FUNDAMENTAL RISK FACTORS AND FINANCIAL PERFORMANCE OF INSURANCE FIRMS IN KENYA

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A RESEARCH PROPOSAL SUBMITTED TO THE SCHOOL OF BUSINESS, ECONOMICS AND TOURISM IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF SCIENCE IN FINANCE OF KENYATTA UNIVERSITY

SEPTEMBER, 2025

DECLARATION

Student

I certify that this thesis is ingenuity and has not been submitted to any other institution of higher learning.

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DEDICATION

I dedicate this work to Mister Kennedy Wanyonyi and Mrs. Consolata Wanyonyi who both played a pivotal role in facilitating my studies. Many thanks indeed; words can never be enough to express my gratitude.

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ABBREVIATIONS AND ACRONYMS

AKI	Association of Kenyan Insurers
CAR	Capital Adequacy Ratio
CAPM	Capital Asset Pricing Model
CPI	Consumer Price Index
CBK	Central Bank of Kenya
GDP	Gross Domestic Product
IRA	Insurance Regulatory Authority
IFRS	International Financial Reporting Standards
KNBS	National Bureau of Statistics
NACOSTI	National Commission for Science, Technology, and Innovation
ROE	Return on Equity
ROA	Return on Assets
TA	Total Assets
VIF	Variant Inflation factor

OPERATIONAL DEFINITION OF TERMS

Financial Performance	Financial performance indicates the degree to which an enterprise has met its financial targets over a specific time frame. Financial performance is indicated by earnings, profitability, and growth in the firms' value. This research employed the operating ratio as a metric for the financial performance of insurance firms.
Interest rate	It is the cost a borrower incurs to the lender to receive credit. Alternatively, the rate a lender charges for lending money or a bank pays its savers to keep deposits. The study measured interest rates using the average quarterly interest rate.
Fundamental risk factors	These refer to market factors that affect financial asset value and prices in the financial system. Fundamental risk factors in this study are inflation rates, exchange rates, and interest rates.
Return On Equity	It is a metric of financial performance computed by expressing the net income as a percentage of shareholder's funds.
Marginal growth rate	A measure that evaluates how much a subject of study has grown throughout a specific period.
Capital Adequacy	Indicates the insurance companies' financial ability to fulfill their obligations to policyholders. The Capital Adequacy level is assessed using the Capital required and the Capital available. This study employs Capital adequacy ratio to measure capital adequacy

Operating ratio	It refers to a measure of financial performance among Insurance firms that is computed by deducting the investment ratio from the combined ratio
Inflation Rates	Inflation is the constant upsurge in prices over a specific time frame. This research measures inflation using the average quarterly inflation rate to measure this variable.
Exchange Rates	Refers to the conversion rate of units of one currency into units of another currency. This study uses USD/KSH average quarterly exchange rates to express this variable.

ABSTRACT

The financial performance of Insurance firms holds a vital function in increasing the Insurance sector's market value and leads to the economy's overall growth. There exists substantial empirical evidence on fundamental risk factors and financial performance in other sectors. However, there are limited studies that have delved into the link between fundamental risk factors and the financial performance of Insurance firms. The tendency of declining financial performance of the Insurance firms in Kenya is a cause for concern among various stakeholders. The financial performance showed a downward trend from 2011 to 2018 before a little bullish movement in 2019. This research aimed to analyze fundamental risk factors and financial performance of Insurance firms in Kenya. The financial performance of Insurance firms was measured by the operating ratio. The study's specific objectives were to ascertain the effect of inflation, interest, and exchange rates on the financial performance of Kenya's insurance firms. The research further established the moderating effect of capital adequacy regarding fundamental risk factors and the financial performance of the Insurance firms in Kenya. The research was supported by the portfolio, expectations, and the Liquidity theories. The study adopted the Positivism philosophy and an Explanatory research design. The study used quarterly data from the insurance firms in Kenya and used STATA software to analyze. Data analysis was done through Descriptive statistics, Pearson's simple correlation, and time-series regression over a scope of 10 years. The hypothesis was tested at the 0.05 level of significance; findings indicate that Interest rates had a negative but not statistically significant effect on financial performance at p value of 0.081. In addition, Inflation rates had a negative but not statistically significant effect on financial performance with a p value (p value=0.863), and exchange rates had a positive statistically significant effect on financial performance (p value= 0.000). Lastly, capital adequacy with a (P=0.0000<0.05) had a significant moderating effect on the relationship between fundamental risk factors and financial performance. As a result, Insurance firms should focus on managing the risk posed by exchange rate movement to reduce the operating ratio. Secondly, Kenyan Insurance firms should strategically select debt capital taking into account the timing, cost, and debt capital structure to positively control the incidence of interest rates on their financial performance. Thirdly, Kenyan insurance firms should factor in the effect of inflation rates while pricing insurance contracts to strategically distribute the effect inflation rates to the policyholder in the quest to achieve a positive outlook on financial performance.

CHAPTER ONE

INTRODUCTION

1.1Background to the study

Burca (2014) stated that both fundamental risk factors and firm-specific characteristics impacted on revenue and expenditure of insurance firms. In finance, market parameters like interest, inflation, and exchange rates that affect the monetary value of financial instruments, are known as "fundamental risk factors" (Duestch, 2004). Interest rates are a major economic influence; they facilitate capital formation and profoundly affect monetary policy, investment decisions, job creation, and corporate financial performance (Mboga, 2014). Insurance firms pool risks together and mobilize capital by premium collection for investments (Agiobenebo & Ezirim, 2004). Insurers cover risk and promote the financial stability of financial markets because firms may lack sufficient capital to bear all risks in such a dynamic global economy (Ahmed & Ahmed, 2010).

Financial performance is a company's capacity to employ its assets in revenue generation and to meet its financial targets over a specific period (Ozeke & Abadolaye, 2020). According to Chen, Sun, and Yu (2010), financial performance is indicated by earnings, profitability, and growth in the firm's value. For Insurance companies, performance is measured by operating ratio, profits earned from underwriting activities, net premiums underwritten, combined ratio, and return on investment (Insurance Regulatory Authority, 2018). The potential losses posed by changes in exchange rates and interest rates lower insurance companies' investment income from bonds, loans, and real estate (Gerald & Ulrike, 2018). The Consumer Price Index, which records the average cost of goods and services, is the standard of measure for inflation rates (Akers, 2014). The index tracks the typical retail prices consumers pay; a high inflation rate raises costs which in turn results

in a decline in overall consumer spending. A decrease in insurance policy uptake translates to decrease in the gross written premium (Ahmed, 2011).

Interest rate fluctuation among lending and deposit-taking institutions originates from unpredictable fluctuations in the current market rates (Akpomiemie & Euphemia, 2016). In Pakistan, Ahmed, Rehang, and Stupor (2018) contend that variations in interest rates influence the worth of capital in financial markets and impacts the Continuum of consumption by people. In addition, Noreen, Liana, and Praveen (2018) contend that interest rate changes significantly affects the economy. Rising interest rate affects financial performance as it also increases the cost of borrowing and in a similar vein, declining interest rates also result in lower deposit rates, which decreases the desire to save.

According to Hicks (2010), Insurance companies are affected by fundamental risk factors because of their substantial part in the financial markets. Fluctuation of fundamental risk factors affects the financial performance of Insurer's world over. In Croatia, Previn and Panic (2010) and Curah *et al*. (2011) investigated fundamental risk factors and financial performance of insurance firms in Croatia. Findings showed an inverse but noteworthy influence of inflation rates on the financial performance of Insurance firms.

According to Brainerd (2008), Insurance is very important in ensuring financial security. Bhatia (2013) states that several fundamental risk factors like interest rates, inflation rate, and exchange rates affect the growth of insurance services as they influence critical aspects of the firm like total premium collection and Insurance uptake. Fundamental risk factors affect domestic price levels, the profitability of companies, investment decisions, and export sale (Nyairo, 2018). According to Mulwa (2013), the movement of exchange rates has a ripple impact on the value of international transactions both in goods and financial assets. The effect of exchange rate volatility manifests

when there are financial obligations to be met in foreign currency. This kind of risk has more significance in financial performance non-life than in life insurance (Hales, 2015).

In Nigeria, Williams (2018) investigated how currency rates influenced the performance of insurance firms on the Nigerian national exchange. He reveals that increasing rapid changes in exchange rate result in reduction in the Return on capital invested among Insurance firms. Njoroge (2013) studied how interest rates impacted the financial performance of insurance firms trading on the NSE. He observes a clear correlation between profitability of listed firms and interest rates. Furthermore, Muchiri (2012) studied interest rates and the financial performance of insurance firms on the NSE; conclusions show interest to rate has a positive but negligible impact on the value of stocks.

1.1.1Fundamental Risk Factors

Fundamental risk factors refer to market-related factors like interest, inflation and exchange rates that influence how financial instruments are valued and priced in the financial markets (Deutsch, 2014; Akims & Jagongo, 2018). Fluctuation of these factors causes changes in the value and pricing of underlying financial instruments because of inherent market risk (Misund, 2018). Movement in Fundamental risk factors is associated with trends in asset prices and financial instruments on financial markets (Aguiar & Broner, 2016). Berends *et al.* (2020) investigated profitability and the interest rate risk that insurance firms face through the behavior of policyholders. Several insurance products provide policyholders the leeway to terminate their policies at personal discretion.

Interest rate is the cost that the debtor pays to the lender for acquiring credit (Nyambura, 2016); insurance companies recognize it on the income statement as a cost. A real interest rate is computed by taking into account the net of the expected inflation rate to the cost of capital for the debtor and

the real yield for the creditor (Brock, 2018). According to Ngugi (2001), interest rates are among the most significant determinants of a firm's financial performance. He further stated that interest rates also impact investing decisions and monetary policies. This study adopted quarterly interest rates as a metric for interest rates.

Inflation is the constant upsurge in prices over a specified period (Karl & Holzheu, 2017). The primary cause of inflation is a constant increase in income that is not proportionate with available goods and services (Osoro, 2014). Where the money supply supersedes the available goods and services; in the long run, prices increase, leading to reduction in the purchasing capacity and spare income among the population (Ongeri, 2014).This therefore affects the financial performances of deposit-taking institutions like insurance companies. The study used the average quarterly inflation rate to quantify the inflation rate.

Exchange rate fluctuations directly affect firms through transactions whose obligations are in foreign currencies (Bailliu & Bouakez, 2018). Exchange rate movements are transfered to local prices through imported consumer goods and local goods priced in non-local currency (McCarthy, 2000). Mwangi (2017) stated that exchange rate fluctuations might affect the price levels in any economy depending on foreign exchange transactions. The researcher employed the quarterly average exchange rate between the USD and Kenya shilling to access the rate movement.

1.1.2Financial Performance

Kenton and Scott (2016) refer to financial performance as a metric of how efficiently a firm invests its capital for revenue generation. Financial performance metrics show the financial stability of a firm over time, and it can also be used as a comparison tool against other firms in the industry (Burca, 2014). Jansirani (2019) states that insurance organizations utilize a comparative model, the capital adequacy, asset quality, reinsurance, Liquidity and management soundness model, to measure financial soundness and stability.

This study adopts the Operating ratio to measure financial performance. This research adopts this ratio because an Insurance Regulatory Authority (2018) report highlights the operating ratio as Key performance indicator used in Kenya's Insurance Scene. The operating ratio is computed by deducting the investment ratio from the combined ratio. Barr (2024) emphasizes that the operating ratio brings out a wholesome understanding and measurement of operating success for insurance firms. According to the Insurance Regulatory Authority (2018), there was a smooth decline in the industry's operating profit from 2014-2018 compared to the number of assets employed in the same period, which increased constantly. The inverse relationship between the growth in assets used and income indicates a continuously declining investment ratio (Gonga, 2019).

The operating ratio depicts a firm's capacity to generate profit from its primary revenue generating activities. If the operating ratio is over 100%, it shows a firm's inability to earn profits from its underwriting and investment activities (Carton and Hofer, 2010). The commission ratio is expressed by net premium as a percentage of commission paid (Kinyua, 2014). According to Charumathi (2012), another efficient measure of insurance companies' performance is the claims ratio. Jansirani, (2019) states the combined ratio comprises claims, management expenses, and net Commission ratios.This study elects operating ratio to measure financial performance of Insurance firms in Kenya.

