially during low profits.

Credit Risk Hedging and Firm Value

The third aim in this survey was to evaluate the link between Credit Risk Hedging and Firm Value in the energy and petroleum firms listed in NSE. Findings on credit risk hedging showed that Total Ltd had higher credit risk hedging between 2013 and 2017 then highest in 2022 unlike Umeme Ltd that had lower credit risk hedging, especially between 2012 and 2017. These findings indicate that credit risk hedging level is influenced by the level of credit risk exposure. The researchers further tested the hypothesis of the prediction of credit risk hedging on the enterprise value of energy and oil organizations listed on the NSE. The results showed that hedging credit risks has a significant impact on firm value. Intensive credit risk coverage protects companies against the negative effects of credit risk. This is due to the fact that the firm is cushioned from adverse effects of debts and credits.

Financial Risk Hedging Practices and Firm Value

A multiple regression analysis was performed to assess the combined prediction of financial risk hedging practices on firm value. Research shows that liquidity risk hedging, capital risk hedging and credit risk hedging together have a significant impact on firm value. These findings imply that intensive adoption of financial risk hedging practices enhances sustainability in business operations hence leading to improved firm value. Financial risk hedging generally acts as a buffer projecting the firms from financial risks emanating from dynamic operating environment.

V. Conclusion

From the results, conclusion was arrived at that liquidity risk hedging is an important determinant of firm value for energy and petroleum organizations listed on the Nairobi Stock Exchange. This means that businesses can use liquidity risk hedging as a strategy to increase and sustain business value.

Secondly, outcome of the study showed that hedging the capital risk significantly affects the value of the company. It is therefore concluded that the coverage of capital risk is an important determinant of the value of the company. Capital risk hedging is useful in ensuring the firm maintains acceptable level of capital base. This means that the use of capital risk hedging can be used as a strategy to enhance the value of the business.

Thirdly, the results led to conclusion that hedging of credit risk significant predicts firm value. This means that credit risk hedging contributes significantly to the firm value. Credit risk hedging ensures the firm maintains acceptable of credit worthiness.

The ultimate goal of the study was to evaluate the prediction power of financial risk management practices on firm value. The results concluded that liquidity risk hedging, capital risk hedging and credit risk hedging have, individually and collectively, have significant prediction outcome on firm value. These outcomes suggest that energy and oil companies can use financial risk management practices to increase firm value.

This study recommends that financial risk hedging be considered as a strategic approach to financial risk management especially for organizations operating in international markets characterized by high levels of financial risks. Liquidity risk hedging should be adopted to manage liquidity problems in the firms, capital risk hedging should be used to ensure sustainable capital base is realized while credit risk hedging should be used to realize and maintain acceptable credit levels. The study recommends that energy and petroleum firms develop

organizational policies that guide on adoption of long term financial risk hedging strategies, align financial risk hedging with organizational strategy as well as operationalize adoption of financial risk hedging practices in the daily running of the firms. Lastly, the study recommends that standard financial risk hedging practices need to be developed for energy and petroleum firms operating internationally.

Further studies need to focus other hedging practices adopted by firms other than the financial risk hedging practices. Further studies may be done to explain the fluctuating and reducing trends seen in the firm values over the years, similarly, a study is needed to building a financial risk management model in the context of energy and petroleum firms, especially in Kenya. This will help in tailored financial risk management. Similarly, further study needs to be conducted on financial risk management post covid-19 pandemic. There is need for a broader study on financial risk management focusing on energy and petroleum firms in Africa. A comparative analysis may be adopted. Lastly, there is need for further research to develop theories and models that can guide in operationalization of financial risk hedging and well as the relationship between risk hedging practices and other variables.

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