1.1.3Capital Adequacy

Capital adequacy is the threshold of equity needed to facilitate the smooth operation and cover liabilities of a firm over time; capital availability is essential prevent firms from going bankrupt (Olalekan, 2018). According to Alcazar and Alarm (2017), the Capital Adequacy Ratio (CAR) is a suitable metric for capital adequacy; he asserts that CAR is an objective ratio for measuring firm liquidity. There are other indicators of a firm's capital adequacy like the quality of assets, CAR

also demonstrates the capacity of a firm's management to deploy its assets to optimize financial performance (Almazari, 2017).

According to Udom and Eze (2018), capital adequacy is central to ensuring enhanced financial performance, and adaptability to industry changes. According to Akbas (2012), a company's capital base is a good measure of financial soundness. A well-capitalized firm tends to be more profitable, because proper capital management enhances financial performance (Boadi, 2013). When a firm becomes more extensive, it takes advantage of economies of scale hence lowering its production cost and enhancing operational efficiency (Gatsi, 2013). Further, Baumol (2018) categorically states that larger firms have an edge due to advantages that come from their market prowess and ability to harness vast amounts of capital resources compared to their smaller competitors.

For instance, Reinhard (2017) developed an oligopoly model that emphasizes that capital adequacy has a positive correlation to a firm's production ability and financial performance. Adequate Capital lays a platform for a firm's growth and buffers the firm against contingent liabilities; adequately capitalized financial undertakings are better prepared to bear impending risks (Afande, 2015). Minimum capital requirements ensure financial organizations harbor adequate capacity to play the key role of financial intermediation function for economic growth. Well-capitalized firms compete more favorably as they can undertake more significant business expansion and allocate resources effectively (Mackay, 2013).

According to Stoughton and Zechner (2009), insurers need to have sustainable cashflows to cover business risks, meet their obligations, and manage the underwriting risks adequately to generate profit. Brealey (2021) asserts that Insurance firms are futuristic; they are keen to avoid regulatory interventions, and hence obliged to adhere to the regulatory capital requirements. Adequate capital gives a firm freedom to make acquisitions and investments without having to concern itself with

balance sheet limitations. In this research, capital adequacy ratio is adopted to measure Capital adequacy. The statistics are adopted directly from IRA annual reports in which CAR is calculated by dividing the capital available by the capital required

1.1.4Insurance Firms in Kenya

Insurance firms operating in Kenya are overseen by the Insurance Regulatory Authority. Kenyan insurance firms have expanded over the past ten years into the rest of Africa.For instance, Britam has associated operations in Uganda, Tanzania, Malawi, Mozambique, South Sudan and Rwanda. Evidence highlighted by IRA (2018) indicates that the Kenyan Insurance sector is relatively stable despite a marginal growth rate. In 2018, the industry reached Ksh.216.26b in gross premiums up from Ksh.209b in the preceding year 2014.The period from 2019 to 2021 also witnessed and increase in Insurance uptake with a growth of 16.9% to record a GWP of Ksh.275b.However, from the final reports by the IRA, net profit in Insurance firms declined from Ksh.13.58b in 2017 to Ksh.7.29b the following year.

The Insurance Regulatory Authority (2018) sector report states that 55 licensed insurance companies in Kenya for the period ending 2021. The Kenyan market comprises at least five reinsurance companies. In addition, several foreign insurance firms have claimed a stake in the local insurance market; UK's Prudential, South Africa's Sanlam, among others. According to Deloitte, 2018) the life insurance business grew by 5.6% to Ksh. 87.41 billion in 2018 from Ksh. 82.8 billion getting the better of the general insurance business which grew in GWP by 2.2% to Ksh.128.85 billion in 2018 from Ksh.126.19 billion in 2017 . Despite this, the general insurance business still contributed a more significant portion of the premium in the industry, accounting for 59.6% of the total premium collected. According to The Association of Kenya Insurers (2017), the industry asset base composed of financial market investments increased by 7.5% to Ksh.635.04

billion in 2018, up from Ksh.590.95 billion in 2017. These investments primarily comprise government securities at 57.4% of the total assets.

Further insight from the IRA (2018) indicates that Insurance penetration which is a percentage of gross premiums to Gross Domestic Product, had been on a constant downward trend from 2.88% in 2014 to 2.4% in 2018. Cyton Investments (2019) stated that emerging trends indicate a need for insurance companies to utilize big data and artificial intelligence to objectively utilize the data they collect to identify and recognize patterns and anticipate customer actions. Artificial intelligence helps Insurers to provide personalized insurance products. The regulator has also encouraged industry players to adopt new reporting standards in IFRS9 and IFRS17 to enhance objective financial reporting to keep up with the global pace and trends (AKI, 2018).

1.2Statement of the Problem

The Insurance Regulatory Authority (2019) reveals that the insurance firms aggregate Operating ratio has been on a sloping trend, the Kenyan insurance firms recorded an operating ratio of 91.99% in 2011, the performance goes down by a stable steady rate of 1.05% to record an operating ratio of 97% in 2015, it slumps further to dropped by 4.9 % from 100.70% in 2016 to 105.3% in 2021.The steady decline in the operating ratio is noted because the a high or growing operating ratio denotes a declining performance. The Insurance Regulatory Authority (2018) notes a negative growth rate of -13.89% in investment income from 2011 to 2018.According to a Central Bank of Kenya (2020), interest rate has been steadily rising from an average of 6.5% in 2014 to 7.9% in 2018 to 7% in 2019 and lower to 6.7% in 2020. In the wake of this trend in interest rate statistics, there has been a smooth decline in performance of insurance firms.

According to the KNBS in 2020, the annual average Inflation rate was relatively stable with 6.8% in 2011, 6.5% in 2015 and 2016. The USD/KSH rate was on an upward trend from Ksh.88.07 in 2014 upwards to Ksh.103.39 in 2017, and bearish movement was recorded at Ksh.101.3 in 2018

before rising to an annual average of Ksh.106.62 per USD in 2020(Central Bank of Kenya,2020). Amidst the volatility of the fundamental risk factors, the trend in ROE stayed on an average downward trajectory from 2014 to 2020**.**

Financial performance remains a key subject among researchers in business and management since nearly every business stakeholder is interested in performance (Batra, 2007). Despite playing a critical role in wealth creation through investments and risk management, the insurance industry in Kenya has witnessed several firms close down (Hagel, Brown & Davison, 2010). Insurance firms like Blue Shield Insurance and United Insurance have closed business and faced liquidation in the decade ending in 2018. Consequently, Policyholders have lost billions of shillings in pension schemes and life funds (Kumba, 2011). Such instances raise questions about the insurance industry's stability and investment decision making.

Substantial empirical evidence has dwelt on the economic performance of Banks, while other researchers have reported little on how interest rates affect the performance of Kenyan Insurance. For instance, Kipngetich (2011) investigated the financial performance of Banks. Evidence from this study indicates that interest rates significantly impact the financial performance of both banks and real estate firms. According to Kipngetich (2011), there is a need to conduct further research to cover fundamental risk factors in other sectors like insurance; this research filled this gap. Moreover, Akotey (2013) undertook a study on interest rates and Life insurers. Findings revealed a negative relationship between firms' investment income and interest rates, but he does not cover other factors like inflation rates. Akotey (2013) delves into the case of general insurers. This study addressed this by investigating both life, general and reinsurers.

Muya (2013) holds that interest rates are positively correlated with the insurance firm's financial performance. However, the current research employed a descriptive research design in analyzing

quantitative panel data rather than an exploratory research design, which would be a more effective technique. Studies by Nyamu (2016) and Ndichu (2014) investigated fundamental risk factors and the financial performance of insurance firms. However, they employed a descriptive research technique that measures financial performance by return on assets. This study filled the gaps and employed exploratory design; this study also measured financial performance using the operating ratio.

There are methodological gaps in the reviewed studies. Both Mwangi (2012) and Murungi measured financial performance using ROA; this study took the operating ratio approach for insurance firms as a metric for financial performance. They also used the descriptive research technique while this study used causal and exploratory research design. Despite the extensive empirical evidence reviewed, all studies do not have moderating variables, while others are a mix of macro and micro factors. There is still room for research to study the insurance firms' performance and fundamental risk factors. Furthermore, most of the studies on the fundamental risk variables dwelt on commercial banks. This study used the time series regression model and exploratory research design. This current study filled the gaps documented above and was keen to analyze fundamental risk factors and the financial performance of Insurance firms.

1.3Objectives of the Study

1.3.1General Objective

This study's main objective was to ascertain the effect of fundamental risk factors on the financial performance of Insurance firms in Kenya.

1.3.2Specific Objectives

i. To establish the effect of interest rates on the financial performance of Insurance firms in Kenya.

ii. To establish the effect of inflation rates on the financial performance of Insurance firms in Kenya.

iii. To ascertain the effect of exchange rates on the financial performance of Insurance firms in Kenya.

iv. To determine the moderating effect of capital adequacy on the connection between fundamental risk factors and the financial performance of Kenya's insurance firms.

1.4Research Hypotheses

The null hypotheses were as follows:

i. **H_{01}** Interest rates do not have a significant effect on the financial performance of Insurance firms in Kenya.

ii. **H_{02}.** Inflation rates do not have a significant effect on the financial performance of Insurance firms in Kenya.

iii. **H_{03}**. Exchange rates do not have a significant effect on the financial performance of Insurance firms in Kenya.

iv. **H_{04}**. Capital adequacy does not have a significant moderating effect on fundamental risk factors and the financial performance of the Insurance firms in Kenya.

1.5Significance of the Study

This research is significant to the government, Insurance firms, regulators researchers, investors, and other stakeholders.

1.5.1To insurance firms and investors

The conclusion of the study helps insurance firms lay in place measures, policies, and strategies that enhance management of the incidence of the fundamental risk factors on a firm's financial performance. The study enhances the understanding of Insurance firms on the effects of these fundamental risk variables for more informed and objective investment decision making. The research findings are necessary for investors and stakeholders to assist them in understanding the sustainability of their insurance companies and the critical elements that could have a big effect on the going concern of their shareholding in the firm. These would guide to more informed investment choices to better the financial performance of their portfolios in the firms.

1.5.2To regulators

Furthermore, the revelations of this study are useful to the sector regulators. In terms of policymaking and legislation, the regulator should model objective policies that make insurance firms more attractive and secure to investors to increase the uptake of insurance policies in Kenya. This study gives the above policymakers a more recent view of how the free-market economy model relates to the insurance sector, aiding in proper insurance product regulation.

1.5.3To Finance theory.

The study also contributes as a source of knowledge and value addition. Future researchers can use this research to make more advancements and iron out limitations in their future findings. This research can also be a reference source for further studies related to this research area. This study adds value to scholars, academicians, and finance theory in general.

1.6Scope of the Study

This encompassed a population of licensed insurance companies in Kenya from years from 2011 to 2021. Data is gathered from the regulating body for the insurance industry. Data on interest rates, currency exchange rates, and inflation rates are available by the CBK and KNBS. A time-series regression analysis model is used to study how interest rates, exchange rates, and inflation

rates affect the financial performance of the Insurance firms in Kenya; and the moderating effect of capital adequacy on the performance of Insurance firms in Kenya. The year 2020 and 2021 represent a scope of time in which Insurance firms had to manage the effects of the Covid virus. The virus prompted a sharp contrast in the operating environment the firms had faced from 2011 to 2019.

1.7 Limitations of the Study

The Study faced some limitations which are worth noting. For instance, the researcher faced an inherent audit reporting risk where there could be inefficiencies in the firms' reporting functions. This study counterchecked data in the IRA report with the financial statement of the specific insurance firms to affirm validity. To mitigate inaccuracies in the study variables. Therefore, the use of monthly data analysis of these variables in further studies enhanced the granularity of data which brings out the most accurate nature of the relationship between fundamental risk factors and the financial performance of Insurance firms.

1.8Organization of the Study

Chapter One introduced the research study by covering the background of the study, research problem, research objectives, research hypothesis, the scope of the research, limitations of the research, and significance of the study. The second chapter covered a literature pertaining to fundamental risk variables, capital adequacy, and financial performance of insurance firms. Chapter three detailed the research methodology, design, philosophy, empirical model, operationalization, and measurement of variables. Additionally, there is the sampling design, study population, data collection instruments, analysis, and diagnostics tests of the research. Chapter four delineated the findings, their interpretation and discussion presentation whilst Chapter five addressed the conclusions of the study and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1Introduction

This part presented the hypothetical framework of the study; this highlighted various theories by scholars that underpin the subject of financial performance. Furthermore, the section also covered the empirical review; this section reviews literature about fundamental risk factors and the financial performance of insurance firms. The section also had a conceptual framework that figuratively illustrates the dependent and independent variables.

2.2Theoretical Review

The theories surrounding financial performance are vast. Still, this study emphasizes three fundamental theories that provide evidence from various scholars and researchers about fundamental risk factors and insurance firms' financial performance. The three theories are the Modern Portfolio Theory, the Liquidity preference theory, and the Expectations theory.

2.2.1Modern Portfolio Theory

Refers to an investment-based theory advanced by Harry Markowitz in his study "Portfolio Selection" (1952). He suggests that an investor can settle for an efficient combination of optimal investment opportunities at the highest possible risk they can bear. The interest rates that affect the level of returns explain how this theory points to this variable of the study. An ideal portfolio aims to achieve the maximum possible portfolio return at a specific risk level by efficiently selecting the composition of the investment portfolio (Levchenko *et al*., 2016). Modern portfolio theory explains the way an investor can select a portfolio and aim for maximum return at the lowest

potential risk. The risk and anticipated revenue from a financial asset are positively correlated (Sadiye, 2014).

Under the Markowitz analogy, insurance companies are expected to be risk-averse like any other rational investor. They should therefore choose the portfolio with reduced risk given a choice between two portfolios that have the same return. When selecting portfolios with similar risk levels, being rational, they invest in the portfolio with a higher rate of return. (Li & Huang, 2006). Because of the fluctuation of fundamental risk factors, insurance companies ought to invest in a portfolio of investments with an array of classes of financial instruments to maximize returns and mitigate risk (Kung'u, 2013).

To maximize their financial performance, insurance firms, being a pool of investments, should diversify their investment portfolio to reduce risk to generate revenue from various investment options Gollier & Wibaut, 2012). Insurance companies apply the portfolio theory to maximize portfolio expected return at a measurable risk level by carefully selecting the quantities of financial assets invested (Read, 2012). Modern portfolio theory also has limitations, for example; it places significant reliance on historical performance data, yet assets can perform differently from the past, and correlation between assets and returns can change. It also uses variance to measure risk, yet it's not the best technique to measure portfolio risk.

2.2.2Liquidity Preference Theory of Interest rate

This theory was first postulated by Keynes (1936). Keynes analogy holds that interest rate is an economic feature affected by overall currency supply and demand. People keep money for a variety of reasons, including consumption, investments, speculative objectives, and precautionary measures. The supply of money at a particular period is the fixed quantity of money in circulation

(Appelt, 2016). Money constitutes the total currency stock in coins, notes, and deposits held by commercial banks, companies, and individuals (Amanda, 2020). Money supply remains stable into the future through the controlling actions of the central bank. Similarly, citizens and businesses prefer to hold on to cash rather than invest in a highly risky portfolio; the need to hoard cash rather than invest is referred to as liquidity preference (Millikan, 2020).

Lending out funds for a particular period earns interest income. Lending institutions earn interest from lending; borrowers incur a cost when they borrow money in exchange for interest (Bektas, 2014). The supply of credit by lenders and the demand for credit from borrowers have an effect on the interest rate. When demand for credit is greater than supply, it raises interest rates and vice versa. These fundamentals explain how interest rate fluctuations relate to the profitability of deposit Insurance Companies, the liquidity theory is pertinent to the research because insurance firms are affected by interest rates through policy loans and debt capital.

The interest on loans from banks is a cost for Insurance firms, and a source of profit of banks (Appelt, 2016).Additionally its income for Insures when they issue policy loans. High interest rates pegged on lending activities result in high interest income and vice versa (Corb, 2012). Contrarily, the Liquidity Theory, does not view the interest rates as an incentive to save. There won't be any formation of liquidity without savings (deposits); therefore, the theory primarily focuses on demand and supply for money; Interest rates also determine the price of government bonds. The Liquidity theory supports the association between interest rates and the financial performance of Insurance firms.

2.2.3Expectations Theory of Exchange Rates

The earliest proponent of the expectations theory is Moth (1961). In "Rational Expectations" Moth used these phrases to characterize a variety of circumstances where a result partially depends on

people's expectations. The great British economist John Maynard Keynes is the proponent of this theory, which allocated people's future expectations. He referred to them as "waves of optimism and pessimism" . According to the theory, expectations play a crucial part in defining the business cycle. (Tardy, 2020).

Economists typically utilize market expectations to describe anticipated inflation rates or the economic state. In this case, policyholders might consider this, along with other indicators.

Expectation's theory targets to assist in investment decisions based on projection of future interest rates Moth (1961). This hypothesis employed the rate for bonds with a short term to forecast return of long term investments like government bonds. Theoretically, long-term rates predict how short-term bond rates fluctuate in the foreseeable future (Murphy, 2020). Proponents of the biased expectations theory hold that the yield curve's shape varies due to various systematic factors besides what the market currently anticipates in future interest rates. They state that market expectations of future rates influence investors' preferences over bonds with different yield terms (Brainerd, 2019).

An extension to the expectations theory by Chapellow (2019) says that capital holders would choose short-term bonds over long-term bonds unless the latter pay a higher reward. In addition, the theory explains why two shorter-term bonds that when combined have the same maturity period as a long-term bond but still often pay out lower interest rates (Murphy, 2020). For Insurance firms, it is worth noting that the expectation theory comes into play as it affects the levels of premium collection. When the general public anticipates inflation and interest rates, they tend to make investment and expenditure decisions in line with the market expectations of such fundamental risk factors. This is because inflation and interest rates affect the levels of disposable income among households.

Expectations Theory is relevant to this research since the economy has expectations about exchange rates on the basis of market sentiment. The theory illustrates how the general expectations of individuals and corporations in the economy affect money supply which in turn influence the currency exchange rates. As a result, changes in exchange rate are affected by mass expectations. Hence, individuals' expectations of higher exchange rates result in economies' exchange rates increasing and vice versa. This ultimately affects financial institutions' profitability. The main argument against rational expectations is that it is irrational to claim that each person's expectations are exactly the same as what the relevant economic theory predicts.

2.3Empirical Review

This part covered empirical studies that stage a cause-effect relationship between fundamental risk factors and the financial performance of Insurance firms. The researcher examined how changes in fundamental risk factors affect the financial performance of Kenyan insurance firms.

2.3.1Interest Rates and Financial Performance

Njeru (2018), employed regression analysis and correlation analysis through quantitative research design to look into determining factors of financial performance for general business underwriting firms in Kenya; findings of the correlation analysis of the data from 34 firms under review revealed that interest rates and inflation rates exhibit a direct relationship with financial performance. The regression study results showed that interest rates have an adverse but insignificant effect on the financial performance of non-life insurers in Kenya. The current study employed the operating ratio to measure financial performance and covered life, general composite insurers and reinsurers.

Ndichu (2014) utilized a descriptive research technique and random sampling to examine how interest rates affect the performance of Kenyan insurance firms. The outcome of the analysis showed that interest rate spread has a significant effect on the financial performance of deposit

taking financial institutions. The correlation analysis showed that interest rates have a negative correlation with financial performance, thus as interest rates go up, the financial performance decreases.

Muya (2013) used a descriptive research approach and panel regression analysis to evaluate factors affecting the financial performance of Kenyan insurance enterprises. Based on this study, changes in interest rates had a favorable although insignificant effect on the profitability of insurance firms in terms of investment rates of return. The researcher used questionnaires to collect primary data on variables with a qualitative aspect, the current study used secondary data which is more reliable and objective in qualitative studies. This study utilized a time series regression model to incorporate the aspect of time in the model.

A study conducted in Ghana investigated the elements influencing life insurance companies' profitability by Akotey *et al.* (2013) employed a panel regression analysis over ten years; their findings indicated that interest rate has a positive although insignificant effect on the revenue of insurance firms. The current study used more techniques like Pearson correlation analysis and descriptive analysis to interpret the data further and have more granular findings of the analysis. The current study further employed a time series regression analysis to analyze the model,

Previn *et al.* (2011) analyzed the Macedonian insurance industry's financial performance. According to of the panel data regression analysis's conclusions about the factors that affect profitabilit, interest rates and inflation have a significant effect on the performance of insurers measured by the underwriting results. The current study employs a time series regression model and a correlation model to enhance the level of data analysis. This research also used a more objective measure, the operating ratio, also recommended by the IRA to measure financial performance.

Brewer *et al.* (2017) used a panel regression to evaluate the performance of American Insurance companies. They establish a correlation between the P/E ratio and the US treasury note and hold that interest rate changes affect the value of assets and liabilities. The current study advanced this study by employing the more fancied measure of financial performance; the operating ratio as recommended by IRA. Analyzing the interest risk behavior of insurance companies in Asia, Wang (2006) employed an explanatory research design to investigate life insurance companies' performance. Findings show that their corporate bond portfolio yield rises as interest rates rise.

2.3.2Inflation Rates and Financial performance

Mwangi (2017) investigated how fundamental risk factors affect the financial results of 35 insurance firms in Kenya. Revelations of the event methodology analysis of cross-sectional data from 2010 to 2014 indicated that when both inflation and interest rates increase, there is a decline in the ROA of the listed Insurance firms. This analysis brought the total number of insurance companies under investigation up to the whole industry. This study employed the operating ratio as the measure of insurance firms' financial performance as recommended by the IRA. The study also has very few observations over the short time scope,this study covers a longer time scope of ten years.

Nyamu (2016) used descriptive research design to analyze how macroeconomic factors influence the financial performance of insurance firms in Kenya. He analyzed financial performance of 50 Kenyan insurance firms against fundamental risk factors; results show that Interest rates and financial performance have a significant relationship. This research opted for an exploratory research design to review how the variables and financial performance are related. This study also employed capital adequacy as a moderating variable to enhance the stregnth of the model.

Dorofti and Jakubik (2015) investigated macroeconomic variables and insurance companies' financial results in Europe by deploying a panel data regression approach. Findings from their census study of cross-sectional aggregate data shows that high inflation negatively affects insurance financial performance. The current study moved its jurisdiction of the study to cover Kenyan insurance firms and also employed the time series regression approach to perform the data analysis. This research also employed correlation analysis to bring out a more comprehensive analysis of the variables.

Further studies by (Murungi, 2014) employed descriptive research design to delineate the effect of macroeconomic variables on the financial performance of Kenyan insurance firms. The analysis showed a strong positive correlation between financial performance of insurance firms and interest rates. This study increased the number of observations to forty-four being quarterly data observations from an extended period of 10 years to enhance the strength of the regression model.

Another study by Moraine (2013) analyzed fundamental risk factors and the financial performance of six insurance firms in Malaysia. He employed Multiple Linear Regression analyses on data collected from listed insurance companies from 1996 to 2015. According to the findings, GDP and interest rates influences the firms' financials while inflation has less significant influence on their financial performance. This study reviewed all firms in the industry to attain a good representation of the whole industry. This study employed the census approach to enhance accuracy of analysis.

Becker and Hall (2012) employed a census approach to review the European Insurance Market performance from 2008- 2012; from their panel regression analysis, results depicted that inflation has great sensitivity to investment return. The current study involved more techniques including correlation analysis and descriptive statistics to analyze the data for a comprehensive output and

in depth interpretation of the results. This research also expanded the scope of the study to 10 years and was analyzed into quarterly data to enhance the regression model.

2.3.3Exchange Rates and Financial Performance

Research by Tesfaye (2018) employed a panel regression and a descriptive research design to analyze factors affecting selected insurance firms from 2010 to 2016. The analysis of the findings show that financial performance and exchange rates are negatively correlated. The outcome of the regression model disclosed that currency rates significantly affect financial performance of Ghanaian Insurance enterprises. This thesis widened the span of study to both all life and general insurance companies to contribute to finance knowledge. This study also employs an exploratory design to expound on the existing range of studies.

Kamau (2016) used a descriptive research design to analyze the impact of market risk on Kenyan listed insurance companies' financial performance. According to the analysis of top managers' questionnaire responses,correlation analysis reveals an inverse correlation between market risk and financial performance. The current study intensified the analysis of data through the utilization of techniques like Pearson correlation analysis and time series regression. Furthermore, this thesis also investigated a wider population having favored the census approach.

Ongeri (2015) used a descriptive analysis and correlation analysis to study fundamental risk factors and the financial performance of Kenyan non-bank institutions that take deposits. The research's conclusions reveal that financial performance of non-bank deposit-taking financial entities and exchange rate changes were positively correlated. The current research furthered the analysis by fitting the time series regression to analyze the correlation between fundamental risk factors and the financial performance of insurance firms.

Nyambura (2014) employed a time series regression technique to investigate how exchange rates among other fundamental risk factors influence the financial performance of Kenyan Insurance firms. The outcomes of the time series model demonstrate a strong and statistically significant correlation between exchange rates and financial performance. The research findings show a strong correlation between financial performance and currency exchange rates. As much as the current study also employed time series regression, it also used other additional techniques like descriptive statistics to enhance the outcome of the analysis.

Kung'u (2013) used correlation analysis techniques to analyze data while studying the effect of fundamental risk factors on Kenyan based reinsurance firms' financial performance. Findings of this research revealed a tenuous negative correlation between real exchange rates and the financial performance of the firms. This study widened the array of objectives and studied the effect of fundamental risk factors on insurance firms in Kenya. Furthermore, Murungi (2017) deployed a descriptive correlation research technique to study the interrelationship between fundamental risk factors and the financial performance of Kenyan Insurance firms. The conclusions of the investigation reveal that the exchange rates significantly positively affect the financial performance of insurance firms. This research deployed an exploratory research technique to expand the findings of the study.

2.3.4Capital adequacy and financial performance

Namusonge and Makokha (2017) analyzed financial performance of Insurance companies on the NSE and their capital adequacy, they deployed a qualitative research design to analyze secondary data from 2010-2014, the findings showed that capital adequacy and financial performance were positively correlated. This study variates this study by investigating insurance firm's financial performance and capital adequacy.

Malik (2011) studied the variables affecting Pakistani insurance organizations' financial performance. The regression analysis was undertaken on panel data over five years depicts a significant positive relationship between profitability and capital adequacy for Insurance firms. This research increases the scope of the study by reviewing 10 years from 2011-2021, In addition, this data was granulated to quarterly statistics in the respective years. Furthermore, this study used additional techniques like correlation analysis and descriptive statistics to enhance the understandability of the findings.

Sasaka and Gonga (2017) employed a descriptive research design to investigate capital strength and financial performance of a section of Nairobi insurance companies. The findings from analysis done on questionnaire responses from top managers and descriptive statistics indicate that firms' capital and interest rates are all positively correlated with firms' financial performance. The present study looked at more market factors that determine an insurer's performance. This study further employs time series regression models to analyze the relationship.Bawa and Samaiya (2013) employed descriptive statistics to analyze the financial performance of Indian life insurers. Financial performance was discovered to be positively correlated with capital adequacy. The current study focused on a different geolocation investigating the Kenyan Insurance firms. The current study further analyzed the statistical data through correlation analysis and regression models.

Kaguri (2013) researched on the association between business attributes and the financial performance of Kenyan long-term insurers, he employed asset return rate to quantify the financial performance data of Seventeen Kenyan insurance firms. The study's findings reveal that insurance companies' profitability and firm capital were positively correlated. In this study, focus was on both life, general, and composite insurers which increased the scope to the whole industry outlook.

Collins and Preston (2007) employed a descriptive survey methodology to investigate the connection between financial performance and capital availability in the Insurance industry of Macedonia. Findings from the census survey show a positive correlation between capital availability and the financial performance of Insurance firms. This research gave a different perspective when it focused on Kenyan insurance firms. The current study used the operating ratio as the measure of financial performance as recommended by the Insurance Regulatory Authority of Kenya.

Charumathi (2014) investigated the financial performance of life insurers in India against the size of the firms. He employed descriptive statistics to analyze the data from a census of life insurers. Findings reveal that an insurer's size has a positive correlation with premium growth and equity capital, and both affect an insurer's financial performance. The current study delved into both Life and general insurers in Kenya. Aside from descriptive statistics, the study employed other techniques like correlation analysis and fitted time series regression models for analysis.

A descriptive research study by Mwangi (2013) aimed to identify aspects influencing the financial performance of insurance firms in Kenya. He revealed that the key variables that affect the financial performance are firm capital, capital structure, and liquidity. While Mwangi (2013) dwelled on internal variables that affected financial performance, the current study covered fundamental risk factors which were predominantly market factors. The current study also employed further analysis techniques like regression and correlation analysis, it also adopted the Capital adequacy ratio to quantify capital adequacy.

2.4Summary of Literature Review

This section examined prior studies and theories of fundamental risk factors and financial performance of Insurance firms in various contexts; the review was keen to capture contextual and

methodological gaps in the studies to gain more understanding and to fill the gaps in the studies. This chapter explained modern portfolio theory which highlights the concept of portfolio choice and composition to achieve optimal performance. The Expectations theory underpins the role of market sentiments on the volatility of interest rates. The Liquidity preference theory completed the subsection; it discusses how interest rates affect how much financial instruments cost on the financial markets.

In the empirical review, several studies revealed that when both inflation and interest rates increase, there is a decline in financial performance. Other researchers also studied capital structure and financial performance. They affirm that the performance of insurance firms was directly related to its capital adequacy and negatively correlated with inflation. Others found a relationship between fundamental risk variables and premium received by the life insurance industry. Findings from several studies indicated that high inflation rates have a positive relationship with net investment income. Some studies employed a descriptive research design, and their findings suggested that interest rates positively correlate with firms' financial performance. This research attempts to fill the study gap by establishing how the Insurance industry's financial performance relates to specific fundamental risk factors.

Table 2.1Summary of Empirical Literature and Research Gaps.

Author	Research Objectives	Key Findings	Research gaps	Filling the research gaps
Njeru (2018)	Conducted an analysis determining factors of financial performance of general business underwriting firms in Kenya.	Interest rates and inflation rates do not significantly influence the financial performance of Kenyan non-life insurers.	The research only covered non-life insurers and investigated two factors; interest rate and GDP. The researcher also employed a quantitative research design and measured financial performance using ROE	This study investigates both general, life and medical insurance firms. It also increased the number of variables under study and employed both causal and exploratory research techniques.
Tesfaye (2018)	Investigated the elements influencing the profitability of insurance firms in Ethiopia.	The results show that economic growth (GDP) and inflation rates have a statistically significant influence on insurance firms' profitability. The exchange rate has a significant impact but is negatively correlated with performance.	The study employed a panel data model and a quantitative research design. This study explicitly investigates privately owned general insurance firms.	This study expands the scope of research to include all life and general insurance firms in order to contribute to the existing corpus of knowledge. This research also employs an exploratory design to expound on existing findings.
Akotey *et al*. (2017)	Investigating determinants of profitability in Ghana's Insurance Industry	The firms' capital of insurance companies and interest rates positively correlate with the profitability of insurers.	The study employed regression analysis alone. There is still room for the investigation to look at the effect of other	The current study used other techniques like descriptive analysis and Pearson correlation analysis.

		The insurers have been incurring high underwriting losses owing to the ever-increasing claims and managerial expenses	fundamental risk factors like GDP and exchange rates	
Mwangi (2017)	To Ascertain the effects of fundamental risk factors on the financial performance of insurance firms in Kenya	The research indicated inflation is inversely related to ROA. Regression analysis between average interest rates and performance metrics showed that interest rates are negatively correlated with the financial performance of insurance firms.	The study only investigated 35 firms hence limiting the scope of the study. The study uses an event Methodology analysis and measures the financial performance of insurance firms using unconventional ROA.	This study increased the scope covered to 55 firms. It also employed an exploratory research design with time-series data. It also has many data observation points by using quarterly data for the variables for seven years.
Gonga & Sasaka (2017)	To analyze the factors that influence the financial performance of Insurance firms in Nairobi	The capital of Insurers and interest rates were positively correlated with financial performance.	The researcher put much emphasis on insurer-specific determinants of financial performance. The only market determinant analyzed was the interest rate. They also use descriptive statistics to examine respondents' data, which tends to be more opinions than analyses from the firms' financials.	The present study dwelled more on market factors that determine an insurer's performance. The study employs time series regression models to analyze the relationship

Nyamu (2016)	To analyze macroeconomic factors and the financial performance of insurance firms in Kenya	Inflation rate, exchange rate and GDP have a significant relationship with financial performance	Nyamu (2016) employed ROA to assess the financial performance of insurance firms. The literature reviewed was weak as it has been generally not categorized per variable.	This research adds an exploratory research design to review the link between financial performance and the variables. It also employed a moderating variable to strengthen the model.
Kamau (2016)	To analyze market risk and the financial Performance of listed Kenyan Insurance firms	Descriptive statistics on questionnaire responses of top risk managers revealed an inverse link between market risk and financial performance measured by ROE	He used questionnaire responses on a Likert scale and analyzed them by descriptive statistics. Furthermore, the study only covered life Insurance firms that are listed, which translates to a narrow scope.	This study used a time series regression to measure the link between secondary data of the variable and financial performance
Murungi (2014)	To investigate macroeconomic variables and the performance of Insurance firms In Kenya	The study suggested that interest rates and money have a positive but not significant effect on insurance company's financial performance.	The study only covered four years with annual data being used, making it have very few observations that limit the strength of the regression model.	This study increased the number of observations by using quarterly data observations for seven years.
Ahmed *et al.* (2015)	They evaluated the profitability of the Pakistan Insurance Industry. They compared the profitability of the Insurance companies over four years.	Based on regression analysis done, there is a positive correlation between the financial performance of insurance	The study mostly dwelled on micro determinants of financial performance, which doesn't give a whole industry outlook. This is because the size amongst companies varies, but macro-	The research dwelt on analyzing the effect of fundamental risk factors to get a whole market outlook on the industry's

		companies and the equity, leverage, and GDP.	economic variables give an entire market view.	determinants of financial performance.
Muya (2013)	To investigate factors that determine the financial performance of insurance firms in Kenya	Fluctuation in interest rates impacts the financial performance of insurance companies owing to their effects on the rate of borrowing and the rate of return.	The researcher used questionnaires to collect primary data on variables with a qualitative aspect, where secondary data is more reliable. The researcher employs descriptive statistics on the Liker scale.	This study used a proper time series regression model to analyze secondary data between financial performance and its determinants.
Moraine *et al.* (2016)	The goal of the researcher was to delineate the impact of macroeconomic factors on the performance of Malaysian Insurance firms.	Findings show that the insurance company's performance is affected by interest rates and GDP	The study did not state the research design it intends to use. It also covered six Insurance firms which represents a small sample of the Malaysian Insurance Industry	This study accessed 55 firms which is a good representation of the whole industry. This study employed an exploratory research design to investigate the relationship
Bawa & Samiya (2013)	To investigate the Financial Performance of Indian, Long-term Insurance Industry	Capital availability affects financial performance of Insurance enterprises.	The study was specific to only life insurance with a small sample size of 18 firms	The study improved the scope by looking at both life and general insurers

Source: Various Literatures Reviewed (2023)

2.5Conceptual Framework

This section covered empirical studies indicate that market factors affect the financial performance of the insurance enterprises in Kenya. These factors include Interest rates, inflation rates, exchange rates, and capital adequacy. Capital adequacy is the moderating variable. Mark and Naiwu (2015) defined it as a factor that controls the association between the predictor and outcome variables.

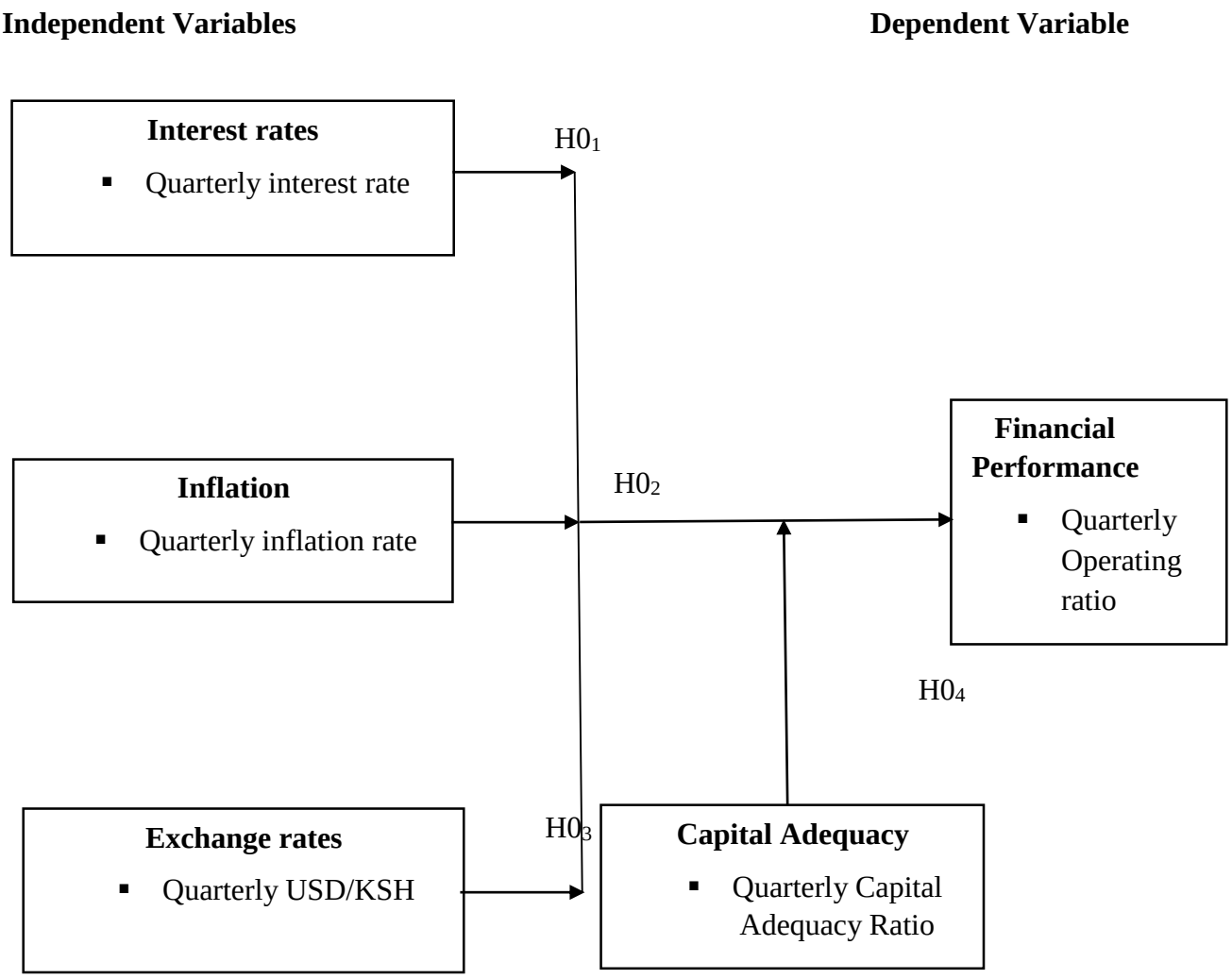

Figure 2.1: Conceptual Framework

Source: Researcher, (2023)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1Introduction

In-depth discussion of techniques that were adopted in course of the research are explained in this section. The techniques covered in this chapter aimed to test the hypotheses underpinning the current research. Mainly the chapter deliberates the research philosophy, design, empirical models, sampling methods, sampling design, sample size, instruments for gathering data, and methods for analyzing data. The measurement of variables, diagnostic procedures, and ethics are highlighted in this section.

3.2Research Philosophy

The research was based on the philosophy of positivism. According to the ideology of positivism, only factual knowledge obtained by senses, including measurement, is reliable. (Bell, 2015). According to the positivist concept, a researcher's only responsibility is to gather and interpret objective facts so that the research's conclusions can be observable and measurable. (Crowther, 2008). According to positivism, only factual information obtained via observation and measurement is reliable. The researcher's concern in positivist studies is to ensure that data is collected and interpreted objectively in order to increase the observability and quantifiability of the research findings (Crowther & Lancaster, 2018). Positivism is an ideal option for this research, mainly because the study focused on time series data whereby the researcher observed trends of fundamental risk factors alongside the financial performance of Insurance firms in Kenya from 2011 to 2021.

3.3Research Design

This is a detailed road map of conducting a study Robson (2014). Research design includes data collection methods, the instruments utilized in the collection, and the mode of data analysis used

(Creswell, 2013). The present study adopts an explanatory research design whose primary focus is to address problems that were not reviewed in-depth previously; it focuses on providing a better research model and a better explanation of the main aspects of the study.

This design was preferred because it focuses on examining a particular circumstance or problem to identify the patterns of correlations between various variables (Salkind, 2009). Explanatory research gives the researcher the ability to provide a thorough comprehension of a topic, which gives rise to numerous themes and increases the opportunity for the researcher to study and inquire about novel subjects (Saunders, 2012). Explanatory research gives the researcher the ability to provide in-depth comprehension of a topic, this generates a variety of topics and expands the researcher's scope of inquiry into new areas hence giving more ways for researchers to study the subject (Thornhill, 2012). It is beneficial to delineate the attributes of a sizable populace. Additionally, the findings are highly dependable for reference in future research (Mugenda & Mugenda, 2010). This study translated to gathering secondary data from 2011 to 2021 and investigated fundamental risk factors and the financial performance of Insurance enterprises in Kenya.

3.4Empirical Model

This study utilized a Time-series analysis model that ensured accuracy and reliability in estimating the study's parameters, improved analysis of events by incorporating the element of time in the model, and simplicity in applying statistical inferences. To comprehend, clean, and forecast data, the time series approach seeks to find significant characteristics of the data under review. The researcher models interest rates, inflation rates, exchange rates , Capital adequacy and financial performance.

3.4.1General Model

The general model was a time series regression model where **FP** is a function of explanatory variables represented by (**Fr**).

Fp = f (Fr)…… Equation i

Where:

Fp= Financial performance

Fr = Fundamental risk factors

3.4.2 Direct Effect Model

Under this model, **FP,** which is the quarterly aggregate financial performance, is a function of predictor variables which are quarterly interest rates (**INT**), exchange rates (**EX**), and inflation rates (**IFR**) for a specific time (**t**) period.

$$FPt = \beta_0 + \beta_1 INT_t + \beta_2 IFR_t + \beta_3 EX_t + \varepsilon_t$$ …… Equation ii

FP_t = Financial performance of Insurance firms at time t

INT_t = Interest rates at time t

IFR_t = Inflation rates at time t

EX_t = Exchange rates at time t

β_0 = Intercept

$\beta_1 - \beta_3$ = Coefficients

$\mathbf{\varepsilon_t}$ = error term

This study selected the operating ratio as a measure of financial performance because a report by the Insurance Regulatory Authority (2018) highlights both operating as a Key performance indicator used in Kenya's Insurance (IRA, 2020).

3.4.3Moderating Effect Model

This model aims to ascertain how capital adequacy controls the link between financial performance and fundamental risk factors. McClelland (2017) cited evidence to support the claim that the moderation test should check if the interaction term's coefficient statistically deviates from zero. The moderating variable was incorporated to determine its impact on the relationship between the predictor and response variables. Consequently, the connection between fundamental risk factors and the financial performance of Insurance companies in Kenya was moderated by capital adequacy and estimated by introduction the combined effect for each fundamental risk factor and capital adequacy**.**

$\mathbf{FP_t = \beta_0 + \beta_1 INT_t CA_t + \beta_2 IR_t CA_t + \beta_3 EX_t CA_t + \varepsilon t}$ ……...…… Equation (iii)

where,

$\mathbf{FP_t}$ = Financial performance of Insurance firms at time t

$\mathbf{\beta_0}$ = Intercept

$\mathbf{\beta_0 - \beta_3}$ = Coefficients

$\mathbf{INT_t}$ = Interest rates at time t

$\mathbf{IFR_t}$ = Inflation rates at time t

$\mathbf{EX_t}$ = Exchange rates at time t

$\mathbf{CA_t}$ = Firms' Capital Adequacy at time t

Subscript **t** = Quarters of years ranging from 2011 to 2021.

$\boldsymbol{\varepsilon_t}$ = Composite error term of the model.

$\boldsymbol{\alpha}$ = Constant term.

Table 3.3: Moderating Decision Rule

Condition	**Interpretation**
Statistically significant ($p < 0.05$)	Capital adequacy significantly moderates the relationship between the fundamental risk factors and financial performance.
Not statistically significant ($p \geq 0.05$)	Capital adequacy does not significantly moderate the relationship between the fundamental risk factors and financial performance.

3.5Target Population

This refers to the facet of the whole group that is selected for studying (Giraud, 2012). The target population for this study was a census of licensed insurance firms providing long-term, medical, general, micro-insurance, and miscellaneous products in Kenya. The study focuses on a period of 10 years from 2011 to 2021.

3.6Sampling Design

According to Baker (2014), selecting a subset of a larger population for research purposes is known as sampling. The census approach refers to statistical enumeration where the whole population is studied (Toppr, 2019). The results obtained from a census approach are accurate because they

covered each member of the population; this means there is little margin of error compared to other sampling techniques (Ahmed, 2011). The census method provided thorough information on every element of the research problem. When a census is conducted, the survey results frequently have a high level of statistical confidence. In a study of a population of fewer than 1,000 individuals, it is critical to survey every facet to achieve statistical confidence (Shannon & Bradshaw, 2002). For such reasons, this study adopts the census approach hence no sampling.

3.7Data Collection Instruments

It refers to the technique employed in compiling the required secondary data to acquire empirical evidence for informed findings from the study (Kothari, 2011). The data collection instrument for this research study included input for quarterly interest rates, inflation rates, exchange rates and capital adequacy ratio based on appendix II. It also included the data input for the operating ratio that was presented for every quarter from 2011 to 2021.

3.8Data Collection Procedure

Secondary data is the material that has been acquired previously through primary sources and is easily accessible to researchers. Secondary data is a type of data collected previously and reused in subsequent research hence making it primary data for the first and secondary data for the subsequent studies (Formplus, 2020). Before data collection, a research authorization letter from the graduate school and a research permit issued by NACOSTI was obtained. The study used time-series data published by the Insurance Regulatory Authority, which is a quarterly Insurance industry outlook in Kenya. More secondary data about fundamental risk factors was collected from the CBK, the data represented movement in numbers of each of the fundamental risk factors per quarter year from 2011 to 2021. Moreover, Government publications, surveys, business journals, and websites provided data. The sources facilitated the acquisition of quantified data that proved

to be valuable in formulating conclusions and offering recommendations pertaining to fundamental risk factors and the financial performance of insurance firms in Kenya.

3.9Operationalization and Measurement of Study Variables

Operationalization is the process of converting abstract notions into observable and quantifiable variables. It is necessary to help researchers utilize techniques in an inconsistent manner (Bhandari, 2017). Operationalization enhances objectivity and improves the dependability of the study (Bhandari, 2020). The average quarterly interest rates measured interest rates movement, the quarterly average quote of the USD/KSH measured exchange rates movement, the average quarterly inflation rates measured Inflation, the quarterly Capital adequacy ratio to measure the capital adequacy, and the Operating ratio measured financial performance.

Table 3.2Operationalization and Measurement of Variables

Type	Variable	Operationalization	Measurement	Measurement Scale
Dependent Variable	Financial performance	Insurance firms' performance is measured by operating ratio.	Average quarterly operating ratio	Ratio
Independent Variables	Interest rates	It's the cost a borrower incurs to the lender to receive credit. It is a percentage of the principal amount.	Average quarterly Interest rate	Ratio
	Inflation rates	Inflation is the constant upsurge in cost of goods and services over a specified period	Average quarterly inflation rate (Consumer price index)	Ratio
	Exchange Rates	Refers to the expression of currency in terms of units of another currency.	Average quarterly (USD/KSH)	Ratio
Moderating Variable	Capital Adequacy	Indicates the insurance companies' financial ability to fulfill their obligations to policyholders.	Aggregate quarterly Capital Adequacy ratio of Insurance firms.	Ratio

Source: Researcher, (2024)

3.10Data Analysis and Presentation

The process of evaluating data by employing logical and analytical reasoning to investigate each facet of the available data is called data analysis (Dorant, 2015). This study used descriptive analysis, Pearson's simple correlation, and time series regression for data analysis. The analyses were shown in figures and tables to enhance comprehension. Researchers used time-series data when analyzing corporate business KPIs or keeping track of industrial operations. Time-series data analysis technique uses verifiable information to evaluate the results.

Time series data is numerical data collected in a particular sequence over regular intervals (Agadir, 2015). According to Sematic (2012), time series analysis is based on data points collected over a while and may have a unique internal structure like autocorrelation, trend, or seasonal variation. A unit test approach was used to verify stationarity because a key presumption of the time series data collection is that it is stationary (Wooldridge, 2013). Time series analysis established the effect of interest rates, inflation rates, exchange rates, and Capital adequacy on the financial performance of the Insurance firms in Kenya. Time series analysis includes techniques that aim to comprehend the underlying context of the data points and create predictions. When forecasting using a time-series model, future occurrences are predicted based on previously observed past events. (Sinharay, 2020).

According to Senthilnathan (2019), correlation investigates the magnitude of the association among variables. The correlation coefficient quantifies the extent of the link between variables. The correlation analysis technique applied in this research is the Pearson's Correlation Coefficient. This study used Pearson's Simple Linear Correlation to analyze the association between the study variables, it provides the details on the strength of the association as well as the relationship's direction. (Sinharay, 2020).

3.11Diagnostic Tests

Diagnostic tests are utilized to recognize and evaluate different types of bias that may arise during research in order to determine the correctness and validity of the data (Campell & Jenny, 2007). The study executes several diagnostic tests as captured hereunder.

3.11.1Multicollinearity Test

Multicollinearity is when predictor variables that should be independent in a regression are correlated and may be challenging during analysis (White, 2017). If the extent of multicollinearity is high, the researcher may encounter challenges when fitting the model and interpreting the results.

The variance inflation factor (VIF) confirms the existence and magnitude of correlation. A VIF is computed for each predictor variable using statistical software. A VIF value of 1 infers that correlation between this independent variable and any other variables is not present. A VIF value between 1 and 5 indicates the existence of moderate correlation while VIFs greater than 5 represent critical levels of multicollinearity (Frost,2021). This study employed the variance inflation factor to measure multicollinearity.

3.11.2Normality Test

The normality test compares this set of results against a set of results that are normally distributed and have a constant mean and standard deviation(Shiva, 2012). The assumption of "sample distribution is normal" is the null hypothesis. The distribution is not normal if the test is significant. The researcher employed the Shapiro-Wilk test to check normality where p values smaller than 0.05 indicate that the data set is normally distributed, and probabilities higher than 0.05 suggest the set is abnormally distributed.

3.11.3Co-integration test

The cointegration test is used to confirm the existence of long-term association between different time series data (Amanda, 2020). The tests are used to quantify the sensitivity of variables to the same average over a specific period. Because the data included integrated variables, the study employed the Pesaran and Shins' bounds technique to test for cointegration. The null hypothesis is rejected if the F statistic is higher than the critical value at one percent significance level.

3.11.4Heteroscedasticity Test

According to Jameson (2014), Heteroscedasticity refers to any data that does not have homoscedastic characteristics. Its data has unequal variability across the set of independent variables it predicts. In regression, the error term denotes how far a point deviates from the

regression line, and the idea is that the error term should be constant or simply homoscedastic (Frost, 2021). This research used the Breusch-Pagan model as proposed by Breusch and Pagan (1979) who recommended this test for heteroscedasticity. The equation form is $\chi^2 = n \cdot R^2 \cdot k$ in this case, n is the sample size; in a potential linear regression, R^2 is the coefficient of determination, and k is the number of predictor variables. Instead of the sample size, the degrees of freedom are determined by independent variables. This test's interpretation is; a significant result indicates the existence of heteroscedasticity (Clark, 2018).

3.11.5Stationarity Test

Refers to a test of verification of whether the data studied is stationary or not (Schaffer, 2020). The Kwiatkowski-Philips-Schmidt test considers the null hypothesis H_0 for testing stationarity. Other techniques include unit root tests like the Dickey-Fuller test and its enhanced form, the augmented Dickey-Fuller (Stillman,2011). The test used the unit root approach, where if the stochastic component of the probability distribution has a unit root, it is non-stationary. Under this null hypothesis, the stochastic component does not follow a normal distribution or t-distribution. The alternate hypothesis is if the stochastic component misses a unit root, then the data is stationary (Harsha, 2019). As proposed by Stillman (2011), This study evaluated stationarity using the Augmented Dickey fuller test.

3.11.6Autocorrelation Test

Autocorrelation where the similarity between observations is a function of time lags between them (Misund,2018). The Durbin-Watson test is a widely used method for autocorrelation (Jeong & Chung, 2021). This study adopted the Durbin-Watson test to investigate autocorrelation. The Durbin-Watson statistic always falls between the numbers 0 and 4. Metrics of the value of 2 shows no autocorrelation was detected in the data set. Metrics of more than 0 but less than 2 confirm

Positive autocorrelation Finally, metrics greater than 2 but less than 4 reveal the presence of negative autocorrelation (Kenton, 2018).

3.12Ethical Considerations

Ethics are the commonly accepted norms and behaviors in a society or a group with similar objectives (Kothari, 2010). Research ethics are a vital facet of this study. For instance, the Insurance Regulatory Authority (2018) indicated that the published financial results may not fully represent an accurate and fair view of the Insurance firms because of the risk of data manipulation by the individual firms. The study paraphrased all information obtained from secondary sources and acknowledged the sources accordingly to avoid plagiarism.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1Introduction

This part delineated the diverse techniques applied for data evaluation, procedures undertaken to analyze, interpret and present the data. The first section of this chapter covered descriptive analysis which depicted key features of research data through presentation of the summarized statistics and analysis of trends. The chapter further covers correlation analysis to ascertain the characteristics of the association between the research variables. The section also delineated the diagnostic tests,

a time series regression model, and hypotheses to evaluate the association between fundamental risk factors to the financial performance of insurance enterprises in Kenya. Discussions and presentation of the findings were conducted in accordance to null hypotheses of the study-specific objectives. The data that was analyzed in this section was for the period between 2011 to 2021.

4.2Descriptive Analysis

This part covered the analysis of descriptive statistics for the interest rate, inflation rate, exchange rate, interest rate, and capital adequacy. The data utilized was a time series in nature where study variables were measured as the quarterly average set for all Kenyan insurance firms. The time series outcome is presented against time to come up with movement for each study variable. The descriptive analysis comprises the lowest and highest figures, average and standard deviation for; inflation rate, exchange rate, interest rate, and capital adequacy for the period 2011 to 2021. The descriptive analysis is tabulated below.

Table 4.1Descriptive Analysis

Variable	Obs	Average	Std. Dev.	Min	Max
Operating Ratio	44	98.95409	5.329724	87.4	110.04
Interest rate	44	15.21875	2.615526	11.877	20.213
Inflation rate	44	6.990773	2.851682	3.687	16.29
Exchange rate	44	97.26434	8.828021	82.309	111.897
Capital Adequacy	44	4.799291	1.13756	2.4065	6.2946

Source: Research findings, (2024)

Analysis from Table 4.1 revealed that from the 44 observations across the variables. The average Operating ratio was 98.95, the maximum operating ratio was 110.4 while the minimum value was 87.4. This consequently resulted in a standard deviation of 5.38 which deduces a high dispersion between the best and least-performing firms. The mean Interest rate was 15.29, the highest rate was 20.21, and the lowest rate was 11.88. The standard deviation of the interest rate was 2.64 which shows that the interest rates are quite stable over the period reviewed. In addition, the inflation rates throughout the period of study had a mean of 6.99, and a maximum value of 16.29 which is the point in time when the highest inflation rate level, and the lowest inflation rate at 3.687. The standard deviation in the period under review is 2.85 which indicates that values of inflation rates varied significantly from the mean during the period reviewed. Table 4.1 depicts that the exchange rate recorded a mean of 97.26, the highest exchange rate was 111.897 while the minimum value was 82.309 between the shilling and USD. The standard deviation at 8.83 indicated a substantive variation from the mean, this is occasioned by a positive growth rate of exchange rate. The Capital adequacy ratio was at a mean of 4.793, the maximum was 6.294 while the minimum was 2.406. The stan dev of 1.137 indicated great dispersion from the average CAR.

4.3Correlation Analysis

Correlation is statistical technique that assesses the direction and degree of the association between a set of two or more variables. This research analyzed the correlation between fundamental risk factors and financial performance. After undertaking correlation analysis, the outcome was highlighted below.

Table 4.2Correlation Analysis table

	OR	INT	INF	EX	CAD
OR	1				
INT	-0.6428*	1			
	0.0000				
INF	-0.4888*	0.5571*	1		
	0.0008	0.0001			
EX	0.7828*	-0.6416*	-0.5446*	1	
	0.0000	0.0000	0.0001		
CAD	0.7933*	-0.6061*	-0.4904*	0.8040*	1
	0.0000	0.0000	0.0007	0.0000	

Source: Research Data, 2024

Table 4.2 enlisted the correlation statistics between fundamental risk factors and operating ratio. The matrix reveals Operating Ratio had a weak, negative, and insignificant correlation with interest rates ($p = -0.643$, $p < 0.05$). The findings hold that inflation rates had a weak, negative, insignificant relationship with the operating ratio ($p=-0.489$, $p<0.05$). Besides, exchange rates had a robust, favorable, and significant connection with the Operating ratio ($p = 0.783$, $p>0.05$). Finally, Capital adequacy had a very weak negative and insignificant association with the operating ratio ($p=-0.723$, $p>0.05$). According to this analysis financial performance as determined by operating ratio increases when exchange rates between USD/KSH increase. Furthermore, the significant negative relationship between financial performance, interest rates, and Inflation rates implied that financial performance declines when interest rates and inflation rates increase. Thirdly, financial performance declined when the capital adequacy ratio increased, this is indicated by the weak negative correlation between the two variables. This conforms with the conclusions of Mwangi (2014), who found a negative correlation between interest rates and financial performance.

4.5Diagnostic Tests

Before analysis of the regression model, this part delineates diagnostic tests of evaluation, they are stationarity and normality tests. To determine the ideal number of lags, post-estimation diagnostic tests are used. These tests include the ARDL Bounds test for co-integration, the Breusch-Pagan test, the Durbin Watson statistic for autocorrelation, and the VIF for multicollinearity.

4.5.1Multicollinearity Test

The study aimed to use time series regression methods hence no two variables should have an extremely high correlation. Variance Inflation Factors (VIF) were employed to definitively prove existence of multicollinearity.

Table 4.3Variance inflation factor

Variable	VIF	1/VIF
INT	1.9	0.526971
EX	1.86	0.537536
INF	1.59	0.63014
$Mean\ VIF$	1.78	

Source: Research Data, 2024

As displayed in Table 4.3, the VIFs fall between 1 and 5; the research concluded that there was moderate multicollinearity but it does not meet the threshold for correction. VIFs greater than 5 represent critical multicollinearity levels.

4.5.2Normality Test

Normality tests were performed to assess the level of normal distribution of data. The Shapiro-Wilk test was employed to test normality.

Table 4.4Normality Test Results

Shapiro – Wilk W Test					
Variable	Obs	W	V	z	Prob > z
OR	44	0.97207	1.189	0.366	0.35735

Source: Research Data, 2024

The residuals from the test are thought to be normally distributed under the null hypothesis.

The null hypothesis is therefore acceptable any time the p-value is above 0.05. The findings from the table above indicated that the data is distributed close to the normal curve. Given the p-value from the Shapiro-Wilk test was above 0.05 (p = 0.35735) hence the null hypothesis was supported. Results from tale 4.4 indicate that the residuals of the model were normally distributed.

4.5.3Co-Integration test

Because the data contained integrated variables, the Co-integration test was performed utilizing the bounds testing method proposed by Pesaran and Shins.

Table 4.5 ARDL Bounds Test

Pesaran/Shin/Smith (2001) ARDL Bounds Test

H0: no levels relationship F = 9.545
t = -6.073

Critical Values (0.1-0.01), **F-statistic**, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	2.72	3.77	3.23	4.35	3.69	4.89	4.29	5.61

accept if F < critical value for I(0) regressors
reject if F > critical value for I(1) regressors

Critical Values (0.1-0.01), **t-statistic**, Case 3

	[I_0] L_1	[I_1] L_1	[I_0] L_05	[I_1] L_05	[I_0] L_025	[I_1] L_025	[I_0] L_01	[I_1] L_01
k_3	-2.57	-3.46	-2.86	-3.78	-3.13	-4.05	-3.43	-4.37

accept if t > critical value for I(0) regressors
reject if t < critical value for I(1) regressors

Source Researcher, 2024

Table 4.5. The null hypothesis reports that there is cointegration among the variables. The F statistic of 9.545 is higher than the criterion of 5.61 at a one percent significance level hence we reject the null hypothesis. This demonstrates a sustained connection between the log of operating ratio as the metric of the dependent variable, interest rates, exchange rates, and inflation rates. Considering the results of the ARDL bounds test both ARDL models were suitable for analysis.

4.5.4Heteroscedasticity Test

This test's objective is to ascertain whether the error term's variance is constant. When the error term's variance fluctuates, heteroscedasticity arises because the error term changes in response to fluctuations in the independent variables. The Breusch-Pagan test was employed in this study to investigate heteroscedasticity.

Table 4. 7Breusch-Pagan test

$Chi^2(1)$	0.0000
$Prob > Chi^2(1)$	0.9580

Source: Researcher, 2024

Table 4.7 provides the test results. The study results in which the null hypothesis, constant variance (homoscedasticity) was accepted (chi-square = 0.9580; $p > 0.05$). Hence, the findings indicate no concerns for heteroscedasticity.

4.5.5Stationarity Test

When the researcher employed a time series analysis, the stationarity test was essential because the outcome of having non-stationary variables is several model misspecifications. Stationarity was evaluated by the Augmented Dickey fuller test.

Table 4.8stationarity test results

Variable	Test statistic	1% Critical Value	5% Critical Value	10% Critical Value	p-value for Z(t)
OR	-2.392	-3.628	-2.95	-2.608	0.1439
INT	-1.346	-3.628	-2.95	-2.608	0.6077
INF	-3.388	-3.628	-2.95	-2.608	0.0114
EX	-1.014	-3.628	-2.95	-2.608	0.748

Source: Study (2024)

The results in the above table revealed p-values above 0.05 across all factors. Therefore, the null hypothesis that all variables have a unit root for operating ratio, interest rates, inflation rates, and exchange rates was accepted. The results form a basis of conclusion that none of the relevant variables are stationary.

4.5.6Autocorrelation Test

Autocorrelation is when the similarity between observations depends on the intervals of time between them. The ideal goal of autocorrelation testing is to determine whether there is a relationship between the error terms in different periods of a regression model.

Table 4.9Autocorrelation test

Model	**Statistic**
$\text{Durbin} - \text{Watson d} - \text{statistic}(4, 44)$	1.713846

Source: Researcher 2024

From table 4.9, the d-test statistic is 1.7138 with the operating ratio as the metric for the response variable, financial performance. The research supported the null hypothesis because the d-test statistic was higher than 0.05 and it determined that the residual variables in the various data points showed no correlation**.**

4.6Regression Analysis

The fundamentals of this study show that there is an association between fundamental risk factors and financial performance, in addition, this association is moderated by capital adequacy. The time series model with financial performance as the response variable determined the degree of direct association between fundamental risk factors and the Kenyan Insurance firms' financial performance. Time series analysis was also conducted to ascertain various hypotheses' statistical significance. The F statistics determine the goodness of fit of the model for the data set, the (R^2) depicts the change in the dependent variable caused by the independent variable.

4.6.1Fundamental Risk factors and Financial Performance

In analyzing the result of fundamental risk factors on financial performance. The specific objectives of the research were: to ascertain the effect of interest rates, inflation rates and exchange rates on the financial performance of Kenyan Insurance firms. Fundamental risk factors were regressed against the financial performance of the Kenyan Insurance firms; the outcome is displayed below.

Table 4.10Fundamental Risk Factors and Financial Performance

FP	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
INT	-0.47220	0.2638	-1.79	0.081	-1.00548	0.0610
INF	-0.03844	0.2213	-0.17	0.863	-0.48573	0.40885
EX	0.37603	0.07740	4.86	0.000	0.21960	0.5324
_cons	69.83396	10.3750	6.73	0.000	48.86526	90.8026

Number of obs	44
$F(3, 40)$	24.39
$Prob > F$	0.000
$R-Squared$	0.6466

Source: Study Data (2024)

Table 4.10 demonstrates the regression model's findings regarding the direct effect of fundamental risk factors on financial performance of Kenyan insurance firms with the operating ratio as the metric for the dependent variable. Overall, the results in Table 4.10 show an R^2 of 0.6466, which explains that fundamental risk factors account for 64.66 percent of the changes in the operating ratio.

$$\mathbf{FP_t = 69.83 + - .47X_{1t} + -.038X_{2t} + .37X_{3t}}$$

Where, S

$\mathbf{FP_t}$ = Financial performance of Insurance firms at time t

$\boldsymbol{\beta_0}$=Intercept

$\boldsymbol{\beta_1 – \beta_3}$ = Coefficients

$\mathbf{X_{1t}}$=Interest rate at time t

$\mathbf{X_{2t}}$=Inflation rate at time t

$\mathbf{X_{3t}}$=Exchange rate at time t

Subscript **t**=The quarterly time series range from 2011 to 2021.

$\boldsymbol{\varepsilon_t}$=Model's composite error term.

$\boldsymbol{\alpha}$=Constant term

The p value (P=0.0002<0.05) demonstrated how the model fits the operating ratio. The study conforms to Njeru (2018) which holds that; interest rates and inflation rates do not significantly influence the financial performance of Kenyan non-life insurers. This research however differs from Gonga & Sasaka (2017) who discovered a strong correlation between fundamental risk factors and financial performance.

The outcome specifically revealed that interest rates have a negative but not statistically significant effect on the operating ratio as indicated by the p value (β =-0.472; P = 0.081) at a 5% significance level. Therefore, an increase in one unit of interest rates causes a 0.472-unit decrease in the financial performance of insurance firms in Kenya. The research agrees with Murungi (2014) who revealed that interest rates do not have a significant influence on insurance company's financial performance. On the contrary, Kamau (2016) discovered an inverse correlation between market risk and financial performance.

Furthermore, Inflation rates had an adverse but not statistically significant effect on financial performance with p value (β =-0.038; P = 0.863) at a 5% level of significance. This deduces that a unit increase in inflation rates resulted in a decline of 0.038 units in the financial performance of insurance firms in Kenya. This study upholds the conclusions of Mwangi (2017), which suggest that an upsurge in inflation adversely affects the profitability of insurance firms. On the contrary,

Tesfaye (2018) finds out that inflation rates affected the financial performance of insurance firms significantly.

The outcome demonstrated that the exchange rate had a positive, statistically significant effect on the operating ratio (β =0.376; P = 0.000) at a 5% level of significance. This outcome was evidence that a unit rise in exchange rates resulted in a 0.376 growth in the financial performance of insurance firms in Kenya. Nyamu (2016) who contends that exchange rate, and GDP have a significant positive relationship with financial performance. The analysis upheld that the general time series regression model for this study was significant.

4.6.2Test for Moderating Effect

The fourth aim of this research was to ascertain the moderating effect of capital adequacy on the relationship between fundamental risk factors and the financial performance of Kenyan Insurance firms. Each of predictor variables was regressed against financial performance. It was hypothesized that capital adequacy did not have significant effect in the analysis of association between interest rates and financial performance of Kenyan Insurance firms. The result of the regression was as bellow.

Table4.11The moderating effect of Capital adequacy on the relationship between Fundamental risk factors and financial performance of Insurance firms in Kenya.

Financial performance	Coef.	Std. Err.	z	P>|z|
Interest rates*CA	0.346	0.116	2.790	0.014
Inflation rates *CA	-0.461	0.105	-4.470	0.000
Exchange rate *CA	0.249	0.114	2.249	0.027
_cons	0.985	0.189	4.834	0.000
F (3, 40)	25.84			
Prob>F	0.0000			

R-squared	0.6956

Source: Study Data (2024)

$FP_t = 0.985 + 0.346X_{1t} - 0.461X_{2t} + 0.249X_{3t}$

X_{1t} = Interest rates at time t

X_{2t} = Inflation rates at time t

X_{3t} = Exchange rates at time t

CA= Moderating effect (Capital Adequacy)

Table 4.11 depict the results of the moderation effect model, interest rates (β=0.346, p=0.014), inflation rates (β=-0.461, p=0.000), Exchange rates(β=0.249, p=0.027),had a positive and statistically significantly effect on financial performance of Insurance firms in Kenya. The interaction term at (P = 0.000) is less than 0.05 which implied that Capital adequacy has a significant moderating effect the relationship between fundamental risk factors and financial performance on financial performance.

Findings revealed that the r^2 in the first model is 64.66%, introduction of the interaction term causes an increase to an r^2 of 69.56% The study therefore rejects the null hypothesis and concludes that capital adequacy had a significant moderating effect on the link between fundamental risk factors and financial performance. This study contends that capital adequacy and fundamental risk factors influence financial performance. The study is consistent with Gonga and Sasaka (2017) who stated that the capital adequacy of the Insurers was positively correlated with financial performance and capital adequacy is a key metric for management to use in capital structuring.

4.7Hypothesis Testing

The research examined the hypotheses to determine whether the research variables were related. Fundamentally, the intent of the research was to ascertain the effect of fundamental risk factors on the financial performance of Kenyan insurance firms.

4.7.1Interest Rates and Financial Performance

H_{01}: Interest rates do not have a significant effect on financial performance of Insurance firms in Kenya.

From the outcome, interest rates did not have a significant effect on the financial performance of Insurance firms in Kenya ($P = 0.081 > 0.05$), and hence the null hypothesis is supported. This outcome conforms to Njeru (2018) who affirms that interest rates and inflation rates do not significantly influence the financial performance of Kenyan non-life insurers. This is contrary to Akotey *et al*. (2017) who contend that interest rates are positively correlated with the profitability of insurers.

4.7.2Inflation Rates and Financial Performance

H_{02}. Inflation rates do not have a significant effect on financial performance of Insurance firms in Kenya.

The outcome of the hypothesis showed that inflation rates do not have a substantial effect on the financial performance measured by operating ratio ($P = 0.863 > 0.05$) and thus the null hypothesis is supported. This study agrees with Mwangi (2017) who holds that growth in inflation causes a downward trend in the profitability of insurance firms.

4.7.3Exchange Rates and Financial Performance

H_{03}. Exchange rates do not have a significant effect on the financial performance of Insurance firms in Kenya.

The results indicated that the exchange rate had a significant effect on the financial performance of the Kenyan Insurance firms as demonstrated by ($P = 0.000 < 0.05$). Consequently, the null hypothesis which asserts there is no substantial influence of the exchange rate on financial performance is rejected.

4.7.4Fundamental Risk factors, Capital adequacy, and financial performance

H_{04}. Capital adequacy does not have a significant moderating effect on the relationship between fundamental risk factors and the financial performance of the Insurance firms in Kenya.

In light of the results of the hypothesis, intrest rates ($\beta=0.346$, $p=0.014$), inflation rates ($\beta=-0.461$, $p=0.000$), Exchange rates($\beta=0.249$, $p=0.027$),had a positive and statistically significantly effect on financial performance of Insurance firms in Kenya. The interaction term at $\beta =0.3929$; $P = 0.151$ is more than 0.05 which implied that Capital adequacy has a significant moderating effect the relationship between fundamental risk factors and financial performance on financial performance.

The study therefore rejects the null hypothesis and concludes that capital adequacy had a significant moderating effect on the link between fundamental risk factors and financial performance because the p-value was below 0.05 and there was a change in r^2 after introduction of the interaction term in the second model. The results of the moderating effect model showed that Capital adequacy has a significant moderating effect on the link between fundamental risk factors and financial performance ($p = 0.000 < 0.05$).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1Introduction

This part highlighted the research summary, discussion of the findings, addition to knowledge, and recommendations for further research. The summary predominantly entails the results made out of the analysis, the respective interpretation, recommendations for policy, practice, and finance theory. This part further addresses conclusions made from the interpretation of the findings and it goes on to delineate suggestions for other researchers to consider. This chapter also covers the contribution of the study to finance theory as well as recommendations for future studies.

5.2Summary

The study set out to ascertain the association between fundamental risk factors, financial performance and the moderating effect of capital adequacy of the interaction between financial performance of the Kenyan Insurance firms and fundamental risk factors. Specifically, the study aimed to ascertain the effect of inflation rates, exchange rates and interest rates on the financial performance of insurance firms in Kenya. The research further ascertained the moderating effect of capital adequacy on the interaction between the financial performance of insurance firms in Kenya and fundamental risk factors. This study adopted the census approach hence the absence of sampling. The study analyzed data through descriptive statistics, correlation, and regression analysis.

The maiden aim of this research was to determine the effect of interest rates on the financial performance of Insurance firms in Kenya. The outcome of correlation analysis of the research reveals that interest rate does not have a strong correlation with financial performance as measured

by operating ratio. The regression coefficients indicate that interest rate does not have a significant effect on financial performance as measured by the operating ratio. The study's conclusions concluded that interest rates don't have a significant effect on financial performance of Insurance firms in Kenya. Thus, the null hypothesis was accepted.

The study's second goal was to ascertain the effect of inflation rates on the financial performance of Insurance firms in Kenya. The study's correlation analysis that Inflation rates have an inverse negative relationship with on financial performance. The results of the regression model showed that inflation rate does not have a significant relationship with financial performance of insurance firms in Kenya. Therefore, the null hypothesis of the study was accepted.

The research's third objective was to determine how exchange rates affected the financial performance of Insurance firms in Kenya. The findings reveal that exchange rates had a significant influence on the financial performance of Insurance firms in Kenya. The outcome of the regression analysis depicts that the exchange rate had a positive statistically significant effect on the operating ratio. Consequently, the null hypothesis was rejected.

The research's fourth objective was to establish the moderating effect of capital adequacy on the association between fundamental risk factors and financial performance. Findings of the moderation model reveal that Capital adequacy and fundamental risk factors have a statistically significant moderating influence on the relationship between financial performance and fundamental risk factors. The interaction term is significant because of the change in r^2 after introduction of the moderation term effect. The study confirms that capital adequacy moderates the link between fundamental risk factors and the financial performance of Insurance firms in Kenya.

5.3Conclusion

The results of the study drew various conclusions. Insurance firms are key stakeholders in intermediation and their substantial investment in financial markets contributes to the stability of financial systems. The research aimed to ascertain the link between fundamental risk factors and Insurance firms' financial performance. The outcome of the correlation analysis shows that Operating Ratio had a weak, negative, and insignificant correlation with interest rates. The findings from the study demonstrate that interest rates have an insignificant effect in the determination of the financial performance of insurance firms in Kenya as measured by operating ratio. In conclusion, this indicates that the financial performance of insurance firms in Kenya is determined by other factors aside from interest rates. This outcome consistently indicated that growth in interest rates prompts a recession in financial performance.

This study sought to ascertain the effect of inflation rates on the financial performance of Insurance firms in Kenya. Findings from correlation analysis show that inflation rates and Kenyan insurance firms' financial performance do not have a significant correlation. The regression coefficients further show that inflation rates had an insignificant effect on financial performance of insurance firms in Kenya. The research findings from the regression analysis affirmed that inflation rates do not explain significantly the changes in financial performance of insurance firms as measured by the operating ratio and hence the variations in the financial performance of Kenyan insurance companies can also be attributed to other factors. The study held that Interest rates and inflation rates do not significantly influence the financial performance of Kenyan insurers.

The third study objective was to ascertain the connection between fundamental risk factors and financial performance of insurance firms in Kenya. The correlation analysis of this study reveals exchange rates had a strong, positive, and significant correlation with the Operating ratio.

Additionally, results from regression analysis revealed that exchange rates significantly affected Kenyan insurance companies' financial performance. The regression coefficients also suggested that exchange rates have a significant effect on the financial performance of Kenyan Insurance firms. The research concludes that Insurance firms' performance is influenced by the incidence of foreign exchange loss or gain from diaspora transactions. The researcher confirmed that exchange rates have a significant relationship with financial performance of insurance firms.

This study's ultimate goal was to ascertain the moderating effect of capital adequacy on the link between fundamental risk factors and financial performance. According to the correlation study, capital adequacy had positive and significant correlation with the Operating ratio. In addition, the moderating effect model indicates that capital adequacy had a significant moderating effect on the link between fundamental risk factors and financial performance of insurance firms. This study confirmed that the financial performance of insurers is influenced by the capital availability. In conclusion, the performance of insurance firms in Kenya is sensitive to fundamental risk factors encountered by insurance firms in Kenya

5.4Recommendations

The subsequent recommendations were based on the hypotheses of the study.

5.4.1Recommendation to Policy Makers

The study's findings demonstrated that exchange rates have a profoundly positive effect on the performance of insurance firms in Kenya. As a consequence of that, the CBK ought to employ smooth financial-policy actions to attain exchange rate stability. The CBK should be objectively intentional through policies aimed at protecting the local currency from instability caused by imported inflation through goods and services. In addition, the Insurance regulatory Authority ought to organize training for Insurance firms on the guidelines of the proposed IFRS 17 reporting

standard. Informed and effective application of IRFS 17 ensures financial reports reflect the effect of interest rates and inflation rates on the firms' financial performance reports, this ensures that financial reports portray a fair view of the Insurance firm's performance.

5.4.2Recommendation to practitioners

The research finds that exchange rates have a significant positive effect on the financial performance of insurance firms in Kenya. This is an indicator that insurance companies are heavily affected in periods of high volatility in currency markets and hence any obligations to be met in foreign currency should be adequately timed and evaluated to alleviate the effects of foreign exchange loss from diaspora transactions. Furthermore, the study discovered that interest rates had a positive but insignificant effect on the financial performance of insurance firms in Kenya. As per the findings Insurance firms should strive to lessen the adverse effects of interest rates on their financial performance by carefully timing the cost and nature of debt capital. Insurance firms should also aim to take advantage of interest waivers to acquire cheap debt capital and pay off debt at much cheaper rates.

In addition, this study recommends that Insurance firms' management ought to inculcate policies to curb the effect of foreign exchange loss. For instance, the management of the volume of transactions settled in varying currencies to mitigate the incidence of possible foreign exchange loss. For instance, where they must pay in foreign currency, Insurance firms should explore the options of negotiating lower exchange rates of payment through banks.

Furthermore, the correlation analysis indicates that capital adequacy had significant positive correlation with financial performance. In addition, the moderating effect model implies that company size has a substantial moderating effect on the link between the fundamental risk factors and financial performance. Therefore, the shareholders of insurance firms should be keen to

maintain capital adequacy levels that yield market power. The shareholders should prudently formulate a sustainable capital structure that accounts for the effect of market risk exposure.

5.4.3Recommendation to Theory

The analysis finds that exchange rates had a significant positive effect on the financial performance of insurance firms in Kenya. This implied that transactions settled in two different currencies bear an element of either foreign exchange loss or gain. Insurance firms should make sure they take into account how foreign exchange transactions affect the companies' performance. Firms should take advantage of the arbitrage that comes with foreign exchange to carefully schedule payments to minimize foreign exchange loss and maximize foreign exchange gain.

5.5Contribution to Knowledge

This work contributes to the existing body of information from several perspectives. The study's objective was to determine the relationship between fundamental risk factors and financial performance of insurance firms and the moderating effect of capital adequacy on the link between fundamental risk factors and the financial performance of insurance firms in Kenya. Thus, the study advances the understanding of how interest rates affect the financial performance of insurance firms in Kenya. It also reveals information on the effect of inflation rates on the financial performance of Insurance firms in Kenya. Thirdly, the study contributes to the knowledge of the effect of exchange rates on the financial performance of insurance firms in Kenya. It further gives an insight into how the capital adequacy of the firm can affect how fundamental risk factors relate to the financial performance of insurance firms.

5.6Limitations of the Study

The Study faced some restrictions which are worth noting. For instance, the researcher faced an inherent audit reporting risk where there could be inefficiencies in the firms' reporting functions.

This study counterchecked data in the IRA report with the financial statement of the specific insurance firms to affirm validity to mitigate the problem owing to the fact that monthly data on certain study variables such as; Operating ratio and capital adequacy is unavailable. Therefore, the use of monthly data analysis of these variables in further studies enhanced the granularity of data which brings out the most accurate nature of the link between fundamental risk factors and the financial performance of insurance firms in Kenya.

5.7Suggestions for Further Research

Considering the results of the correlation and regression models of this study, there are two suggestions for more study. The results of the study have demonstrated existence a significant positive relationship between financial performance and exchange rates. A study should be done to ascertain the effect of currency exchange rate of the Kenya shilling and Euro exchange rate fluctuations on the financial performance of insurance firms in Kenya. Furthermore, interest rates and inflation rates were discovered to have a negative insignificant effect on financial performance. For further insight, more research ought to be done on the effect of interest rates and inflation rates on the financial performance of insurance firms. This aimed to uncover more about the effect of interest rates on life insurance investment-based market products which are heavily affected by market factors.

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APPENDICES

APPENDIX II: Data Collection Instrument

Years		Average Interest rates (%)	Average Exchange rates (-(USD/KSH)	Average Rate of Inflation rate	Average quarterly Capital Adequacy ratio	Average quarterly Operating Ratio
2011	Q1					
	Q2					
	Q3					
	Q4					
2012	Q1					
	Q2					
	Q3					
	Q4					
2013	Q1					
	Q2					
	Q3					
	Q4					
2014	Q1					
	Q 2					
	Q 3					
	Q 4					
2015						
	Q1					
	Q 2					
	Q 3					
	Q 4					

2016						
	Q1					
	Q 2					
	Q 3					
	Q 4					
2017						
	Q1					
	Q 2					
	Q 3					
	Q 4					
2018						
	Q1					
	Q 2					
	Q 3					
	Q 4					
2019						
	Q1					
	Q 2					
	Q 3					
	Q 4					
2020						
	Q1					
	Q 2					
	Q 3					
	Q 4					
2021						
	Q1					
	Q 2					

	Q 3					
	Q 4					

Source: Researcher, 2023

APPENDIX III: RESEARCH AUTHORIZATION

KENYATTA UNIVERSITY
GRADUATE SCHOOL

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Website: www.ku.ac.ke

P.O. Box 43844, 00100
NAIROBI, KENYA
Tel. 020-8704150

Our Ref: D58/CTY/PT/25602/2018

DATE: 28th October, 2022

Director General,
National Commission for Science, Technology
and Innovation
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION FOR MR. WANYONYI DOUGLAS SIFUNA – REG. NO. D58/CTY/PT/25602/2018

I write to introduce Mr. Wanyonyi Douglas Sifuna who is a Postgraduate Student of this University. He is registered for M.Sc. degree programme in the **Department of Accounting & Finance.**

Mr. Wanyonyi intends to conduct research for a M.Sc. thesis Proposal entitled, **"Fundamental Risk Factors and Financial Performance of Insurance Firms in Kenya."**

Any assistance given will be highly appreciated.

Yours faithfully,

KENYATTA UNIVERSITY
OFFICE OF DEAN
31 OCT 2022
GRADUATE SCHOOL
P.O. Box 43844-00100, NAIROBI

for **PROF. ELISHIBA KIMANI**
DEAN, GRADUATE SCHOOL

EO/eww

APPENDIX IV: RESEARCH PERMIT

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

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